



November 26, 2004

MASTER CREEK CHANNEL, VEGETATION, AND HABITAT RESTORATION PLAN

**GM POWERTRAIN BEDFORD FACILITY
105 GM DRIVE
BEDFORD, INDIANA**

U.S. EPA ID# IND006036099

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LIST OF ACRONYMS/SHORT FORMS

ACOE	- United States Army Corps of Engineers
AOC	- Administrative Order by Consent
BA	- Biological Assessment
Bailey's Branch Creek	- Pleasant Run Watershed in Lawrence County, Indiana
Bedford Facility	- GM Powertrain Bedford Facility
CERCLA	- Comprehensive Environmental Response, Compensation, and Liability Act
CRA	- Conestoga-Rovers & Associates Inc.
E&SCPs	- Erosion and Sediment Control Plans
GM	- General Motors Corporation
HASP	- Site Health and Safety Plan
IDEM	- Indiana Department of Environmental Management
IDNR	- Indiana Department of Natural Resources
PCBs	- Polychlorinated Biphenyls
RA	- Removal Action
Removal Action Work Plans	- The Upstream Parcels Removal Action Work Plan (CRA July 18, 2003), Parcel 22 Removal Action Work Plan (CRA, July 18, 2003 and the Downstream Parcels Removal Action Work Plan (CRA, May 25, 2004)
Restoration Plan	- Master Creek Channel, Vegetation, and Habitat Restoration Plan
Site	- Pleasant Run Watershed ("Bailey's Branch Creek") in Lawrence County, Indiana
SOW	- Scope of Work
SSC	- Site Source Control
U.S. EPA	- United States Environmental Protection Agency
USFWS	- United States Fish and Wildlife Service

1.0 INTRODUCTION

This Master Creek Channel, Vegetation, and Habitat Restoration Plan (Restoration Plan) presents the general Scope of Work (SOW) for restoration activities to be completed following the Removal Action (RA) activities for identified properties within the Pleasant Run Watershed, including Bailey's Branch Creek, Pleasant Run, and associated tributaries, located in Lawrence County, Indiana (Site). The Upstream Parcels Removal Action Work Plan (CRA July 18, 2003), Parcel 22 Removal Action Work Plan (CRA, July 18, 2003) and the Downstream Parcels Removal Action Work Plan (CRA, May 25, 2004) (RAWork Plans) outline the cleanup activities to take place as part of the Removal Action. Figure 1.1 identifies the approximate limits of work identified in the RA Work Plans. Figure 1.2 presents the locations of the Parcel boundaries.

The RA Work Plans did not fully define the restoration details for areas of the Site disturbed during implementation of the RA. This Restoration Plan has been prepared to more fully define these restoration measures for the Site consistent with the work plans and access agreement with individual property owners.

Conestoga-Rovers & Associates Inc. (CRA) has prepared this Restoration Plan on behalf of General Motors Corporation (GM).

2.0 SUMMARY OF RESTORATION AFTER REMOVAL ACTION

Development of restoration details for each Parcel will be completed through the implementation of the process established herein and will result in the generation of two plans for each Parcel ("*Grading and Creek Restoration Plan*", and "*Vegetation and Habitat Restoration Plan*"). Backfilling of the creek, the type of habitat, and type of vegetation will be generally consistent with the pre-existing conditions. Wetland areas will be mitigated by the construction of a large wetland area, anticipated to be constructed on Parcel 39, which is owned by GM. Individual wetland areas may be restored to conditions that will promote re-establishment of wetlands; however, these areas will generally not be counted or monitored as mitigation wetlands. In some areas of the Site, it might be more beneficial for the stream and adjacent habitats to restore wetlands in their original locations rather than replacing them on Parcel 39. Wetlands that fall into this category will be addressed on a case-by-case basis. In general, the process for the development of restoration plans for the Parcels is as follows:

- Pre-excavation surveys will be completed which will include a wetland delineation, tree survey, and topographical survey. Additional information, including a pre-construction photo-log and field documentation related to creek morphology (i.e. pool/riffle sequences) and habitat features, will be collected. This information will be utilised to support the development of restoration requirements and details;
- Prior to completion of the excavation/restoration activities, a draft set of restoration plans will be developed based on a review of:
 - Access agreement requirements for non-GM owned Parcels, and
 - Physical limitations on restoration (e.g., soil depth limiting tree size for replanting on privately owned Parcels);
- Following completion of verification sampling, the final limits of excavation will be surveyed and used to update the restoration drawings. Grading and creek restoration requirements will be modified as appropriate, and re-planting/habitat restoration extended to cover disturbed areas;
- Final plans will be distributed for GM review. Backfilling and creek restoration may commence during review of the plans. Habitat features may also be installed during the backfilling, or during the tree planting phase;
- Seeding/erosion control measures will be installed immediately upon completion of grading activities (unless prohibited by weather conditions);
- Planting of trees and shrubs and installation of remaining habitat features will be completed under appropriate weather conditions; and

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- Restored areas will be monitored and maintained as necessary to ensure restoration efforts are successful.

In order to facilitate this process, a set of standard details has been developed for the installation of anticipated creek restoration, habitat features, and vegetation. These details are further discussed in Section 8.0. The Grading and Creek Restoration, and Vegetation and Habitat Restoration Plans for each Parcel will refer to these details, as appropriate.

3.0 OBJECTIVES

The objectives of this Restoration Plan are as follows:

- Restore disturbed areas generally to the pre-construction grade and morphology and function;
- Comply with access agreement requirements for non-GM owned Parcels;
- Re-vegetate areas with native plant species, after review with the Parcel owner (private or GM-owned); and
- Construct habitat features consistent with the stream type and size.

4.0 REQUIREMENTS FOR CREEK CHANNEL, VEGETATION, AND HABITAT RESTORATION

Because the Removal Action is being implemented under the authority of CERCLA, traditional permits are not required for the subject restoration work. Certain provisions, including administrative requirements, are waived. However, this Restoration Plan has been developed to comply with the applicable substantive requirements of federal, state, and local law. The following subsections discuss the applicable requirements of access agreements, and federal, state, and local law.

4.1 ACCESS AGREEMENTS SUMMARY

Access agreements for Parcels included in the RA are in place between GM and individual Parcel owners for all non-GM owned Parcels with the exception of Parcel 40. An agreement for access to Parcel 40 is currently being negotiated. Clarification on the impacts of the RA activities to a conservation easement on Parcel 40 was required prior to finalising the agreement. It is anticipated that the access agreement for Parcel 40 will be in place sufficiently in advance of the RA activities in that area to facilitate the implementation of the RA and subsequent restoration. Should any issues in obtaining this access agreement be encountered, GM will notify U.S. EPA consistent with the requirements of the AOC.

Access agreements can include specific restoration requirements for that Parcel negotiated between GM and the Parcel owner(s). They typically include requirements for landscape plantings in the general area of the residence, and may differ with the regulatory requirements for the restoration of the creek channel and riparian corridor. For example, some of the access agreements specify a tree density that is much lower than the tree density proposed for a natural riparian corridor to meet the specific land-use of the Parcel owner. Other access agreement requirements include specifications for replacement of existing structures (e.g., bridges over the creek) or replacement of excavated soil with like soil for agricultural use (e.g., Haymond soil on Parcel 40). This list will be updated to include additional requirements, as necessary.

4.2 FEDERAL REQUIREMENTS SUMMARY

US Army Corps of Engineers

The US Army Corps of Engineers (ACOE) has jurisdiction over wetlands that are considered non-isolated and impacts to waterways below the ordinary high water mark. Activities in streams and wetlands are regulated under Sections 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. RA activities undertaken under the authority of CERCLA as approved or required by the U.S. EPA do not require permits under either Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. Therefore, the removal actions for the Bedford Facility do not require approvals or permits from the ACOE. A letter confirming that no permit or approval is required was issued by ACOE on August 20, 2003. A copy of the letter is included as Appendix A.

Although approval from the ACOE in the form of a permit is not required, the removal and restoration activities will be completed consistent with the substantive technical requirements of Nationwide Permit No. 38 – Cleanup of Hazardous and Toxic Waste. Nationwide Permits are a type of general permit designed to authorise certain activities that have minimal adverse affects on the aquatic environment.

Mitigation of non-isolated wetland impacts is generally required for all but very minor impacts. Requirements typically include:

- 2:1 mitigation for emergent wetlands; 3:1 for scrub/shrub wetlands; and 4:1 for forested wetlands; occasionally 1:1 may be accepted for highly disturbed wetlands;
- Monitoring is typically required for a period of 5 years, though occasionally if a mitigation project is clearly successful, it may be released at 3 years. Monitoring may also extend beyond 5 years if a project is not meeting success criteria;
- Success criteria typically include achievement of a specified wetland acreage, survival of installed plant material, establishment of wetland hydrology, stable plant community, and absence or limited occurrence of aggressive non-native species; and
- The wetland mitigation area to be protected through a conservation easement or deed restriction.

The ACOE has no specific guidance regarding required mitigation for impacts to non-wetland waters of the United States below the ordinary high water mark. General guidelines typically include:

- Replacement of an equal or greater length of impacted waterway;
- Deposit of any dredged material in a contained upland disposal area to prevent sediment run-off to any water body; and
- Installation of erosion control methods to prevent soil from leaving the construction site.

US Fish and Wildlife Service

The USFWS acts in a consulting role to U.S. EPA. USFWS assists U.S. EPA with the identification of any federally listed threatened or endangered species potentially impacted by the project. To date, the only species identified for further evaluation by USFWS is the federally endangered Indiana Bat (*Myotis sodalis*).

GM has submitted a biological assessment (BA) of potential impacts of the RA on the Indiana Bat to the USFWS (J.F. New, February 17, 2004). At the request of USFWS, a number of cottonwood trees will be planted within the Site to provide bat habitat.

4.3 STATE REQUIREMENTS SUMMARY

Indiana Department of Environmental Management, Office of Water Quality

The Indiana Department of Environmental Management (IDEM), Office of Water Quality has jurisdiction over impacts to isolated and non-isolated wetlands, and waterways below the ordinary high water mark. Actual 401 Water Quality certification by IDEM is not required due to the CERCLA status of the Removal Action. In a letter dated November 18, 2003 (Appendix B), IDEM described the substantive general and project specific conditions that are applicable to this project.

General conditions include:

- Deposit of any dredged material in a contained upland disposal area to prevent sediment run-off to any water body;
- Installation of erosion control methods prior to any soil disturbance to prevent soil from leaving the construction site;

- Marking the construction limits identified in the work plan drawings at the project site; and
- Allowing site visits by authorised IDEM representatives.

Project specific conditions include:

- Implement the wetland mitigation plan as described in documents previously submitted by J.F. New & Associates: Application Support Document dated August 22, 2003 (Appendix C), and Upstream Parcels Wetland Mitigation Plan dated September 17, 2003 (Appendix D);
- Clearly identify on-Site all mitigation wetlands after construction of the mitigation wetlands. Install survey markers to identify the boundaries of the wetlands;
- Monitor the mitigation wetland annually to determine where it is achieving the success criteria;
- Submit annual monitoring reports of the mitigation wetland to IDEMs office by December 31 of each year until released from monitoring by IDEM;
- Monitor the mitigation wetland for a minimum of three (3) years;
- Include a delineation of all mitigation wetlands in the final monitoring report;
- Ensure that the mitigation wetland meets all of the success criteria for two (2) consecutive years within five (5) years of creation of the wetland (see Project Specific Condition 8 in November 18, 2003 IDEM letter referenced above);
- Protect all areas upon which a mitigation wetland is to be created with a conservation easement or deed restriction;
- Implement bank stabilisation methods as described in the attached Conceptual Wetland Mitigation Plan dated September 9, 2003 (Appendix E);
- At a minimum of every 150 feet in the upstream portion of the project Site, place stone across the stream from bank to bank to create a riffle complex (see IDEM letter dated November 18, 2003, Specific Comment No. 11); and
- At a minimum of every 150 feet in the downstream portion of the project Site, construct pool riffle complexes (see IDEM letter dated November 18, 2003, Specific Comment No. 12).

Indiana Department of Natural Resources (IDNR), Division of Water

The Indiana Department of Natural Resources (IDNR) requires mitigation for impacts to both upland and wetland habitats within the regulated floodway at locations with a contributory drainage area of one square mile or greater. IDNR's authority under this provision extends generally from Parcel 15 downstream. IDNR's interest is wildlife habitat and is not limited by statute to wetlands or drainage areas greater than one square mile.

The significance of the one square mile drainage area is that it triggers compliance with guidelines for restoration of riparian forest issued by the IDNR. Although compliance with IDNR requirements is not strictly required due to the CERCLA status of the Removal Action (IDNR letter dated February 3, 2004, Appendix G), this Restoration Plan, as well as the restoration plans for the individual Parcels, generally comply with the IDNR guidelines for all areas of the Site.

IDNR guidelines for mitigation include:

- Typically require 2:1 for upland forest and for wetlands. The ratios are typically the same as required by the ACOE and IDEM;
- Tree survival of 300 trees per acre by the end of the mitigation period;
- Trees planted are typically required to be bottomland hardwood species; and
- Monitoring is typically required for a minimum of three (3) years.

Species of trees and shrubs to be planted will be chosen from the Table 4-1 below with no single species comprising more than 20 percent of the total number planted, except where access agreement provisions require specific plantings. Alternative tree species may be planted if specific species of trees are not reasonably available. Shrubs may comprise no more than 33 percent of the total. Alternative shrub species may also be planted.

TABLE 4-1
Tree and Shrub Species Recommended by IDNR

TREES

Botanical Name	Common Name
<i>Quercus palustris</i>	Pin Oak
<i>Quercus shumardii</i>	Shumard's Oak
<i>Quercus macrocarpa</i>	Burr Oak
<i>Nyssa sylvatica</i>	Black Gum
<i>Quercus imbricaria</i>	Shingle Oak
<i>Prunus serotina</i>	Black Cherry
<i>Carya laciniosa</i>	Shellbark Hickory
<i>Carya cordiformis</i>	Bitternut Hickory
<i>Juglans nigra</i>	Black Walnut
<i>Acer rubrum</i>	Red Maple

SHRUBS

Botanical Name	Common Name
<i>Amorpha fruticosa</i>	Indigobush
<i>Cornus racemosa</i>	Gray Dogwood
<i>Viburnum prunifolium</i>	Blackhaw
<i>Lindera benzoin</i>	Spicebush
<i>Sambucus canadensis</i>	Elderberry

Plantings will be performed when appropriate weather conditions exist following completion of backfilling for each area. Some species and size classes may be more sensitive to weather conditions than others and may require plantings to be carried out in two phases. Planted areas will be seeded with a restoration cover of grasses and forbs appropriate for the area being restored. Seed mixtures are presented in Appendix H. Due to the temporary impact of the Removal Action, no deed restrictions or conservation easements are proposed, except for the wetland mitigation area to be constructed on Parcel 39.

IDNR, Division of Soil Conservation

Stormwater Permits and Erosion and Sediment Control Plans (E&SCPs) as described in 327 IAC 15-5 (Rule 5) have been submitted to IDNR, Division of Soil Conservation and approved by IDEM(Appendix I). A Rule 5 Coverage Extension to September 2008 has

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also been submitted(Appendix J). Sediment and erosion control measures specified in these plans will be followed during all phases of RA implementation, including seeding of disturbed areas following backfilling, and the placement of erosion control blankets in restored areas with slopes exceeding 5 percent.

5.0 CREEK CHANNEL RESTORATION PLANS

To the extent practical, the creek channel will be restored to the alignment and elevation of the pre-existing creek channel. Natural materials such as irregular stone, limestone rocks, and natural fiber erosion mats will be utilised to create similar geomorphology and habitat features in the restored creek channel. In some areas of the Site, these materials may be underlain by engineered materials (bank stabilisation features such root wads or limestone slab walls), to provide a stable channel. This is necessary in areas with high flow velocities due to creek slope and areas of high erosion potential such as bends in the creek alignment. The use of these engineered materials will be minimised.

In general, the creek channel can be divided into three or four types of channel. The first is a creek channel bedded on bedrock with gravel and cobble substrate, typical of the stream in Parcels 4 to 12. The second is a creek channel bedded on rock with cobble and rock substrate, typical of the stream in Parcels 15 to 22. The third is a creek bedded on soil or rock with a gravel, cobble and rock substrate, typical of Parcels 76 to 29. The fourth is a creek bed bedded on soil, with a cobble and gravel substrate typical of those Parcels along Pleasant Run Creek. Each type of is further discussed in the following sections. Section 5.3 presents a discussion of the restoration of the creek channel in the Parcel 3/205 area. In the Parcel 3/205 area, the construction of a Site Source Control (SSC) system required a creek flow bypass to the downstream limit of Parcel 205.

5.1 CREEK CHANNEL ON BEDROCK

The Bailey's Branch Creek/Pleasant Run watershed changes character from upstream to downstream, from a low-flow, steep creek to a higher flow, steep creek to a higher flow, lower slope creek to a higher flow relatively flat creek. The observed natural streambed materials consequently change in size and character along the creek. The change in character of the substrate reflects the increase, then decrease, in erosive forces within the creek. As the bedrock, rock ledges, overall slope and substrate change, so do the presence and sizes of pool and riffle sequences.

Within the uppermost reaches of Bailey's Branch Creek, where the erosive forces are moderate, the natural streambed materials (i.e., substrate), consist of gravels and sands interspersed among rocks. The larger rocks are probably remnants that the creek is not commonly capable of moving. The substrate is thin, and bedrock is found within a few

inches of the surface of the streambed. The streambed exhibits a surface texture typical of a hydraulically armored gravel/cobble streambeds. Pools are formed upstream of the remnant rock clusters.

Further downstream, the presence of gravel and sands diminish. By the lower reaches of Parcel 15, the streambed has markedly changed character being mostly loose rock on bedrock. The stream is highly non-uniform being an almost continuous series of foot high waterfalls over rock ledges and rock shelves with intervening very shallow pools. Bare bedrock is common. The loose rock substrate is sharp-edged; it is not the smooth river-stone common in lower energy streams.

By the downstream boundary of Parcel 15 the watershed area exceeds one square mile as a tributary enters Bailey's Branch Creek, from the east. The substrate is loose rock, with minor amounts of gravel and sand. The pool-riffle sequences are longer. There is some bare bedrock. This pattern continues, through Parcel 22, to immediately downstream of the Broomsage Road Bridge.

5.2 CREEK CHANNEL ON SOIL

Downstream of the Broomsage Road Bridge, the slope on Bailey's Branch Creek reduces from approximately 2-percent to below 1-percent. The character of the creek substrate changes, becoming mostly gravel and cobble with some loose rock. In the area of the Broomsage Road Bridge there are some bare bedrock areas. At low flow, pool riffle sequences are present.

By Parcel 28 the substrate in Bailey's Branch Creek is almost entirely cobble with gravel and some sand. The banks are loam and stand about four to five feet high above the streambed. The banks are actively eroding and stand almost vertical. At low flow, there appear to be no pool riffle sequences in this reach of the creek.

The confluence of Bailey's Branch Creek and Pleasant Run occurs in a relatively wide and flat area on Parcel 36. The substrate of Pleasant Run appears to be gravel and sand with some cobble. Bars formed of gravel and cobble are common along the bends in the creek. The banks are primarily loam, and have eroded to almost vertical.

5.3 PARCEL 3/205 AREA

Due to the construction of the SSC system on Parcel 3/205, a bypass of the creek flow past the SSC system was necessary. The bypass includes a series of buried gravity sewer line to bypass the water discharged from Outfall 002 at the Bedford Facility and two smaller tributaries. The water from this outfall is conveyed to the eastern end of Parcel 205, near Parcel 4, where it is discharged to a restored open creek channel. As this area forms the bottom of a ravine which receives surface drainage from adjacent upslope areas, the area above the SSC system has been filled and graded to form a drainage swale to convey collected surface water downslope to the origin of the open creek channel. The area is restored as an open grass area.

The Grading and Creek Channel Restoration plan for this area is included as Appendix K. This area will be seeded with an upland grass/forb mix, but trees and shrubs will not be planted. Therefore, a vegetation and Habitat Restoration Plan was not prepared for this area.

6.0 VEGETATION AND HABITAT RESTORATION PLANS

6.1 OVERVIEW

The entire area affected by the RA will be returned to existing grade, where practicable, and restored. Restoration of vegetation and habitat will occur on two types of Parcels: privately owned Parcels and Parcels owned by GM. Restoration of privately owned Parcels will also be based on agreements signed by the individual Parcel owners and GM. Although the agreements contain similar elements, each Parcel may also have a unique set of restoration requirements. The general requirements are addressed in this document. Restoration requirements specific to each Parcel, based on access agreements and will be addressed in restoration plans prepared for the individual Parcels. Appendix L presents the restoration plans developed for Parcels 4 through 6 and Appendix M presents the restoration plans developed for Parcels 6 through 12. These plans are an example of the restoration plans, which will be developed for the remaining Parcels.

Vegetation and habitat restoration plans for each Parcel consist of four basic components: grading and soil, seeding and stabilisation, trees and shrubs, and habitat enhancements. These components are further discussed in the following subsections.

6.2 GRADING AND SOIL

Topography within the limits of disturbance will generally be returned to similar grades that existed prior to the Removal Action. However, the final configuration of the excavation, location of the restored stream channel, and the need to provide stable slopes may result in some modifications of the final grade. For example, restoration of the stream channel will utilise exposed bedrock, to the extent possible, to form the outside bank of meanders. This may result in minor changes in the location of stream channels in some portions of the restoration area. In those areas where the location of a stream channel has been modified, the restored grade will reflect generally similar conditions.

Clean fill will be placed in areas where soil has been removed. The top six inches of the fill will be topsoil. Prior to placement, the topsoil will be tested for nutrients and other parameters that provide an indication of the suitability of the soil for supporting natural and planted vegetation. If necessary, amendments will be added to the soil to achieve

the desired characteristics. Amendments may include shredding felled trees within the project Site and incorporating the mulch into the topsoil.

6.3 SEEDING AND STABILIZATION

Six seed mixes will be used to stabilise and provide ground cover for the restored areas. The specific mix used will depend on the hydrologic regime, future use of the area, and the slope of the restored area. A lawn seed mix will be used only on those Parcels that are privately owned and only in those areas that the Parcel owners identify as being part of their functional yard area. Another seed mix is for riparian forests. This seed mix will be used in areas adjacent to Bailey's Branch Creek, Pleasant Run, and their tributaries where the slope is less than three percent. Another seed mix is a slope forest seed mix. This mix will be used in areas with slopes of three percent or greater. A grass/wildflower seed mix will be used in those upland areas that will be restored, but trees and shrubs will be not planted.

Benches will be created throughout the restored stream channel to provide additional flood storage and wildlife habitat. These benches will be seeded with a grassy-forb seed mix that contains grasses and forbs adapted to a variety of hydrologic conditions. A emergent wetland seed mix will be used in those areas delineated as jurisdictional wetlands.

Each of the seed mixes includes fast germinating annual grasses to provide stabilisation of the restored areas and perennial grasses to provide permanent cover appropriate for the particular type of habitat. The mixes also contain forbs that will enhance the diversity of plants in the restored areas. Specifications for each of the six seed mixes are discussed in Section 7.2, and included in Appendix H.

6.4 TREES AND SHRUBS

6.4.1 PRIVATELY OWNED PARCELS

On privately owned Parcels, the species and number of trees and shrubs will be installed in accordance with agreements reached and executed with the individual property owners. The number of trees and bushes to be planted is specific to each agreement. In addition, the nominal diameter of the tree trunks will vary from less than 1 to at least 5 inches.

6.4.2 GM-OWNED PARCELS

On Parcels owned by GM, trees and shrubs will be planted at a density of 436 trees and shrubs per acre within the riparian corridor. This density represents an average spacing of 10 feet on center. For both trees and shrubs, the species will be selected from a list of ten species of trees and five species of shrubs recommended by IDNR (Section 7.2). At least five species of trees and three species of shrubs will be planted. Of the five species of trees, at least two will be oak species. No one species will account for more than 20-percent of the total number trees and shrubs. Shrubs will account for 15 percent of the total plantings.

In addition to the ten species recommended by IDNR, cottonwood will be planted downstream of Parcel 22. The USFWS has requested that cottonwood be included in the tree plantings due to utilisation by the Indiana bat (*Myotis sodalis*), as roosting and nursery habitat.

6.5 HABITAT ENHANCEMENTS

Habitat enhancement features will be installed or placed throughout the project Site as part of the restoration effort. The objective of the enhancements is to attract and provide habitat for a variety of wildlife species. Habitat enhancement features include vernal pools, snags, and root wads. Each feature is discussed below.

6.5.1 VERNAL POOLS

Vernal pools are depressions in the topography that contain standing water for a few days to a few weeks during the spring. Numerous pools currently exist in the Bailey's Branch Creek and Pleasant Run Creek watersheds, some of which are remnants of channel meanders. These temporary water bodies provide important breeding habitat for amphibians. Depressions of approximately 100 to 300 square feet will be constructed during final grading. Depth of the depressions will be three to six inches below the surrounding topography. The substrate below the topsoil layer will be compacted prior to placement of topsoil to reduce the permeability of the soil, thus slowing the rate of water loss through infiltration. Because they will contain water in the spring, trees or shrubs will not be planted in the depressions. The exact number and location of the

vernal pools will be determined at the time the specific restoration plan is prepared for each Parcel.

6.5.2 LOGS

Trunks of trees that have fallen as a result of age, disease, or storm events are a natural feature of most forest habitats. These logs provide habitat and structure for a variety of wildlife, such as small rodents, snakes and lizards, and amphibians. Logs felled during clearing of the project area will be randomly placed throughout the areas restored at density of 20 per acre. However, because much of the restoration area is within floodplain, there is a potential for logs to be displaced and transported to the streams during storm events. Therefore the locations for each of the logs will be selected to minimise the potential for displacement.

6.5.3 ROOT WADS

Rootwads are a natural channel stabilisation feature used to provide interim protection to stream banks and instream habitat for fish. When buried into a streambank with the root mass pointing upstream, rootwads provides riverbank stabilisation in high shear stress or high water velocity areas and provide excellent nursery habitat for juvenile fish species. Rootwads provide short-term (5-10 year) protection to allow the establishment of deep-rooted vegetation.

7.0 HABITAT RESTORATION AND ENHANCEMENT MATERIALS

To the extent possible, natural, local materials have been specified for the restoration including the selection of native plant species and re-use of non-contaminated materials (e.g., cleared trees as mulch and habitat features and use of non-contaminated rock for habitat enhancements in the creek channel). The use of engineered materials has been limited to those areas, which require these materials to ensure the restored areas are stable.

7.1 CREEK CHANNEL

The creek channel and creek overbank areas will be restored to a similar geomorphology using materials similar to those naturally present in the creek prior to the Removal Action. However, the geomorphology and materials will change from one creek reach to another. In areas where the creek ran along natural bedrock, the channel will be returned to the bedrock. Where the natural substrate was gravel and cobble, a gravel/cobble mixture will be used. Where the substrate had significant amounts of rock, either the rock will be cleaned and re-used or similar-sized rock will be placed in the restored channel. Where pool-riffle sequences naturally occurred, geomorphologically similar sequences will be constructed, utilising existing natural features, such as rock ledges. In developing this Restoration Plan, it was assumed that the creek will establish a natural geomorphology over time.

One exception to the use of natural materials will be in those limited areas where bedrock in fractures was removed. Here, the fractures will be filled with concrete, and large irregular limestone slabs will be placed overtop to cover the concrete so as to provide a more natural appearance and habitat.

As described elsewhere, the overbank areas will be backfilled with suitable soil and graded to approximately pre-remediation elevations and contours. This soil is susceptible to erosion. Management of the potential for erosion of the banks will vary along the length of the creek. In the uppermost reach of the creek from Parcels 4 to 6, the banks were rock and well defined. To prevent high flood events from eroding the banks and the graded soil, a sub-surface, hidden, armor rock layer, which replicates the former natural rock layers along the creek banks, will be placed. The rock layer will consist of cobble, gravel, and sands. This cobble/gravel/sand layer will be fine graded

to replicate the natural substrate found along the reach. Where rock occurred along with the gravel/cobble/sand, rock also will be placed.

In intermediate reaches, approximately from Parcel 15 through Parcel 22, the channel substrate will be largely rock similar to what occurred naturally prior to the Removal Action. The rock will either be re-used natural rock, or will be similar to the natural rock in size distribution and character. The naturally occurring rock is fragmented, layered rock with sharp edges; it is not smoothed river-stone.

In the lower reaches, from approximately the Broomsage Road Bridge downstream, the channel substrate will consist of a cobble/gravel/sand layer replicating the naturally occurring substrate. The cobble/gravel/sand will be similar to that material being naturally supplied by sediment transport from upgradient areas of the creeks. The banks in these reaches are naturally eroding and are relatively steep, and may be replicated in the restoration, depending on site-specific conditions. The creeks show strong evidence of naturally occurring meandering, which should be allowed to continue.

To prevent excessive erosion immediately after construction and to allow the creek banks to reach a naturally stable condition, the surface of the creek banks will be overlain with a biodegradable erosion control mat to provide initial erosion protection for approximately two growing seasons. After two growing seasons, it is expected that the creek banks will be as naturally stable as prior to remediation, and the plantings and native vegetation will be sufficiently reestablished to provide adequate groundcover to prevent severe non-natural erosion and creek meandering.

The creek banks may be sloped to provide stability during large flow events. In areas where the creek banks were originally unstable and showing visible signs of erosion, the creek banks will either utilise an engineered bank stabilisation structure (i.e., root wads, cabled logs, limestone slab banks, etc.) or will be graded back to a slope no greater than 1V:2H.

7.2 VEGETATION

Plant materials for habitat restoration fall into three general categories:

- seed and forb mixes;

- trees; and
- shrubs.

A discussion of each of these categories is provided below.

7.2.1 SEED AND FORB MIXES

Seed and forb mixes will be used to stabilise soil and to provide permanent ground cover. Six different mixes will be used, depending on the type of habitat and topography of the area. The lawn seed mix will be used on those Parcels that are privately owned and only for those areas of the Parcels that are utilised as functional lawn. The specifications for the lawn seed mix are provided in Table H.1 of Appendix H.

Two types of forest seed mix will be used. A riparian forest mix will be used in areas to be restored as forest adjacent to streams where the slopes are less than three percent. The seed mix includes annual species to provide quick stabilisation and perennial grasses and forbs to provide permanent cover. Species of forbs in the mixture are adapted to a variety of hydrologic regimes, which ensures establishment of appropriate species within the various microenvironments created as a result of final grading. Specifications for the riparian forest mix are provided in Table H.2.

The other type of forest seed mix is for slopes greater than three percent. Because conditions favorable for establishment of wetlands are not expected on slopes greater than three percent, the slope forest mix does not contain seeds of hydrophytic species. The slope forest mix does, however, include annual species of grasses to provide stabilisation and perennial grasses to provide permanent cover. Specifications for the slope forest seed mix are provided in Table H.3.

A grass/wildflower seed mix will be used in upland areas that will not be restored as lawn or forest. The grass/wildflower mix contains annual grasses for stabilisation and perennial grasses and forbs for permanent cover. Because species contained in the mix are tolerant of a variety of hydrological conditions, the mix can be used on both floodplains and dryer upland sites. Specifications for the grass/wildflower mix are provided in Table H.4.

A grass/forb mix seed mix will be used for the benches created within the restored stream channel. This mix contains both annual and perennial grasses, as well as a diversity of forbs adapted for a range of hydrological conditions from dry to wet. Specifications for this grass/forb mix are provided in Table H.5.

The final seed mix that will be used is an emergent wetland mix. This seed mixture will be applied in those areas that have been delineated as jurisdictional wetlands. As with the riparian forest mix, the emergent wetland mix contains species for a variety of grasses and forbs that are adapted for a range of hydrological regimes. The mix also contains annual species for quick stabilisation of exposed soil and perennial species for permanent cover. Specifications for the emergent wetland mix are provided in Table H.6.

All six seed mixes are commercially available from suppliers located in Indiana.

7.2.2 TREES

The majority of the area affected by the Removal Action will be restored as forest. The species and diameter of trees to be planted depend on ownership and location in the geographic landscape of the area being restored. Species planted on privately owned Parcels are identified in agreements entered into by the Parcel owners and GM.

On properties with access agreements, four size categories of trees will be planted: seedlings, 0.75-1.0 inch diameter, 2-3 inch diameter, and 5 inches or greater in diameter. As discussed in Section 6.0, species and tree diameter will be specified in restoration plans developed for each individual Parcel. However, the specimens planted will depend on availability at the time of restoration. Species will be selected from the list provided as Table H.7.

For Parcels owned by GM, the selection of trees will follow the guidelines for restoration of riparian habitats developed by IDNR. Species will be selected from the list provided as Table H.8. A minimum of five species of trees will be planted on each Parcel. At least two of the five species will be oaks. All trees planted will be bare root seedlings.

IDNR guidelines generally recommend planting trees at distance of at least four feet from a stream bank apparently because of concern about trees falling and blocking the channel. The GM project team of engineers, hydrologists, and ecologists believe that this

restriction will not be beneficial for the long-term quality of Bailey's Branch Creek and other streams affected by the Removal Action. Therefore, trees and shrubs will be planted inside the four-foot area to improve the stability of the restored stream banks, reduce the potential for erosion, and increase the degree of shading of the stream channel.

7.2.3 SHRUBS

Shrubs will be planted on both privately owned Parcels and Parcels owned by GM. The species for privately owned Parcels are specified in the agreements entered into by the Parcel owners and GM. All of the agreements to date specify the same species in the IDNR guidance for restoration of riparian habitats. These species are identified in Table H.9. For all Parcels, at least three species of shrubs will be installed. Specifications for shrubs are minimum one gallon containers, although other sizes may be used based on availability at the time of planting.

As is the case for trees, the species and number of each species will be identified in the restoration plans prepared for each Parcel. The specimens planted will depend on availability at the time of restoration.

7.3 HABITAT

Two types of habitat features will be installed in the areas targeted for restoration: logs and vernal ponds. Materials required for each of these features are discussed below.

7.3.1 VERNAL PONDS

Materials required for the construction of vernal ponds are minimal. The key to constructing vernal ponds is providing a shallow depression that will hold water during wet periods. To accomplish this, the surficial soil will be compacted to reduce the loss of water through infiltration. Following compaction, the area adjacent to the ponds will be seeded with the riparian forest mix to promote the establishment of vegetative cover.

7.3.2 LOGS

Logs are the trunks of large trees that have fallen naturally or have been removed as part of the Removal Action. Whole or partial trunks of trees from the area of the Removal Action will be used. To create habitat, tree trunks of varying length and diameter will be placed randomly throughout the restoration area. Restoration details for the individual Parcels will identify locations for the placement of logs.

7.3.3 ROOT WADS

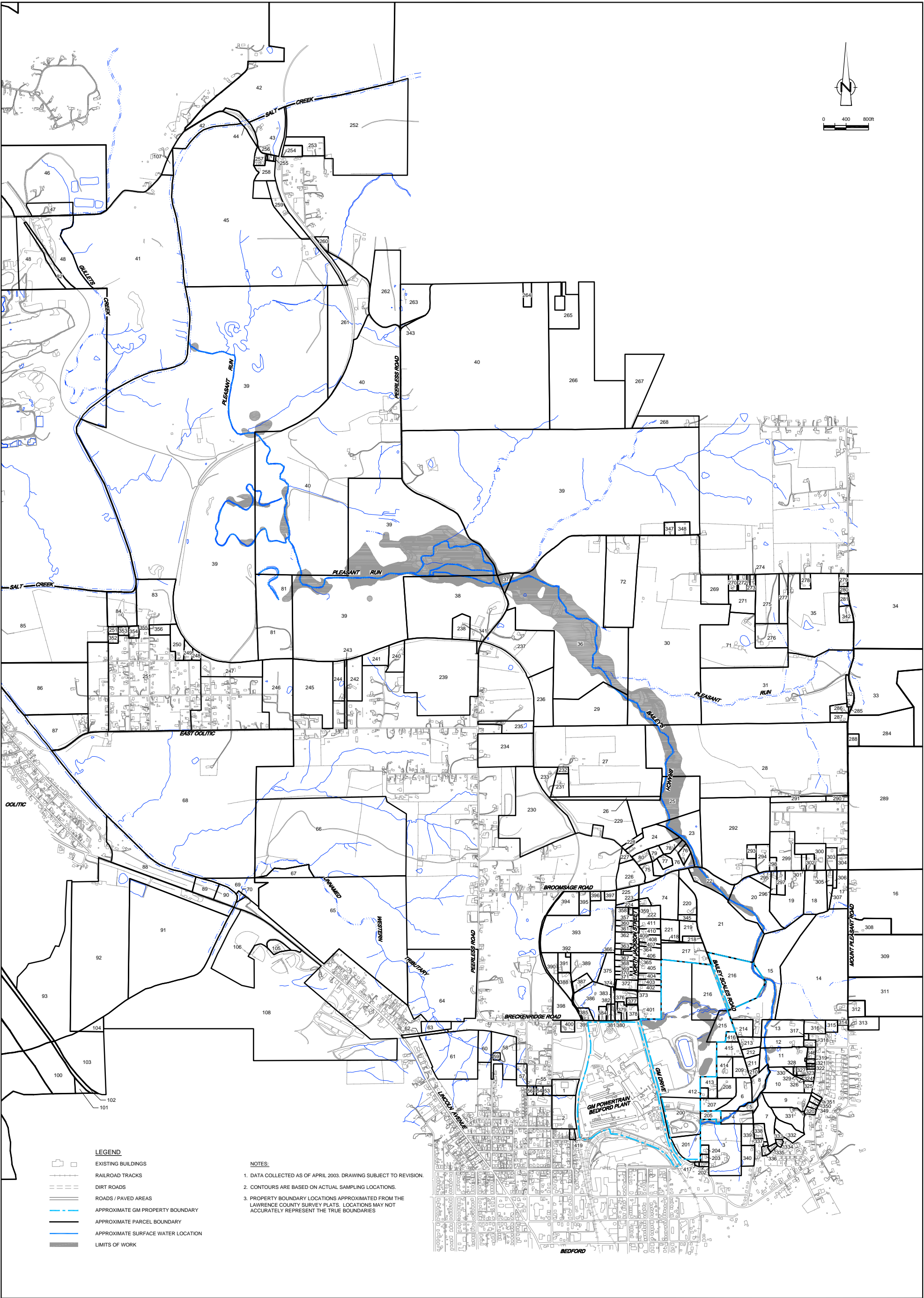
Root Wads are a series of tree roots placed transversely into the creek banks so that the root mass constitutes the creek bank. The tree roots are tied together using fallen logs and anchored and secured into the banks using large boulders or creek substrate. Root wads are generally placed in areas where there is a larger potential for bank erosion (along the outside bends of creeks). The root mass acts to armour the bank and act as an energy dissipater. The root mass also provides a wealth of habitat and shade for small invertebrates and forage fish. Fascine bundles planted along the top of the root wads will grow to form shrub clusters thereby provide further shading to the creek.



8.0 STANDARD DETAILS

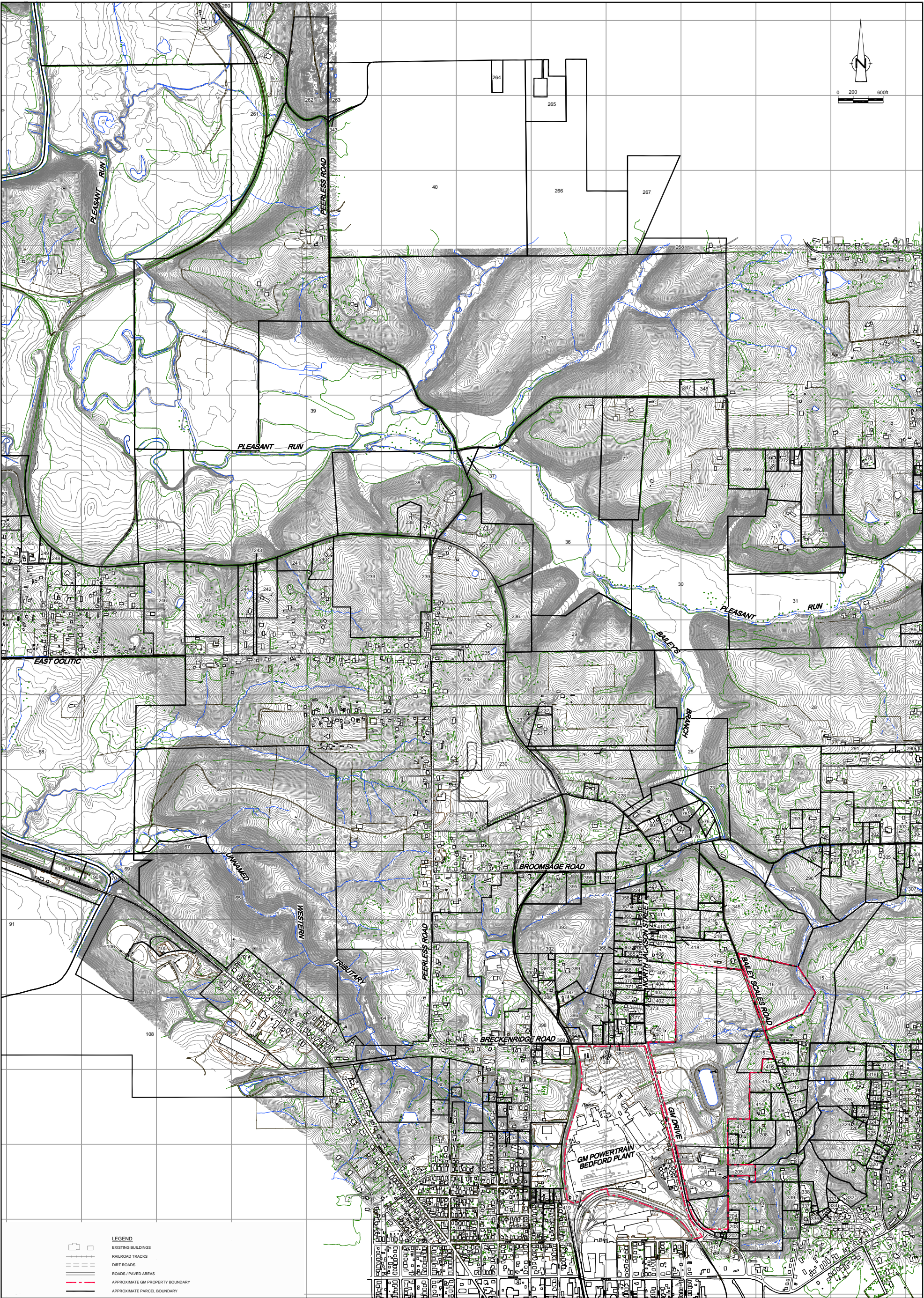
Standard details have been developed for all anticipated installations required to complete the restoration. The Grading and Creek Channel Restoration Plans and Vegetation and Habitat Restoration Plans developed for each Parcel will reference these details, as appropriate.



Additional standard details will be added as appropriate during the completion of the restoration design to address unanticipated restoration requirements.

Standard restoration details are included in Appendix N.



No	Revision	Date	Initial	SCALE VERIFICATION		GM POWERTRAIN BEDFORD PLANT BEDFORD, INDIANA	 CONESTOGA-ROVERS & ASSOCIATES			
				THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.						
										
				Approved		MASTER RESTORATION PLAN	Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001			
						LIMITS OF WORK	Project Manager: J.M.	Reviewed By: J.D.	Date: JUNE 2004	
							Scale: AS SHOWN	Project N ^o : 13968-00	Report N ^o : 069	Drawing N ^o : figure 1.1



Nº	Revision	Date	Initial	SCALE VERIFICATION		GM POWERTRAIN FACILITY BEDFORD INDIANA	 CONESTOGA-ROVERS & ASSOCIATES			
				THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.						
										
				Approved		MASTER RESTORATION PLAN	Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001			
						PARCEL BOUNDARIES	Project Manager: J.M.	Reviewed By: J.D.	Date: JUNE 2004	
							Scale: AS SHOWN	Project N ^o : 13968-00	Report N ^o : 069	Drawing N ^o : figure 1.2

APPENDIX A

ACOE LETTER DATED AUGUST 20, 2003



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059
FAX: (502) 315-6677
<http://www.lrl.usace.army.mil/>
August 20, 2003

0139168-00
GM Bedford

Operations Division
Regulatory Branch (North)
ID No. 200300981-gdn



Mr. Ashley Valentine
Conestoga-Rovers & Associates
9033 Meridian Way
West Chester, Ohio 45069

Dear Mr. Valentine:

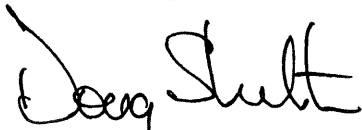
This is in regard to your letter dated August 8, 2003, concerning the proposed Remedial Action (RA) plan for the cleanup of polychlorinated biphenyls (PCBs) in Bailey's Branch, Pleasant Run, their un-named tributaries and in wetlands that were affected near the General Motors plant facility in Bedford, Indiana. The project is located in Sections 11 and 12, Township 5 North, Range 1 West, in Lawrence County, Indiana. This project has been reviewed to determine whether or not authorization pursuant to Section 404 of the Clean Water Act (CWA) would be required.

We have completed our review of the RA work plans previously submitted. The plans indicate that the method for removing PCBs would involve the selective excavation of impacted creek soil sediments and that soil erosion and sediment control plans would be implemented at each work area. Since the proposed RA plan involves wetland impacts you have indicated that a conceptual mitigation plan, to compensate for each of the wetland site to be impacted, would be developed at one location within the affected drainage area. You indicated that a copy of the plan would be submitted to us for review and concurrence. I note that Mr. Gerry Newell and Mr. Larry Parker of my staff were given the opportunity to visit the remediation sites and the proposed wetland mitigation area with you on July 31, 2003.

It is our understanding that an Administrative Order by Consent (AOC) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was issued and became effective on July 31, 2003 between the U.S. Environmental Protection Agency (USEPA) and General Motors. Therefore, since this activity is being undertaken by CERCLA, you are not required to obtain a permit under Section 404 of the CWA. However, we do appreciate the opportunity to coordinate and work with you on developing stream restoration plans and the wetland mitigation site.

If you have any questions concerning this matter, please contact this office at the above address, ATTN: CEORL-OP-FN or call Mr. Gerry Newell at (502) 315-6683. Any correspondence on this matter should refer to our ID Number 200300981-gdn.

Sincerely,

A handwritten signature in black ink, appearing to read "Doug Shelton". The signature is fluid and cursive, with the first name "Doug" and last name "Shelton" clearly distinguishable.

Doug Shelton
Chief North Section
Regulatory Branch

APPENDIX B

IDEM LETTER DATED NOVEMBER 18, 2003



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

November 18, 2003

VIA CERTIFIED MAIL 7002 0510 0004 0441 0886

Ms. Cheryl Hiatt
General Motors Corporation
Troy Tech Park, Building A
Mail Code 483-619-356
1996 Technology Drive
Troy, MI 48083-4243

Re: Review of Application for Section 401 Water
Quality Certification
Project: Pleasant Run Creek and Bailey Creek
PCB Cleanup
IDEM No.: 2003-504-47-MTM-A
County: Lawrence

Dear Ms. Hiatt:

Office of Water Quality staff at the Indiana Department of Environmental Management (IDEM) has reviewed General Motors Corporation (GM)'s application for Section 401 Water Quality Certification received August 26, 2003, and the accompanying application support document (Application Support Document) dated August 22, 2003, for impacts to Bailey's Branch Creek and tributaries. This letter reflects the review that IDEM would normally undertake when receiving such an application. However, because this project is being implemented under the removal action authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §9601 et seq., actual certification by IDEM may not be required. Nevertheless, as a part of the CERCLA cleanup, GM must comply with the substantive elements of applicable or relevant and appropriate requirements of state law. Therefore, IDEM encourages you to review the conclusions and conditions of this letter carefully prior to implementing any aspects of the CERCLA removal action at the GM Bedford CERCLA site that will impact wetlands and other waters of the State of Indiana. Adherence to the conditions of this letter will ensure that GM's project will satisfy the Water Quality Standards of the State of Indiana.

According to the application, GM is proposing to remove approximately 7,000 cubic yards of soil, sand, gravel, and rock impacted with Polychlorinated Biphenyls (PCBs) from a total of 6802 linear feet of Bailey's Branch Creek and its tributaries. Approximately 7,000 cubic yards of clean soil, sand, gravel and rock will be brought in to replace the excavated material and stabilize the stream banks. The project will impact approximately 0.24 acres of emergent wetland. According to the Application Support Document GM is proposing to mitigate for these wetland impacts by establishing 1.0 acre of wetland on a headwater stream of Bailey Branch Creek within the project site. We have subsequently reviewed the upstream parcel wetland mitigation plan dated September 17, 2003, prepared by J.F. New & Associates, Inc. modifying the wetland mitigation plan contained in the Application Support Document dated August 22, 2003. We have also reviewed correspondence dated August 25, 2003, to Danny Gautier, Indiana Department of Natural Resources (IDNR), from Jason Stiner, J.F. New & Associates, Inc. regarding a Construction in a Floodway Mitigation Plan. According to the plan GM is proposing to mitigate for impacts to the forested floodway habitat within the work area by replanting a 0.74 acre area with a variety of trees and shrubs. We have also reviewed correspondence dated September 9, 2003, from Rob Wolfe, J.F. New & Associates, Inc. regarding the reconstruction/restoration of the creek following restoration and the Construction in a Floodway Mitigation Plan. According to the correspondence, the Construction in a Floodway Mitigation Plan will be used as a template for other disturbed forested floodway areas. Additionally, the stream will be reconstructed using its existing alignment to the degree possible with pools, riffles and other habitat features added as appropriate. Bank stabilization will be achieved through the mixed use of bioengineering techniques such as erosion control fabrics, seeding, live cuttings, bare root tree and shrubs, willow fascines, and brush mattresses.

Based on available information, it is the judgment of the Watershed Branch of IDEM's Office of Water Quality that the proposed project will comply with the applicable provisions of 327 IAC 2 and Sections 301, 302, 303, 306, and 307 of the Clean Water Act if GM complies with the conditions set forth below. If GM were seeking actual certification by IDEM, IDEM would grant Section 401 Water Quality Certification for the project described in GM's application received August 26, 2003, subject to the conditions outlined below. Failure to execute the project as submitted or failure to meet any of the following conditions would be considered a violation of the Water Quality Standards of the State of Indiana:

GENERAL CONDITIONS:

GM shall:

1. Deposit any dredged material in a contained upland disposal area to prevent sediment run-off to any waterbody. Dispose of all dredged and excavated material according to the requirements of 329 IAC 10, governing Solid Waste Land Disposal Facilities. GM's project information may be forwarded to the IDEM Office of Land Quality, Industrial Waste Section for review. Sampling may be required to determine if the dredged sediment is contaminated. Failure to properly dispose of contaminated sediment may result in enforcement action against GM.
2. Install erosion control methods prior to any soil disturbance to prevent soil from leaving the construction site. Appropriate erosion control methods include, but are not limited to, straw bale barriers, silt fencing, erosion control blankets, phased construction sequencing, and earthen berms. Monitor and maintain erosion control

structures and devices regularly, especially after rain events, until all soils disturbed by construction activities have been permanently stabilized.

3. Clearly mark the construction limits shown in the attached plans at the project site during construction.
4. Allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials:
 - a. to enter upon GM's property or any property within the mitigation wetland site boundaries not owned by GM but to which GM has been given access;
 - b. to have access to and copy at reasonable times any records that must be kept under the conditions of this certification;
 - c. to inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation wetland site;
 - d. to sample or monitor any discharge of pollutants or any mitigation wetland site.

PROJECT SPECIFIC CONDITIONS:

GM shall:

1. Implement the mitigation plan as described in the Application Support Document dated August 22, 2003, prepared by J.F. New & Associates, Inc and the Upstream Parcels Wetland Mitigation Plan dated September 17, 2003, also prepared by J.F. New & Associates, Inc. (referred to collectively hereinafter as the "mitigation plan"), and as modified by the conditions of this certification. The wetland(s) being created or restored pursuant to the mitigation plan shall be referred to hereinafter as the "mitigation wetland" or "mitigation wetlands."
2. Complete all activities necessary to create the mitigation wetland within one year of the effective date of this certification, unless IDEM grants a written extension upon request. These activities include excavation, grading, installation of hydrologic controls, and planting.
3. Clearly identify on-site all mitigation wetlands after construction of the mitigation wetlands. Install survey markers to identify the boundaries of the wetlands. If the mitigation wetlands being created are adjacent to or near existing wetlands, then the survey markers must distinguish the created wetland from the existing wetland.
4. Monitor the mitigation wetland annually to determine whether it is achieving the success criteria contained in Project Specific Condition 8 of this certification and complete corrective actions as are necessary to ensure the mitigation wetland will achieve the success within the required period. These corrective actions may include additional grading, plantings, or relocation of the mitigation wetland, along with extended monitoring. Describe in the monitoring reports any corrective actions taken to ensure success of the mitigation site.

5. Submit annual monitoring reports of the mitigation wetland to this office by December 31 of each year until released from monitoring by this office. These reports shall contain information concerning what steps GM has taken to create the mitigation wetland and whether the wetland is achieving each of the success criteria outlined in Project Specific Condition 8. The reports shall include the following:
 - a. The IDEM identification number.
 - b. As-built plans (in the first year's report).
 - c. Discussion of hydrology at the mitigation site.
 - d. Discussion of plant community development at the mitigation wetland site.
 - e. Discussion of methods or means used to determine compliance with the success criteria.
 - f. Photographs representative of the mitigation wetland site and sampling points.
 - g. Identification of any problems with meeting the success criteria.
 - h. Recommendations for correcting any problems identified.
 - i. Wetland delineation for the mitigation wetland in the final report.
6. Monitor the mitigation wetland for a minimum period of three (3) years. In order to be released from monitoring, GM must demonstrate to IDEM, through its monitoring reports, that the success criteria specified in Project Specific Condition 8 have been met for two (2) consecutive years within a five (5) year period. Once GM believes it has met this requirement, they may submit its proposed final monitoring report to IDEM and suspend monitoring unless notified otherwise by IDEM. If IDEM determines that the success criteria have not been met, then GM shall resume monitoring. If IDEM confirms that the success criteria have been met, then GM may permanently discontinue monitoring after it receives written notification of this determination from IDEM.
7. Include a delineation of all mitigation wetlands in the final monitoring report. The delineation must be conducted on-site using the hydrology and vegetation parameters from the United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January 1987). The delineation report must include data sheets and a survey, map or drawing with area measurements (in acres) of all mitigation wetland boundaries.
8. Ensure that the mitigation wetland meets all of the following success criteria for two (2) consecutive years within five (5) years of the creation of the wetland:
 - a. Greater than 50% of the dominant vegetation species must be classified as hydrophytic.
 - b. The hydrology at the mitigation wetland site must meet the wetland hydrology criteria contained in the United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January, 1987).
 - c. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation wetland.
 - d. Native vegetation excluding cattail (*Typha spp.*) must cover at least 70% of the mitigation wetland site.

- e. No more than 10% of the surface area coverage of the mitigation wetland may be open water, bare ground or a combination of the two. Open water and bare ground are defined as areas with less than 10% vegetative cover.
 - f. The mitigation wetland consists of a minimum of 0.77 acres of forested wetland and 0.19 acres of emergent wetland.
 - g. Any additional success criteria set forth in the mitigation plan.
- 9. Protect all areas upon which a mitigation wetland is to be created with a conservation easement or deed restriction. These areas shall be protected as wetlands for a minimum period of fifty (50) years and the discharge of pollutants, including fill material, in them or their excavation shall be prohibited. A copy of the signed and recorded modification to the deed shall be filed with this office within sixty (60) days of GM's release from monitoring requirements.
 - 10. Implement the bank stabilization methods as described in the correspondence dated September 9, 2003, from Rob Wolfe, J.F. New & Associates, Inc. Upon completion of the bank stabilization of the upstream parcels the applicant shall schedule an on-site inspection of the upstream parcels with IDEM.
 - 11. At a minimum of every 150 feet in the upstream portion of the project site place stone across the stream from bank to bank to create a riffle complex as described in the correspondence dated September 9, 2003, from Rob Wolfe, J.F. New & Associates, Inc.
 - 12. At a minimum of every 150 feet in the downstream portion of the project site construct pool riffle complexes as described in the correspondence dated September 9, 2003, from Rob Wolfe, J.F. New & Associates, Inc.
 - 13. Shall complete the Mitigation Plan for the Construction in the Floodway Permit as described in the correspondence dated August 25, 2003, from Jason Stiner, J.F. New & Associates, Inc. to Danny Gautier, IDNR by September 1, 2004.

If GM was to be granted an actual Section 401 Water Quality Certification it would not relieve GM of the responsibility to obtain any other permits or authorizations that may be required for this project or related activities, from IDEM or any other agency or person. Other permits that could be applicable to the proposed project include natural freshwater lake or floodway permits from the Indiana Department of Natural Resources, or 327 IAC 15-5 (Rule 5) stormwater permits from IDEM if GM's plans were to include disturbing greater than 5 acres of soil during construction.

Furthermore, Section 401 Water Quality Certification does not:

- (1) authorize impacts or activities outside the scope of the certification;
- (2) authorize any injury to persons or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
- (3) convey any property rights of any sort, or any exclusive privileges;
- (4) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or
- (5) authorize changes in the plan design detailed in the application.

If you have any questions about this letter, please contact Mr. Marty Maupin, Project Manager, of my staff at 317-233-2471, or you may contact the Office of Water Quality through the IDEM Environmental Helpline (1-800-451-6027).

Sincerely,



Martha Clark Mettler, Chief
Watershed Branch
Office of Water Quality

Enclosure- Sample Deed Restriction

cc: Rob Wolfe, J.F. New & Associates, Inc.
Danny Gautier, IDNR
Mike Litwin, Bloomington Office, USFWS
Gerry Newell, Louisville District, USACE

APPENDIX C

APPLICATION SUPPORT DOCUMENTS – J.F. NEW, AUGUST 22, 2003

August 22, 2003

6640 Parkdale Place, Suite S
Indianapolis, Indiana 46254
Phone: 317-388-1982 ext. 31
Fax: 317-388-1986

Jason Stiner
Project Manager
jstiner@jfnew.com

Marty Maupin
Project Manager
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46206-6015

RE: *WQC Application and Support Document*
Creek Removal Action: Phase 1
Lawrence County, Indiana

Dear Mr. Maupin:

Enclosed please find a Water Quality Certification (WQC) application pursuant to Section 401 of the Clean Water Act (CWA) for the above referenced project. Additionally, one figure depicting the location of the project area, the mitigation plan, and the support document narrative has been included to facilitate your review of this WQC application.

This work is being completed under U.S. Environmental Protection Agency (EPA) supervision, in accordance with Administrative Order by Consent (AOC) under the Comprehensive Environmental, Compensation and Liability Act (CERCLA).

Please note that a *Wetland Delineation Report* (JFNew 2003) will be submitted to the U.S. Army Corps of Engineers (Corps) for verification. Additionally, the associated Nationwide Permit 38 Pre-Construction Notice will be submitted to the Corps concurrently with the delineation report. Note that these reports have not been submitted at this time.

Mr. Marty Maupin
Indiana Department of Environmental Management

August 22, 2003

If you have any questions or require additional information, please feel free to contact me at (317) 388-1982.

Sincerely,
J. F. New and Associates, Inc.

Jason Stiner
Project Manager

Enclosures

cc: Cheryl Hiatt (GM)
Laura Fitzpatrick (GM)
Ed Peterson (GM)
Ashley Valentine (CRA)
Jim McGuigan (CRA)
Glenn Turchan (CRA)
Jeff Daniel (CRA)
Jeroen Winterink (CRA)
Robert Wolfe (JFNew)

File No. 02-06-55X



Office of Water Quality

Application Form and Instructions for Authorization to Discharge Dredged or Fill Material to a Water of the State

Note to applicants:

This form may be used to request either a water quality certification pursuant to section 401 of the Clean Water Act or an NPDES permit pursuant to 327 IAC 5. It may also be used to request a review of a proposed project by IDEM to determine whether the project will violate water quality standards. Applicants with discharges covered by an effluent limitation guideline should not use this application but instead contact Mr. Steve Roush (317) 232-8706 for the appropriate application form.

Applicants should also contact the Indiana Department of Natural Resources (DNR) regarding potential permit requirements associated with construction in a floodway or a public freshwater lake. You can reach the DNR Division of Water at 317-232-4160 or toll free at 1-877-WATER55.

Revised June 6, 2001

Instructions for Completing the Application

Address all applications or questions to:
Indiana Department of Environmental Management
Water Quality Standards Section
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015
1-800-451-6027 or 317-233-8488

The numbers below correspond to the section numbers on the application form.

Print clearly or type.

Attach additional 8.5" x 11" sheets if necessary.

-
1. Provide the applicant's name, address, and telephone number. Applicants **MUST** provide a contact name.
 2. Provide the agent's address and telephone information (an agent is anyone representing the applicant on the project, such as an attorney or consultant). Applicants are not required to have an agent.
 3. Provide specific project information relating to the location of the proposed project. Include the Universal Transverse Mercator (UTM) coordinates including the datum (e.g. 1927 North American). UTM coordinates can be obtained from the United States Geological Survey (USGS) 7.5-Minute Series Topographic Quadrangle maps.
 4. Provide the proposed start date and the anticipated completion date. If you have started your project before obtaining authorization, you may be in violation of federal and/or state law. Give a narrative description of the proposed project. Describe the purpose of the project; what goal or outcome will be met by the construction of the project.
 5. Include all impacts with the appropriate unit of measure. If you can avoid impacts to wetlands and other waterbodies, you may be able to avoid the requirement to obtain authorization from IDEM. Minimization of the impacts may decrease any compensatory mitigation requirements that might otherwise apply and increase the chances of receiving authorization. If the compensatory mitigation involves the creation or restoration of wetlands or other waterbodies, IDEM will require separate compensatory mitigation plan. If you need guidance on the information required in a complete mitigation plan, contact IDEM.
 6. Drawing/Plan requirements. All applicants must submit drawings/plans consistent with the specifications under item six.
 7. **For all projects involving impacts to wetlands**, a wetland delineation using the procedures established in the U.S. Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January 1987) is **required**. Photographs aid the department in deciding if a site investigation is necessary and how best to locate the impact areas when site investigations are necessary.

Instructions are continued immediately after the application form.

***Only the Application Pages need to be mailed to IDEM.**

1. APPLICANT INFORMATION		2. AGENT INFORMATION	
Name of Applicant: General Motors Corporation (GM)		Name of Agent: J.F.New & Associates	
Mailing address (Street/ PO Box/ Rural Route, City, State, Zip): General Motors Corporation Troy Tech Park, Building A Mail Code 483-619-356 1996 Technology Drive Troy, Michigan 48083-4243		Mailing address (Street/ PO Box/ Rural Route, City, State, Zip): 708 Roosevelt Road Walkerton, Indiana 46574	
Daytime Telephone Number: (248) 680-5219		Daytime Telephone Number: (574) 586-3400	
Fax Number: (248) 680-5129		Fax Number: (574) 586-3446	
E-mail address (optional): cheryl.r.hiatt@gm.com		E-mail address (optional): rwolfe@jfnw.com	
Contact person (required): Cheryl R. Hiatt		Contact person: Robert Wolfe	
3. PROJECT LOCATION			
County: Lawrence		Nearest city or town: Bedford	
U.S.G.S. Quadrangle map name (Topographic map): Bedford East Bartlettsville		Project street address (if applicable): NA	
Quarter:	Section: 11, 12	Township: 5N	Range: 1W
Type of aquatic resource(s) to be impacted (lake, river, stream, ditch, wetland, etc. Include name if applicable): 3 forested/emergent wetlands Bailey's Branch Creek and tributaries		Project name or title (if applicable): Creek Removal Action: Phase 1	
		UTM North: 38*53'0.82"N	UTM East: 86*28'33.29"W
Other location descriptions or driving directions: Take S.R. 37 south to S.R. 58 in Bedford, turn east on S.R. 58, continue through Bedford to Bailey Scales Road, turn north onto Bailey Scales Road and the sites are located approximately 0.5 mile and 1.0 mile on the east and west side of Bailey Scales Road.			
4. PROJECT PURPOSE and DESCRIPTION <i>(Use additional sheet(s) if required)</i>			
Has any construction been started? Yes		Anticipated start date: August 2003	
If yes, how much work is completed? Equipment mobilization and site preparation activities			
<p>Project purpose and description: Bailey's Branch Creek, it's tributary, and areas downstream have been affected by historical releases of polychlorinated biphenyls (PCBs), thus requiring remediation of select properties. The purpose of the project is to remove soil, sand, gravel, and rock impacted with PCBs from impacted portions of Pleasant Run Creek and its tributary Bailey's Branch Creek. For logistical purposes, the project has been divided into two phases: the first phase of the project is the properties adjacent to bailey's Branch Creek and an unnamed tributary at the upstream end of the Pleasant Run Watershed. Specifically, remediation activities associated with Phase 1 of this project will occur in parcels 3, 4, 5, 6, 7, 8, 10, 11, 12, 22, 205, 215, and 216, as well as the area north of AOI 4.</p> <p>This work is being completed under U.S. Environmental Protection Agency (EPA) supervision, in accordance with Administrative order by Consent (AOC) under the Comprehensive Environmental, Compensation and liability Act (CERCLA) effective July 31, 2003.</p> <p>The land disturbing activities will be carried out from the upstream areas to the downstream areas in approximately 50 to 100 foot sections. At each section, the remediation activities will involve the removal of PCB impacted soils to required depths, replacement with clean fill material, and restoration and stabilization of the disturbed areas. All surface water, including the creek will be diverted around the work sections to ensure that preconstruction downstream flows are maintained.</p>			

5. Project Information: Applicants must answer all the following questions (Use additional sheet(s) if required).

What are the linear feet of impacts to the waterbody below the ordinary high water mark (OHWM) and/or bank clearing?

Approximately 3499.23 linear feet of Bailey's Branch Creek, 2,851.06 linear feet of Tributary 3, and 451.71 linear feet of Tributary 3a will be impacted as a result of remediation activities. Total impacts in linear feet equals 6802.00

What is the acreage or square footage of wetlands or other water resources that are proposed to receive a discharge of material (ie. fill), to be mechanically cleared, or to be excavated?

0.24 acre forested/emergent wetlands

What is the area of wetlands or other water resources on the site, in acreage or square feet?

0.24 acre forested/emergent wetlands

Describe the type, composition and quantity (in cubic yards) of fill material to be placed in the wetland or below the OHWM of the water to receive the material (wetland or other water to be filled).

Temporary berms will be placed within the creek both up- and downstream of the impacted sections during remediation. All fill materials associated with the temporary berms will be removed upon completion of remediation activities. Additionally, note that creek flow will be diverted around the berms.

Describe the type, composition and quantity (in cubic yards) of material proposed to be removed from the wetland or below the OHWM of the water resource.

Amount removed dependent upon extent of contamination

Describe the alternative project locations and/or design configurations that you considered or implemented to avoid and/or minimize impacts to wetlands and other waterbodies to the greatest extent possible.

As the purpose of the project is to remove soil, sand, gravel, and rock impacted with PCBs from impacted portions of Pleasant Run Creek and its tributary Bailey's Branch Creek, no alternative project locations exist. Only those wetlands and stream portions contaminated with PCBs will be temporarily impacted. Additionally, all contours within the remediated areas will be restored to pre-remediation conditions. A restoration plan will also be integrated to restore the vegetation within the impacted areas.

Describe any proposed compensatory mitigation for unavoidable impacts.

Based on the current remediation plan, restoration activities include returning all impacted areas to their original pre-construction contours. The disturbed areas will also be re-vegetated. Additionally, in lieu of parcel-by-parcel mitigation for wetland impacts, the conceptual mitigation plan consolidates all wetland mitigation at on site. However, JFNew is currently in the process of locating a suitable mitigation site. Once this site is located, JFNew will submit a mitigation plan to the Corps and IDEM for review and approval.

Additionally, JFNew is currently working with the Indiana Department of Natural Resources (IDNR), Division of Water to obtain a Construction-In-A-Floodway Permit (Application No. FW-22139) for Parcel 22. As part of the permit application, GM has developed a mitigation plan that involves planting tree and shrub species to minimize the temporary nature of the impacts to wooded wildlife habitat within the floodway corridor.

6. Drawing/Plan Requirements (applicants must provide the following)

- a. Top/aerial/overhead view of the project site.
- b. Cross sectional view.
- c. North arrow, scale, property boundaries.
- d. Include wetland delineation boundary (if applicable). Label the impact wetlands as I-1, I-2, I-3, etc. and the mitigation areas as M-1, M-2, etc..
- e. Location of all surface waters, including wetlands, erosion control measures, existing and proposed structures, fill and excavation locations, disposal area for excavated material, including quantities, and wetland mitigation site (if applicable).
- f. Approximate water depths and bottom configurations (if applicable).
- g. Provide plans on 8" x 11"-inch paper, unless directed otherwise.

7. Documentation Requirements (applicants must provide the following)

- a. A wetland delineation for projects with wetland impacts (approved by Corps of Engineers if a Section 404 permit is required).
- b. Photographs of the project site. Indicate where they were taken on the overhead view of the project plans.

8. Additional information that MAY be required (IDEM will notify you if needed)

- a. Erosion control and/or storm water management plans.
- b. Sediment analysis.
- c. Compensatory mitigation plan including type, size, location, methods of construction, planting & monitoring plans, and criteria for success.
- d. Species surveys for fish, mussels, plants and threatened or endangered species.
- e. Any other information IDEM deems necessary to review the proposed project.

9. Permitting Requirements

- a. Does this project require the issuance of a Department of the Army Section 404 Permit from the US Army Corps of Engineers?
If no, you do not need to answer Part b.
This project falls under NWP 38, thus requiring Pre-Construction Notice (PCN).
- b. Have you applied for an Army Corps of Engineers Section 404 permit? If yes, please supply the Corps of Engineers ID Number, the Corps of Engineers District, the project manager, and a copy of any correspondence with the Corps. **If no, contact** the Army Corps of Engineers regarding the possible need for a permit application. (See instruction #9.)
A Wetland Delineation Report and NWP 38 PCN will be submitted concurrently to the Corps.
- c. Have you applied for, received, or been denied any other federal, state, or local permits, variances, licenses, or certifications for this project? Please give the permit name, agency from which it was obtained, permit number, and date of issuance or denial.
Applied for Indiana Department of Natural Resources Division of Water to obtain a Construction in Floodway permit
(Application No. FW-22139)

10. Adjoining Property Owners and Addresses

List the names and addresses of landowners adjacent to the property on which your project is located and the names and addresses of other persons (or entities) potentially affected by your project. Use additional sheet(s) if required.

Name SEE ATTACHMENT 1

Address

City State Zip

Name

Address

City State Zip

Name

Address

City State Zip

Name

Address

City State Zip

Name

Address

City State Zip

Name

Address

City State Zip

11. Fee Submittal

If applying for authorization under an IDEM NPDES permit, please enclose with the application a check or money order for \$50.00 made payable to Indiana Department of Environmental Management (IDEM).

12. Signature - Statement of Affirmation

I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true and accurate. I certify that I have the authority to undertake and will undertake the activities as described in this application. I am aware that there are penalties for submitting false information. I understand that any changes in project design subsequent to IDEM's granting of authorization to discharge to a water of the state are not authorized and I may be subject to civil and criminal penalties for proceeding without proper authorization. I agree to allow representatives of the IDEM to enter and inspect the project site. I understand that the granting of other permits by local, state, or federal agencies does not release me from the requirement of obtaining the authorization requested herein before commencing the project.

Applicant's Signature: _____ Date: _____

Print Name: _____ Title: _____

Instructions continued

8. Applicants are not required to submit the information specified in this section unless directed to do so by the department. However, applicants may submit the information if they anticipate that such information will be required.
9. Some projects involving impacts to isolated waterbodies, including wetlands, may not require the issuance of a Department of the Army permit. These activities are still subject to the provisions of State law. Please provide documentation from the Corps as to whether a Section 404 permit will be required. Your application may not be processed until this information is provided. The U.S. Army Corps of Engineers can be contacted at 502-315-6733 for the Louisville Corps District or at 313-226-2218 for the Detroit Corps District.
10. Adjacent property owner information must be provided for the purpose of providing public notice. IDEM requires the names and addresses of all property owners adjoining the property in which the project is to occur.
11. A permit fee is required for the process on IDEM NPDES permits. The application will not be reviewed until the application fee is submitted to IDEM.
12. The applicant must sign and date the application.

Where to get additional information

For more information, contact IDEM at the address below. Please contact the DNR or respective Corps District at the proper address below for questions regarding their programs.

IDEM - Office of Water Quality
Water Quality Section
P.O. Box 6015, IGCN Room 1255
Indianapolis, IN 46206-6015
317-233-8488 or toll-free at 1-800-451-6027
<http://www.in.gov/idem/water/planbr/401/401home.html>

Indiana Department of Natural Resources (DNR)
Division of Water
402 W. Washington Street, Room W200
Indianapolis, IN 46204
317-232-4161 or toll free at 1-877-Water55 (1-877-928-3755)
<http://www.IN.gov/dnr/water/>

United States Army Corps of Engineers
Detroit District
P.O. Box 1027
Detroit, MI 48231-1027
313-226-2218
<http://www.lre.usace.army.mil/functions/rf/dtwhome.html>

United States Army Corps of Engineers
Louisville District
P.O. Box 59
Louisville, KY 40201-0059
502-315-6733
<http://www.lrl.usace.army.mil/orf/default.htm>

Application for Authorization to Discharge Dredged or Fill Material to a Water of the State
State Form # 48598 (6-01)

Indiana Department of Environmental Management
Office of Water Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

APPLICATION SUPPORT DOCUMENT

GM POWERTRAIN BEDFORD PLANT: PHASE 1 LAWRENCE COUNTY, INDIANA

August 22, 2003

Prepared for:

General Motors Corporation

Troy Tech Park, Building A

Mail Code 483-619-356

1996 Technology Drive

Troy, Michigan 48083-4243

Prepared by:



6640 Parkdale Place, Suite S
Indianapolis, Indiana 46254
317-388-1982

APPLICATION SUPPORT DOCUMENT

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**APPLICATION SUPPORT DOCUMENT:
CREEK REMOVAL ACTION: PHASE 1
LAWRENCE COUNTY, INDIANA**

1.0 INTRODUCTION

J.F. New & Associates (JFNew) was contracted by General Motors Corporation (GM) to submit necessary application forms for the goal of obtaining Nationwide Permit 38 from the U.S. Army Corps of Engineers (Corps) and Water Quality Certification from the Indiana Department of Environmental Management (IDEM) for work to be conducted along Bailey's Branch Creek. These permits will be necessary to conduct work in the boundaries of "waters of the United States (U.S.)" and "waters of the state" within the proposed project site. Phase 1 of the aforementioned project is located in Sections 11 and 12, Township 5 North, Range 1 West in Lawrence County, Indiana.

The purpose of the project is to remove soil, sand, gravel, and rock impacted with polychlorinated biphenyls (PCBs) from impacted portions of Pleasant Run Creek, its tributary Bailey's Branch Creek, and other tributaries. Bailey's Branch Creek, its tributaries (Tributary 3 and Tributary 3a), and areas downstream have been affected by historical releases of PCBs, thus requiring remediation of select properties. For logistical purposes, the project has been divided into two phases: this first phase of the project is the properties adjacent to Bailey's Branch Creek, Tributary 3, and Tributary 3a at the upstream end of the Pleasant Run Watershed. Specifically, remediation activities associated with Phase 1 of this project will occur in Parcels 3, 4, 5, 6, 7, 8, 10, 11, 12, 22, 205, 215, and 216, as well as the area north of AOI-4. Phase 1 of the aforementioned project is located in Sections 11 and 12, Township 5 North, Range 1 West in Lawrence County, Indiana.

The land disturbing activities will be carried out from the upstream areas to the downstream areas in approximately 50 to 100 foot sections. At each section, the remediation activities will involve the removal of PCB impacted soils to required depths, replacement with clean fill material, and restoration and stabilization of the disturbed areas. All surface water, including the creek will be diverted around the work sections to ensure that preconstruction downstream flows are maintained. A copy of the work plans further describing the aforementioned activities was submitted to John Gunter with the IDEM Office of Land Quality on July 18, 2003. This work is being completed in accordance with:

- Impending Administrative Order by Consent (AOC) under the Comprehensive Environmental, Compensation and liability Act (CERCLA);
- Removal Action related to the AOC under CERCLA;
- Requirements of the Toxic Substances Control Act (TSCA) 40 CFR 761.61(c); and
- Resource Conservation and Recovery Act (RCRA) Voluntary Corrective Action (CA) Work conducted under the Performance Based Agreement between United States Environmental Protection Agency (EPA) and GM.

This support document includes proposed impacts, proposed mitigation, monitoring methodology plan, and correspondence with the Corps.

2.0 IMPACTS AND MITIGATION

2.1 Bailey's Branch Creek, Tributary 3, and Tributary 3a

As previously noted, Phase 1 remediation activities will involve the removal of contaminated soils and sediments, followed by restoration and stabilization of the remediated areas. During these activities, Bailey's Branch Creek, Tributary 3, and Tributary 3a will be diverted to ensure pre-construction flows are maintained. The length of the diversion will typically be 50 to 100 feet, although the contractor may elect to utilize larger diversions of up to 500 feet.

Based on the current Phase 1 work plan, approximately 6,802.00 linear feet of Bailey's Branch Creek, Tributary 3, and Tributary 3a will be remediated for PCB contamination. Specifically, approximately 3,499.23 linear feet of Bailey's Branch Creek, 2,851.06 linear feet of Tributary 3, and 451.71 linear feet of Tributary 3a will be impacted as a result of remediation activities. A parcel-by-parcel breakdown of stream impacts can be found in Table 1.

Table 1. Impacts to Bailey's Branch Creek and Tributaries

Parcel*	Waterbody	Impacts (linear feet)
3	Bailey's Branch Creek	374.45
4	Bailey's Branch Creek	411.74
5	Bailey's Branch Creek	166.46
6	Bailey's Branch Creek	288.23
7	Bailey's Branch Creek	130.72
8	Bailey's Branch Creek	464.64
10	Bailey's Branch Creek	266.29
11	Bailey's Branch Creek	315.07
12	Bailey's Branch Creek	**199.80
22	Bailey's Branch Creek	796.15
205	Bailey's Branch Creek	85.68
215	Tributary 3a	361.71
216	Tributary 3	1376.78
	Tributary 3a	***90.00
N-AOI 4	Tributary 3	1474.28
Total Waterbody Impacts		6,802.00

* Only these parcels will be impacted as part of Phase 1.

** Bailey's Branch Creek length estimated for Parcel 12.

*** Tributary 3a length estimated for Parcel 216. However, total length of impacts in 216 based on CAD calculations.

2.2 Wetlands

As noted in the *Wetland Delineation Report: Creek Removal Action* (JFNew, 2003), four wetlands were identified within Parcels 11, 12, and 216 of the proposed project: Wetland 11A, Wetland 11B, Wetland 216A, and Wetland 216B. However, only Wetlands 11A, 216A, and 216B will be impacted as part of Phase 1 of this project. Descriptions of each impacted wetland can be found below.

Impact Area 1 (Wetland 11A, 0.13 Acre)

Impact Area 1 is identified as a hydrologically connected forested/emergent wetland, and is located in a historic quarry approximately 50 feet east of Bailey's Branch Creek. The dominant plant species consisted of green ash (*Fraxinus pennsylvanica*), American sycamore (*Plantanus occidentalis*), green bulrush (*Scirpus atrovirens*), boneset (*Eupatorium perfoliatum*), creeping jennie (*Lysimachia nummularia*), touch-me-not (*Impatiens spp.*), and duckweed (*Lemna spp.*).

Impact Area 2 (Wetland 216A, 0.09 Acre)

Impact Area 2 is identified as a hydrologically connected forested wetland located directly adjacent to a tributary of Bailey's Branch Creek in Parcel 216. This community contained American sycamore, American elm (*Ulmus Americana*), lakebank sedge (*Carex lacustris*), fowl manna grass (*Glyceria striata*), and rough horsetail (*Equisetum hyemale*).

Impact Area 3 (Wetland 216B, 0.02 Acre)

Impact Area 3 is identified as a hydrologically connected forested/emergent wetland located directly adjacent to a tributary of Bailey's Branch Creek in Parcel 216. This community contained green ash, cutgrass (*Leersia spp.*), Canada wood nettle (*Laportea canadensis*), Virginia wild rye (*Elymus virginicus*), and poison ivy (*Toxicodendron radicans*).

As previously noted, the impacts to the above wetland areas will involve the removal of PCB impacted soils to required depths to ensure all contaminants have been removed. All impacted soils and sediments that are over 50 mg/kg PCB will be removed from the site to a U.S. EPA approved off-site disposal facility, or if not practical to a temporary staging pad prior to off-site disposal. Other impacted soils and sediments that are removed will be removed from the site to a U.S. EPA approved off-site disposal facility or to an on-site interim staging facility. Clean fill will be delivered to the site on an as-needed basis and used immediately.

3.0 MITIGATION PLAN

As noted above, the remediation activities will involve the removal of PCB impacted soils to required depths, replacement with clean fill material, and restoration and stabilization of the disturbed areas. All surface water, including the creek will be diverted around the work sections.

3.1 Conceptual Mitigation

Based on the current remediation plan, restoration activities include returning all impacted areas to their original pre-construction contours. The disturbed areas will also be re-vegetated. Additionally, in lieu of parcel-by-parcel mitigation for wetland impacts, the conceptual mitigation plan consolidates all wetland mitigation at one site. However, JFNew is currently in the process of locating a suitable mitigation site. Once this site is located, JFNew will submit a mitigation plan to the Corps and IDEM for review and approval.

Additionally, JFNew is currently working with the Indiana Department of Natural Resources (IDNR), Division of Water to obtain a Construction-In-A-Floodway Permit (Application No. FW-22139) for Parcel 22. As part of the permit application, GM has developed a mitigation plan that involves planting tree and shrub species to minimize the temporary nature of the impacts to wooded wildlife habitat within the floodway corridor.

3.2 Construction Schedule

The first phase of work is currently scheduled to begin in August 2003. It is anticipated that the work will be completed in January 2004, with final cleanup and restoration completed during Spring 2004. The land disturbing activities will be carried out from the upstream areas to the downstream areas in approximately 50 to 100 foot sections. At each section, the remediation activities will involve the removal of PCB impacted soils to required depths, replacement with clean fill material, and restoration and stabilization of the disturbed areas. The approximate time frames for construction can be found in Table 2.

Table 2. Approximate Time Frames for Phase 1 Construction

Work Areas	Construction Time Frame
Area North of AOI-4, Parcels 215 and 216	August - September 2003
Parcels 3, 4, 5, 6, 22, and 205	September - October 2003
Parcels 7, 8, 10, 11, 12, and additional properties downstream	October 2003 - 2005

4.0 MONITORING PLAN

The following is a description of the predetermined goals set forth for the mitigation wetland. A failure to meet these goals will result in the need for remedial actions which may include supplemental plantings, replanting or reseeding, adjustments to hydrology levels, removal of aggressive species, and/or adding wetland acreage. In order to be considered successful, the mitigation wetland must meet all of the following success criteria for two consecutive years within a five-year period.

4.1 Success Criteria

- Greater than 50% of the dominant vegetation species must be classified as hydrophytic.
- The hydrology at the mitigation site must meet the wetland hydrology criteria contained in the *United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1* (January, 1987).
- The mitigation wetland vegetation total percent cover must be at least 50 percent.
- The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha* spp.) shall not consist of more than 15 percent of the mitigation wetland (based on transect data).

- No more than 10 percent of the surface area coverage of the emergent zone of the mitigation wetland may be open water, bare ground, or a combination of the two. Open water and bare ground are defined as areas with less than 10 percent vegetative cover.
- The mitigation wetlands consist of 0.13 acre, 0.09 acre, and 0.02 acre of forested/emergent wetlands (restoring wetlands following remediation).

The mitigation wetland will be monitored for a minimum period of three years. In order to be released from monitoring, the mitigation wetland must meet the success criteria listed above for two consecutive years within a five-year period. A proposed final monitoring report will be submitted once it is believed that the mitigation wetland has met this requirement, and monitoring will be suspended unless notified otherwise by the IDEM or the Corps. If the IDEM or the Corps determines that the success criteria have not been met, then remedial actions will be assessed and monitoring will resume.

If the IDEM or the Corps confirms that the success criteria have been met, then monitoring will be discontinued permanently upon written notification by the IDEM and the Corps.

4.2 Monitoring Methodology

The monitoring period will commence with notice by the permittee to the IDEM and the Corps that the planting of the mitigation area has been completed. Spring site inspections will be conducted primarily to assess hydrology at the site during what is typically the wettest time of the year. Summer site visits will be made during the summer/fall to document hydrology and vegetation at the mitigation wetland. The summer/fall monitoring inspection will observe the following guidelines:

- Percent plant cover will be estimated for all species present and for the site as a whole.
- Photographic stations will be set up to provide visual documentation of wetland development. The photographic stations will be representative of the mitigation site and sampling points.
- A botanical inventory of the mitigation wetland will be performed in order to note species that are present but were missed by the quantitative sampling efforts.
- In the final year of monitoring, a wetland delineation will be performed to document the extent of wetland that has been created at the mitigation site. The delineation will be conducted on-site using the hydrology and vegetation parameters from the *United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1* (January 1987).

An annual monitoring report based on the results of each year's inspection will be filed with the IDEM and the Corps by January 31 of the following year. This report will include:

- The IDEM and the Corps identification numbers.
- As-built plans (in the first year's report).
- Discussion of methods or means used to determine compliance with the success criteria.
- Discussion of wetland hydrology within the mitigation wetland.
- Discussion of plant community development at the mitigation site. This discussion will consist of tables listing the most dominant species. In addition, a botanical species inventory will be provided. Each year's data will be compared to previous year's data as it becomes available.
- Photographs from each photographic station.
- Identification of any problems with meeting the success criteria.
- A wetland delineation (in the final year's report). The delineation will include data sheets and a survey, map, or drawing with area measurements in acres of all mitigation wetland boundaries.

APPENDIX A

AGENCY CORRESPONDENCE

**APPLICATION SUPPORT DOCUMENT
CREEK REMOVAL ACTION: PHASE 1**

LAWRENCE COUNTY, INDIANA

ATTACHMENT 1

ADJACENT PROPERTY OWNERS

**APPLICATION SUPPORT DOCUMENT
CREEK REMOVAL ACTION: PHASE 1**

LAWRENCE COUNTY, INDIANA

**ADJACENT LANDOWNER INFORMATION FOR USEPA
GM-BEDFORD SITE - PHASE 1
BEDFORD, INDIANA**

Parcel	Current Property Owner	Last Name	First Name	Mail Street Address	Mail City	Mail State	Mail Zip	Phone Number
008	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
010	Norman, Lloyd F. & Gwendolyn	Norman	Lloyd	659 Riley Boulevard	Bedford	IN	47421	(812) 275-8463
011	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
012	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
013	Woody, William J. & Robin T.	Woody	William	330 Robins Way	Bedford	IN	47421	(812) 277-0001
015	Perry, April	Perry	April	314 Bailey Scales Road	Bedford	IN	47421	
021	Robbins, Daniel J. & Carol J.	Robbins	Daniel	890 Bailey Scales Road	Bedford	IN	47421	(812) 279-4297
210	Walker, Gerald W. & Lana J.	Walker	Gerald	423 Bailey Scales Road	Bedford	IN	47421	(812) 279-4085
211	Moss, James R. & Patricia J.	Moss	James	216 Bailey Scales Road	Bedford	IN	47421	(812) 279-0169
212	Moss, James R. & Patricia J.	Moss	James	216 Bailey Scales Road	Bedford	IN	47421	(812) 279-0169
213	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
215	General Motors Corporation	Thomas	John	105 GM Drive	Bedford	IN	47421	(812) 279-7360
217	Walls, Daniel R. & Janet E.	Walls	Daniel	809 Bailey Scales Road	Bedford	IN	47421	(812) 275-0394
317	Woody, William J. & Robin T.	Woody	William	330 Robins Way	Bedford	IN	47421	(812) 277-0001
318	Woody, William J. & Robin T.	Woody	William	330 Robins Way	Bedford	IN	47421	(812) 277-0001
319	Clephane, Mark D.	Clephane	Mark	2917 Mount Pleasant Road	Bedford	IN	47421	(812) 277-1811
321	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
322	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
327	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
327	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997

**ADJACENT LANDOWNER INFORMATION FOR USEPA
GM-BEDFORD SITE - PHASE 1
BEDFORD, INDIANA**

Parcel	Current Property Owner	Last Name	First Name	Mail Street Address	Mail City	Mail State	Mail Zip	Phone Number
328	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
330	Speer, Ernest G & Barbara	Speer	Ernest	5044 Diana Street	Mitchell	IN	47446	(812) 849-3738
346	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
346	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997
346	General Motors Corporation	Hilfinger	Michael	200 Renaissance Center	Detroit	MI	48265	(812) 278-3997

APPENDIX D

UPSTREAM PARCELS WETLAND MITIGATION PLAN – J.F. NEW, SEPTEMBER 17, 2003

**UPSTREAM PARCELS WETLAND MITIGATION PLAN:
GM CREEK REMOVAL PROJECT
LAWRENCE COUNTY, INDIANA**

September 17, 2003

Prepared for:

General Motors Corporation
Troy Tech Park, Building A
Mail Code 483-619-356
1996 Technology Drive
Troy Michigan, 48083-4243

Prepared by:

J.F. New & Associates, Inc.
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

**UPSTREAM PARCELS WETLAND MITIGATION PLAN:
GM CREEK REMOVAL PROJECT
LAWRENCE COUNTY, INDIANA**

Project Introduction

General Motors Corporation (GM) is currently implementing a Resource Conservation and Recovery Act (RCRA) Corrective Action at the GM Powertrain Bedford Facility in Lawrence County, Indiana pursuant to a Voluntary Correction Action Agreement between the United States Environmental Protection Agency (USEPA) and GM that became effective March 20, 2001. Delineation of impacted sediment and flood plain soils of the Bailey's Branch and Pleasant Run Creek Watershed has been completed under the RCRA Voluntary Corrective Action Agreement. The USEPA and GM have entered into a CERCLA Administrative Order on Consent (AOC), effective July 31, 2003, for soil and sediment Removal Action activities on Bailey's Branch and Pleasant Run Creeks to expedite the implementation of cleanup of the stream system. Under the AOC, Removal Actions are required to clean up PCB contaminated sediment and floodplain soils within the Bailey's Branch and Pleasant Run Creek Watershed. The Site includes approximately 5 miles of creek from the GM Bedford Plant outfall downstream to approximately the Old Murdock railroad trestle (Figure 1). Both the creek bed and the adjacent floodplain areas are a part of the Removal Action activities. The objectives of the Removal Action are to control any potential ongoing releases to the creek and to remove soil and sediment present at levels above the cleanup criteria.

The initial portion of the project includes the creek segments from Parcel 3 through Parcel 12, and Parcels 205, 215, and 216 on GM property (known as the "upstream parcels") and Parcel 22. This mitigation plan is intended to cover known wetland impacts in this area. Additional wetland impacts may be encountered in the work areas downstream, but are not fully known at this time due to property access issues. This mitigation plan may be modified in the future to fit into a mitigation plan that incorporates all wetland impacts once they are known.

Proposed Impacts

In the upstream parcels there are 3 known wetlands that will be impacted in the work area: 11A (0.13 acres, PFO/EM), 216A (0.09, PFO/EM acres) and 216B, (0.02 acres, PFO/EM) totaling 0.24 acres (Figure 2).

Proposed Mitigation

The wetland mitigation will occur on Parcel 39 (Figures 3 and 4, see also Figure 1), which is owned by GM. The parcel is bisected by Pleasant Run and is characterized by a mixture of upland forest, riparian forest, and open land. Several small drainages also carry surface water across the parcel to Pleasant Run. To compensate for the loss of

these 0.24 acres of wetland GM proposes to create and plant 0.96 acres of forested and emergent wetland.

Soils

The proposed mitigation site is characterized by Wilbur silt loam (Figure 5). Wilbur silt loam is not classified as a hydric soil but has hydric inclusions. By blocking surface drainage of a portion of this soil unit seasonally ponded conditions will be created.

Hydrology

The proposed wetland restoration area has a watershed of approximately 8 acres and is located within a natural drainage. By blocking the drainage with a low berm surface water will be trapped, creating seasonally ponded conditions suitable for the growth of wetland trees. Maximum water depth will be 6 inches in the winter and early spring. Natural drawdown will occur as spring evapotranspiration increases and water is lost into the ground. This will also create ideal breeding conditions for breeding amphibians that require vernal (ephemeral) pools.

Vegetation

The mitigation area will be planted with wetland trees, shrubs, grasses and forbs appropriate for the expected hydrology.

A mixture of bare root tree and shrub seedlings will be planted at 10' by 10' spacing (approximately 435 per acre). Species will be chosen from the table below with no single species comprising more than 20% of the total number planted. Shrubs may comprise no more than 33% of the total. There will be at least 3 species of shrubs and 5 species of trees planted.

TREES

<u>Botanical Name</u>	<u>Common Name</u>
<i>Quercus palustris</i>	Pin Oak
<i>Quercus macrocarpa</i>	Burr Oak
<i>Nyssa sylvatica</i>	Black Gum
<i>Quercus imbricaria</i>	Shingle Oak
<i>Fraxnus pennsylvanica</i>	Green Ash
<i>Carya laciniosa</i>	Shellbark Hickory
<i>Acer rubrum</i>	Red Maple
<i>Quercus macrocarpa</i>	Swamp White Oak

SHRUBS

<i>Amorpha fruticosa</i>	Indigobush
<i>Cornus racemosa</i>	Gray Dogwood
<i>Viburnum prunifolium</i>	Blackhaw
<i>Lindera benzoin</i>	Spicebush
<i>Sambucus canadensis</i>	Elderberry

Plantings will be performed between April 15 and June 15 the spring following completion of site cleanup.

All planted areas will be planted with a restoration cover crop appropriate for a wooded wetland:

WOODED UNDERSTORY SEED MIX

Permanent Grasses/Sedges

<i>Calamagrostis Canadensis</i>	Blue joint grass	2.0 ounces/acre
<i>Carex crinita</i>	Fringed sedge	1.5 ounces/acre
<i>Carex hystericina</i>	Porcupine sedge	4.0 ounces/acre
<i>Carex lupulina</i>	Common hop sedge	6.0 ounces/acre
<i>Carex vulpinoidea</i>	Brown fox sedge	2.75 ounces/acre
<i>Echinochloa crusgalli</i>	Barnyard grass	12.0 ounces/acre
<i>Elymus canadensis</i>	Canada wild rye	8.0 ounces/acre
<i>Elymus virginicus</i>	Virginia wild rye	8.0 ounces/acre
<i>Glyceria striata</i>	Fowl manna grass	2.0 ounces/acre
<i>Leersia oryzoides</i>	Rice cut grass	4.0 ounces/acre
<i>Panicum virgatum</i>	Switch grass	4.0 ounces/acre
<i>Scirpus atrovirens</i>	Dark green rush	3.0 ounces/acre
<i>Spartina pectinata</i>	Prairie cord grass	2.5 ounces/acre

Temporary Cover:

<i>Agrostis alba</i>	Redtop	2 pounds/acre
<i>Avena sativa</i>	Seed oats	32 pounds/acre
<i>Lolium multiflorum</i>	Annual rye	6.25 pounds/acre
<i>Phleum pratense</i>	Timothy	3 pounds/acre

Forbs:

<i>Actinomeris alternifolia</i>	Wingstem	1 ounce/acre
<i>Alisma subcordatum</i>	Common water plantain	3 ounces/acre
<i>Aster umbellatus</i>	Flat-top aster	1.25 ounces/acre
<i>Bidens cernua</i>	Nodding bur marigold	3.0 ounces/acre
<i>Chelone glabra</i>	Turtlehead	1.25 ounces/acre
<i>Helenium autumnale</i>	Sneezeweed	1.5 ounces/acre
<i>Lobelia siphilitica</i>	Great blue lobelia	1.5 ounces/acre
<i>Mimulus ringens</i>	Monkey flower	1.75 ounces/acre
<i>Rudbeckia laciniata</i>	Wild golden glow	0.5 ounce/acre

Success Criteria and Monitoring Plan

The following is a description of the predetermined goals set forth for the enhanced and created mitigation wetland. In order to be considered successful, the mitigation wetland must meet all of the following success criteria for two consecutive years within a five-year period and must be monitored for a minimum of three years.

- Greater than 50% of the dominant vegetation species must be classified as hydrophytic.
- The hydrology at the mitigation site must meet the wetland hydrology criteria contained in the United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January, 1987).
- The mitigation wetland vegetation percent cover must be at least 50%.
- The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha* spp.) shall not cover more than 15% of the mitigation wetland (based on transect data).
- The wetland plant communities are free of the following exotic species: purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and Eurasian water milfoil (*Myriophyllum spicatum*).
- No more than 10% of the surface area coverage of the mitigation wetland may be open water, bare ground, or a combination of the two. Open water and bare ground are defined as areas with less than 10% vegetation cover.
- The mitigation wetland consists of 0.96 acres of wetland of which at least 80% must be forested. Up to 20% of the wetland may develop into an emergent wetland, roughly equal to the percentage of emergent wetland present in the impacted wetlands.
- At the end of the monitoring period the restored tree and shrub planting area will have a density of at least 305 trees/shrubs per acre (equivalent to 70% survival of planted stock and based on the 435 trees per acre planting criteria).

The monitoring period will commence with notice by the permittee to the Corps of Engineers and the Indiana Department of Environmental Management that the seeding of the mitigation area has been completed. Spring site inspections will be conducted primarily to assess hydrology at the site during what is typically the wettest time of the year. Summer site visits will be made during the summer/fall to document hydrology and vegetation at the mitigation wetland.

The summer/fall monitoring inspection will observe the following guidelines:

- Permanent transects will be randomly established within the mitigation area during the first monitoring year. Each year, percent plant cover will be estimated for all species present within quadrats along the monitoring transects and for the mitigation wetland as a whole. Test pits will be sampled to note evidence of wetland hydrology and/or hydric soils.
- Permanent photographic stations will be set up to provide visual documentation of wetland development. The photographic stations will be representative of the mitigation site and sampling points.
- A botanical inventory of the mitigation wetland will be performed in order to note species that are present but were missed by the quantitative sampling efforts.
- In the final year of monitoring, a wetland delineation will be performed to document the extent of wetland that has been created at the mitigation site. The delineation will be conducted on-site using the hydrology and vegetation

parameters from the United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January 1987).

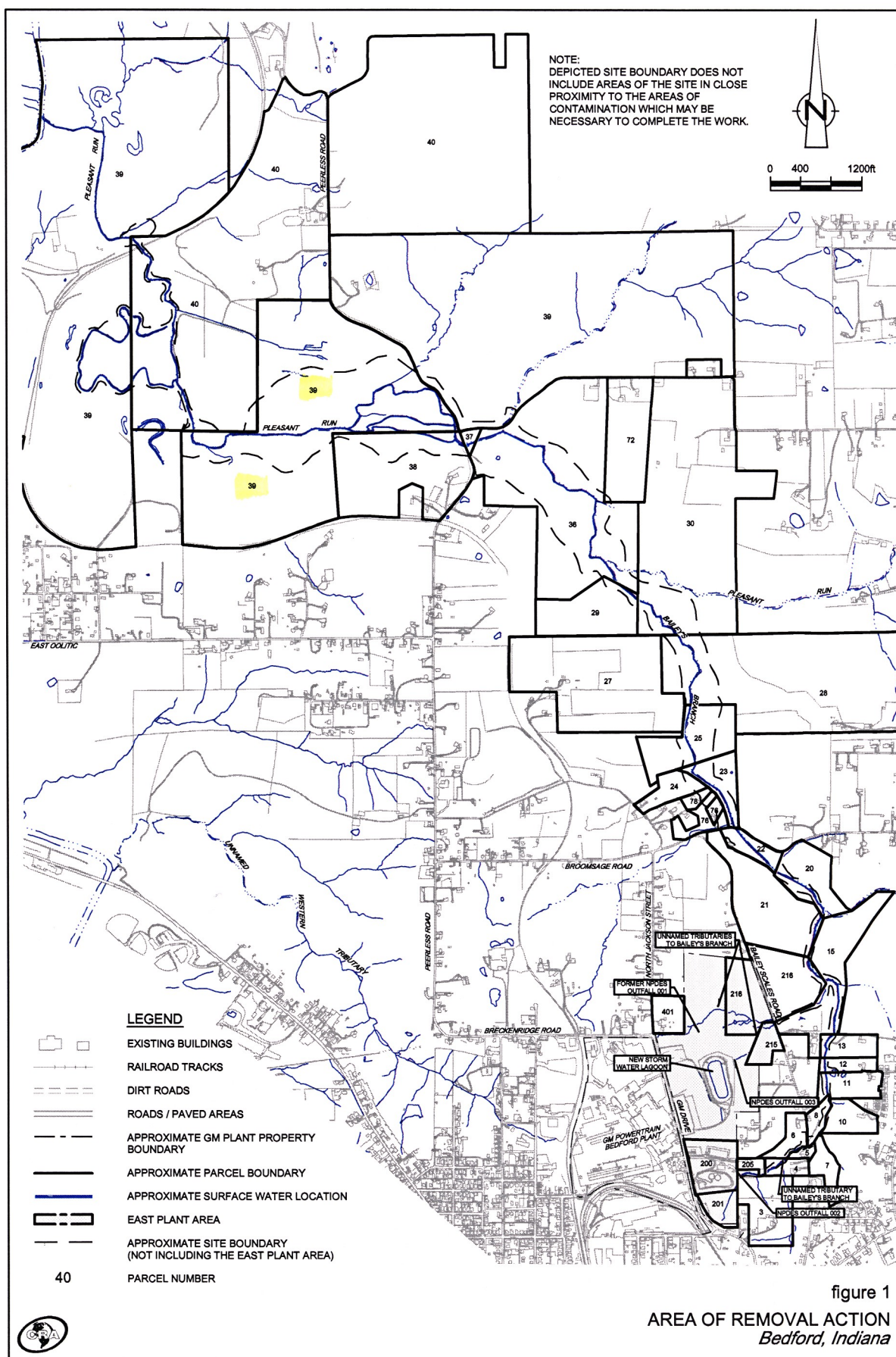
An annual monitoring report based on the results of each year's inspection will be filed with the Corps of Engineers and the Indiana Department of Environmental Management by January 31 of the following year. This report will include:

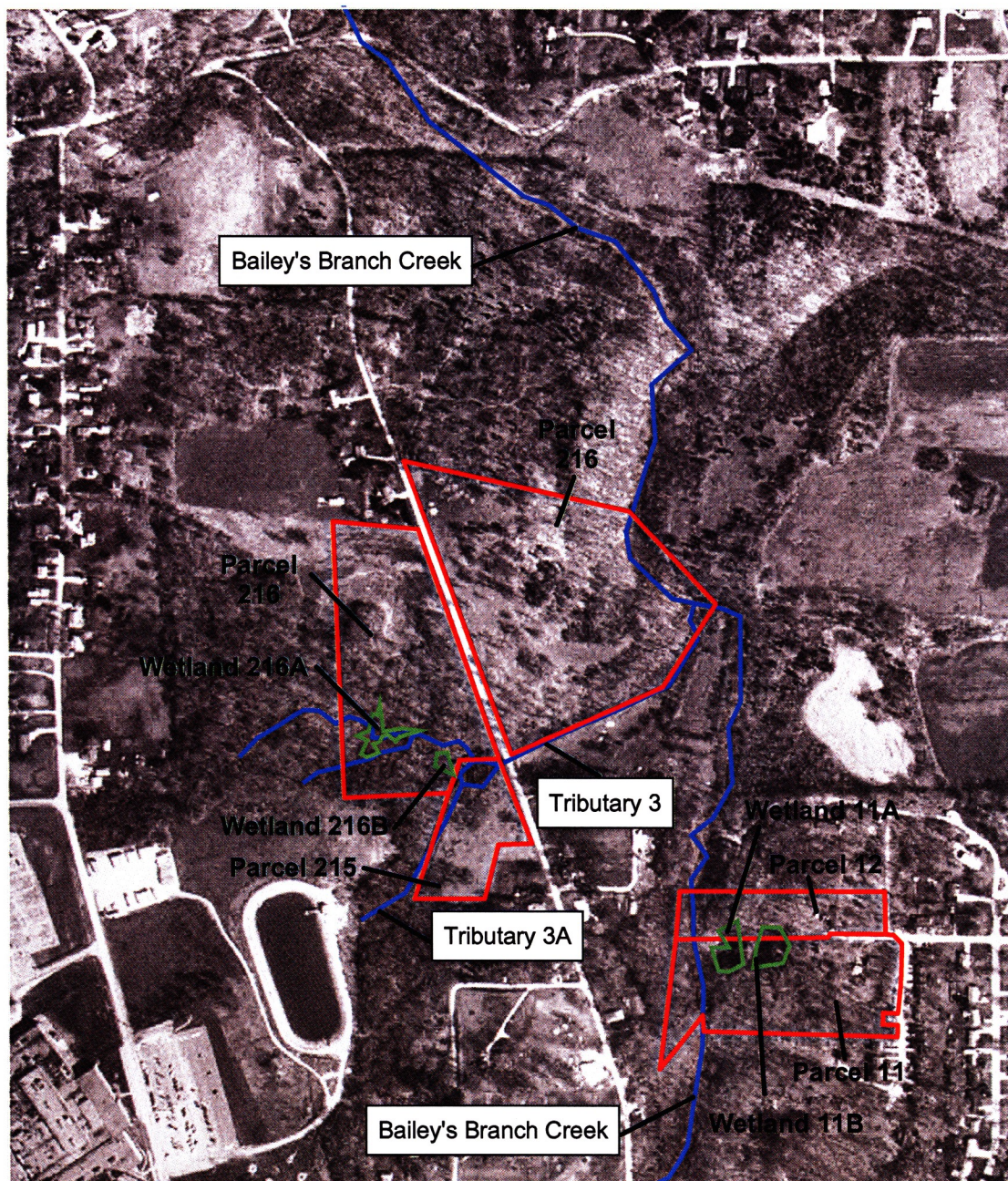
- The Corps of Engineers and Indiana Department of Environmental Management identification numbers.
- Discussion of methods or means used to determine compliance with the success criteria.
- Discussion of wetland hydrology within the mitigation wetland.
- Discussion of plant community development at the mitigation site. This discussion will consist of tables listing the most dominant species. In addition, a botanical species inventory will be provided. Each year's data will be compared to previous year's data as it becomes available.
- Photographs from each photographic station.
- Identification of any problems with meeting the success criteria.
- A wetland delineation (in the final year's report). The delineation will include data sheets and a survey, map, or drawing with area measurements in acres of the mitigation wetland boundaries.

The mitigation wetland will be monitored for a minimum period of three years. In order to be released from monitoring, the mitigation wetland must meet the success criteria listed above for two consecutive years within a five-year period. A proposed final monitoring report will be submitted once it is believed that the mitigation wetland has met this requirement, and monitoring will be suspended unless notified otherwise by the Corps of Engineers or the Indiana Department of Environmental Management. If the Corps of Engineers or the Indiana Department of Environmental Management determine that the success criteria have not been met, then remedial actions will be assessed and monitoring will resume. If the Corps of Engineers and the Indiana Department of Environmental Management confirm that the success criteria have been met, then monitoring will be discontinued permanently upon written notification by the Corps of Engineers and the Indiana Department of Environmental Management.

Summary

GM proposes to create 0.96 acres of forested (at least 80%) and emergent (up to 20%) wetlands on parcel 39 by blocking natural surface drainage with a low berm to mitigate for impacting 0.24 acres of forested and emergent wetlands in the initial phase of the creek cleanup. As additional impacts are identified, this plan will be modified to accommodate those additional impacts.





Note: Wetland 11B will not be impacted.

Legend

- ▭ Approximate Wetland Location
- ▭ Approximate Parcel Boundary
- Approximate Creek/Tributary Locations

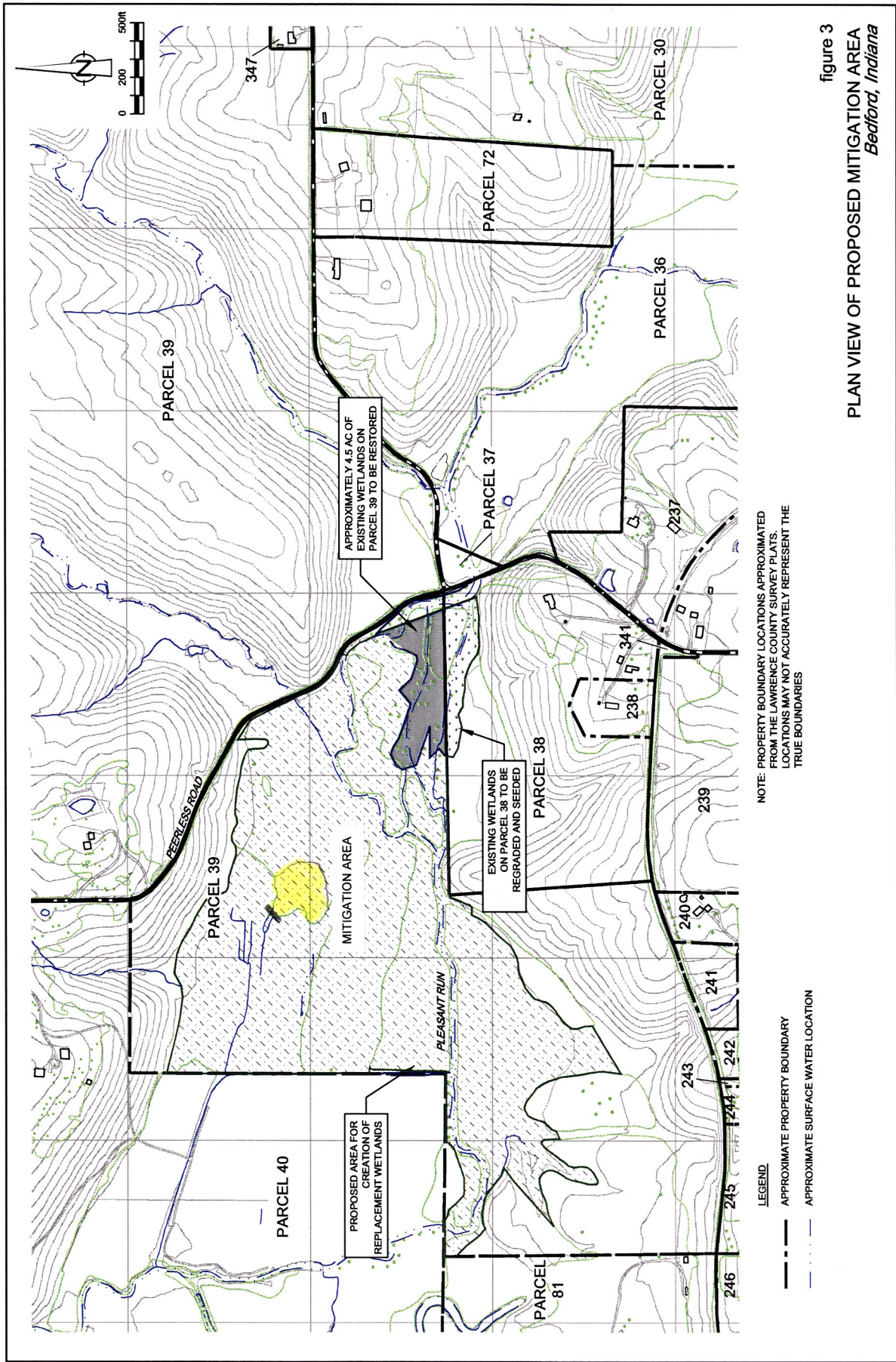


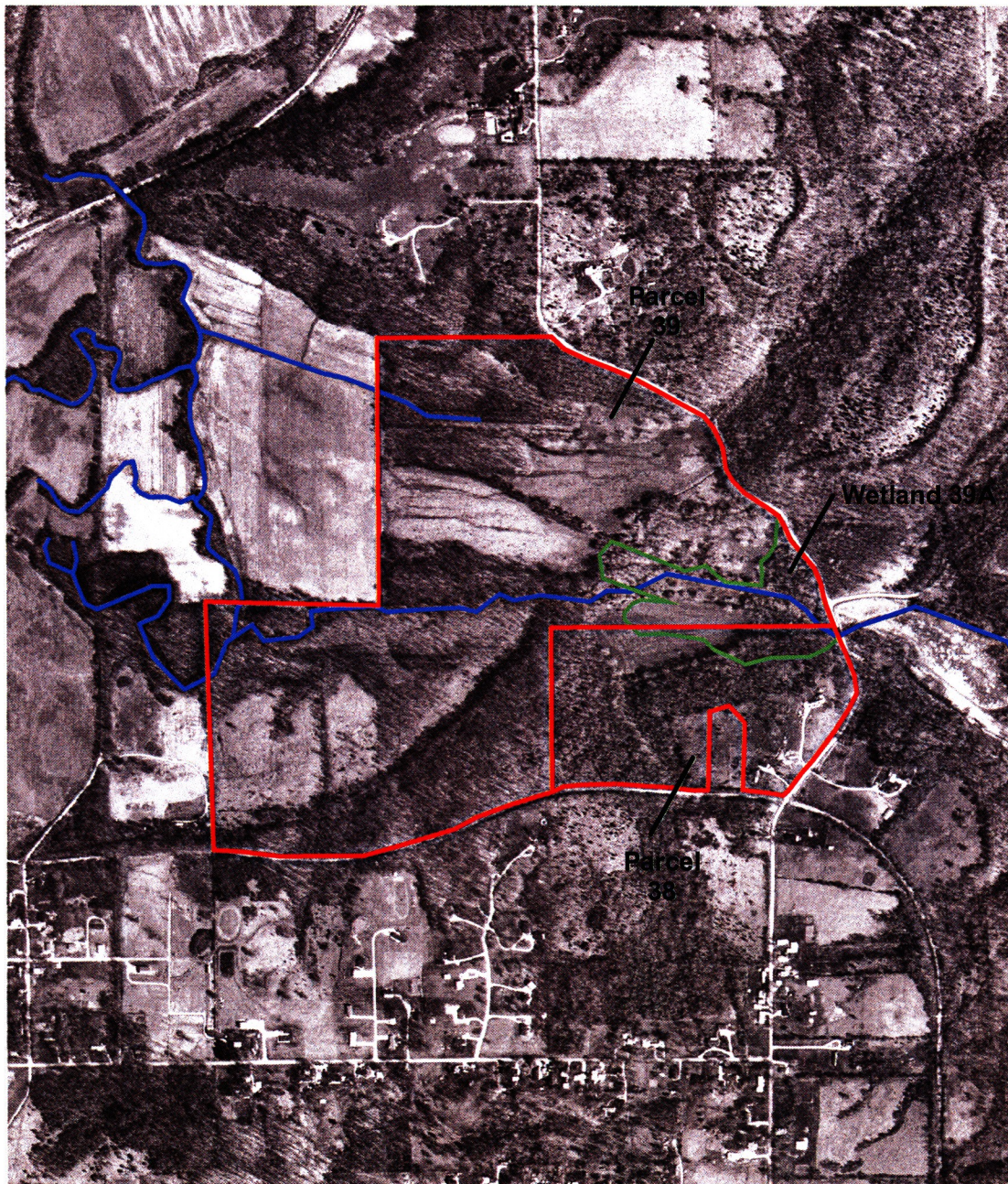
**Figure 2: Wetlands In Area of Removal Action
Parcels 11, 12, 215, and 216
GM Powertrain Bedford Plant
General Motors Corporation
Lawrence County, IN**

0 150 300 600
Feet

Source:
Aerial - USDA/NRCS Geospatial Data Gateway (2002)
(<http://lighthouse.nrcs.usda.gov/gateway>)

September 2003





Legend

- Approximate Wetland Location
- Approximate Parcel Boundary
- Approximate Pleasant Run Location

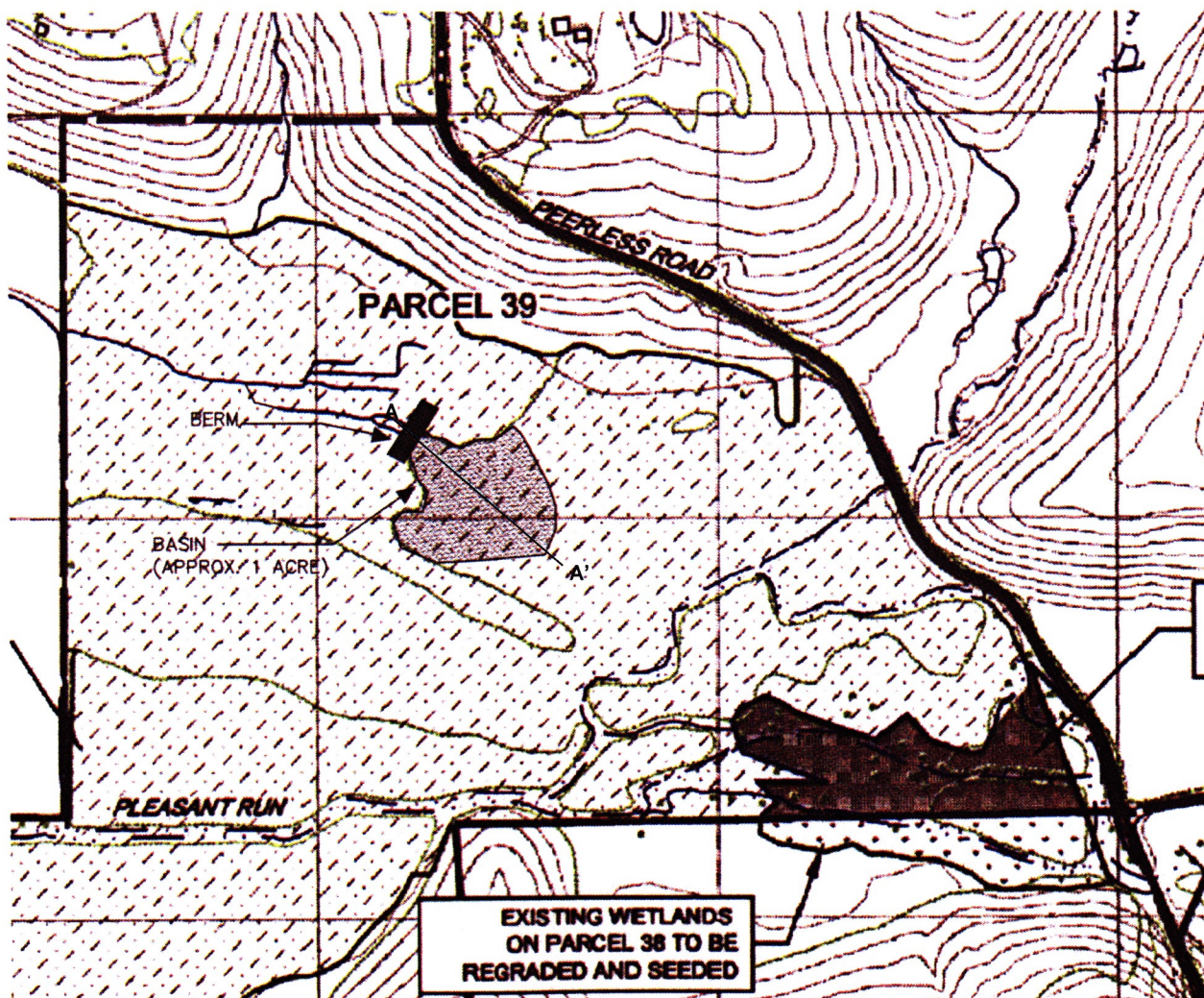


**Figure 4: Wetlands In Area of Removal Action
Parcels 38 and 39
GM Powertrain Bedford Plant
General Motors Corporation
Lawrence County, IN**

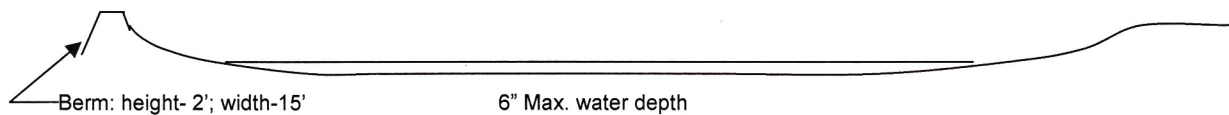
0 250 500 1,000
Feet

Source:
Aerial - USDA/NRCS Geospatial Data Gateway (2002)
(<http://lighthouse.nrcs.usda.gov/gateway>)

September 2003



Scale: 1"=300'



Vertical Scale: 1"=5'
Horizontal Scale: 1"=50'

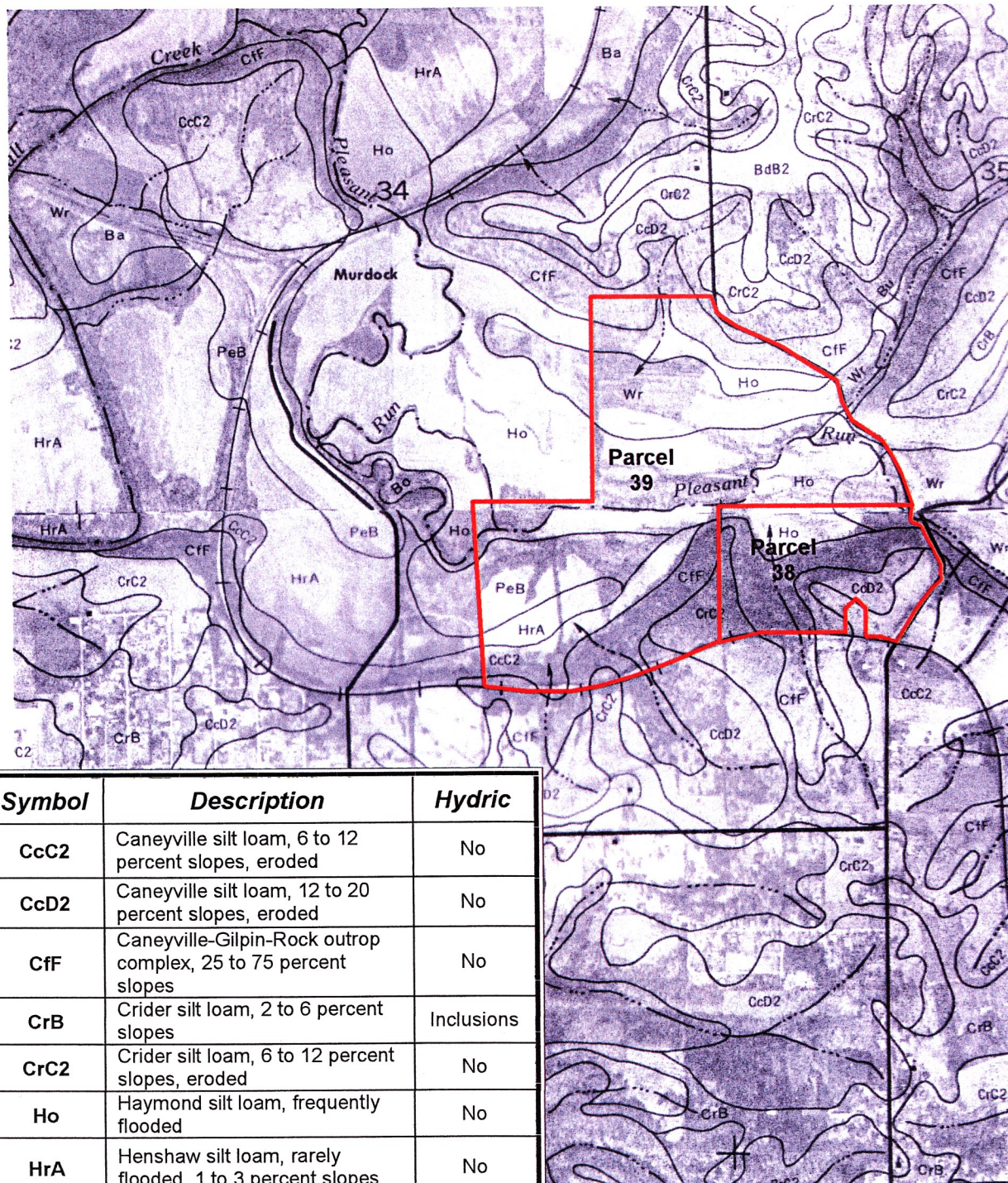
**Figure 5: Plan View and Cross Section
Proposed Mitigation Area
Lawrence County, Indiana**



JFN #: 02-06-55X



708 Roosevelt Road, Walkerton, IN 46574
Phone 574-586-3400 / Fax 574-586-3446
www.jfnew.com



Symbol	Description	Hydric
CcC2	Caneyville silt loam, 6 to 12 percent slopes, eroded	No
CcD2	Caneyville silt loam, 12 to 20 percent slopes, eroded	No
CfF	Caneyville-Gilpin-Rock outcrop complex, 25 to 75 percent slopes	No
CrB	Crider silt loam, 2 to 6 percent slopes	Inclusions
CrC2	Crider silt loam, 6 to 12 percent slopes, eroded	No
Ho	Haymond silt loam, frequently flooded	No
HrA	Henshaw silt loam, rarely flooded, 1 to 3 percent slopes	No
PeB	Pekin silt loam, 2 to 6 percent slopes	No
Wr	Wilbur silt loam, frequently flooded	Inclusions

Legend

 **Approximate Parcel Boundary**

**Figure 6: Lawrence Co. Soil Survey
Parcels 38 and 39
GM Powertrain Bedford Plant
General Motors Corporation
Lawrence County, Indiana
(Sheet #16 and #23)**

June 2003

JFNA # 02-06-55X

0 330 660 1,320
Feet

Source: USDA Soil Conservation Service Soil Survey of
Lawrence County, Indiana (1985)



6640 Parkdale Place, Suite S, Indianapolis, IN 46254
Phone 317-388-1982 / Fax 317-388-1986
www.jfnew.com

APPENDIX E

CONCEPTUAL WETLAND MITIGATION PLAN - J.F. NEW, SEPTEMBER 9, 2003



Wise Growth Through Stewardship

708 Roosevelt Road
Walkerton, Indiana 46574
Phone: 574-586-3400 ext. 312
Fax: 574-586-3446

Robert W. Wolfe
Vice President, Director of
Ecological Services
rwolfe@jfnew.com

Corporate Office:
Walkerton, Indiana

Crete, Illinois

Indianapolis, Indiana

Grand Haven, Michigan

Cincinnati, Ohio

Native Plant Nursery:
Walkerton, Indiana

www.jfnew.com

September 9, 2003

Mr. Marty Maupin
IDEM
100 North Senate Avenue
P.O. Box 6015
Indianapolis, In 46204

RE: GM Bedford
Creek Removal Action

Dear Mr. Maupin,

Enclosed please find the information you requested regarding the GM Bedford creek Removal Action, which includes new documentation, as well as some previously submitted documents. As you requested, I have included the floodway forest mitigation plan that was prepared for IDNR. The plan covers only Parcel 22 at this time but will be used as a template for other forested floodway areas.

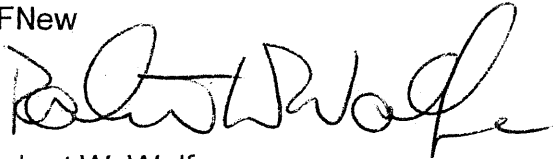
A mitigation plan is also included that identifies the location of the wetland mitigation and the basic concept for the construction of the wetlands. The mitigation site is large and, I believe, provides a great deal of flexibility in meeting the overall wetland mitigation needs of the project. Finally, you had asked for additional basic information on the reconstruction/restoration of the creek following excavation. I have included a brief write up and conceptual plan view that shows how the reconstruction will be approached.

You also requested additional information via email on the impact on wetlands of intercepting spring discharge that may occur as part of the clean up project. I believe that the springs you are referring to are in the vicinity of Parcels 216 and 215. No wetlands were identified on Parcel 215 while two wetlands were identified on Parcel 216. One has a hydrologic connection to one of the springs and the other does not. However, both of these wetlands will be remediated as part of the cleanup and mitigated for at the downstream mitigation site. Therefore, the fate of the wetlands is independent of the springs.

Please review the submitted material and let me know if you have any questions. I will call you Thursday September 11th to see if I can

be of further assistance. I will be happy to meet with you in person if that will help you in making your assessment.

Sincerely,
JFNew



Robert W. Wolfe
Director of Ecological Services

CC Cheryl Hiatt, GM
Ed Peterson, GM
Laura Fitzpatrick, GM
Brad Stimple, USEPA
Ashley Valentine, CRA
Jim McGuigan, CRA
John Gunter, IDEM
Gerry Newell, USACOE
Peter Ramanauskas, USEPA

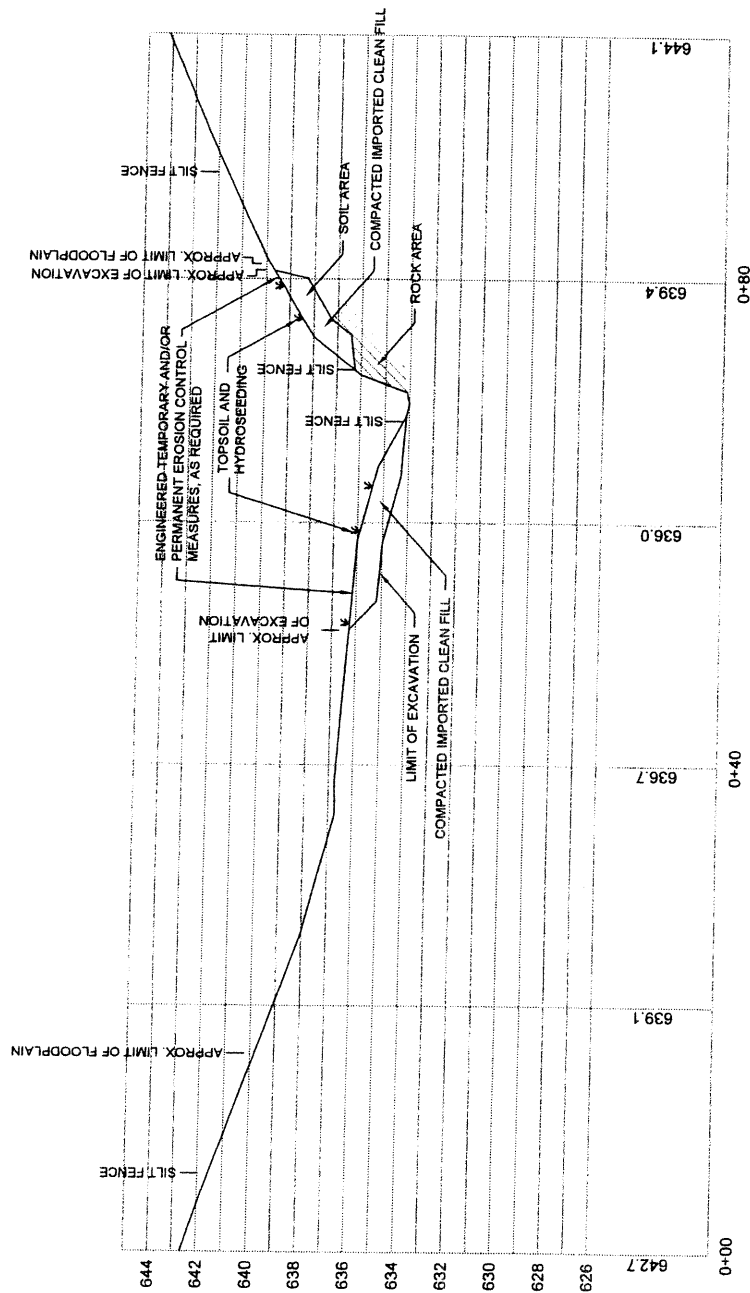
Stream Reconstruction

The creek will be reconstructed following its existing alignment to the degree possible and the creek bed will be populated with rocks. In addition, pools, riffles and other habitat features will be added as appropriate. The attached plan view and cross sections show in concept some of these habitat features. The decision on the placement of actual habitat features will occur in the field during reconstruction based on location-specific stream characteristics.

The creek is typically characterized by a bedrock bottom in the upstream portion of the Site including the portion above Parcel 22. This will preclude the construction of pools in this section except where depressions naturally occur in the bedrock. Habitat features in this area will be created by the occasional placement of rootwads and/or boulders/larger rocks in the stream.

In the downstream portion of the Site the creek bottom is more typically characterized by a sediment bottom that better facilitates the construction of riffle-pool complexes. The plan view shows a conceptual treatment of these downstream reaches. The placement and spacing of these features and other habitat features will be determined during construction based on field conditions.

Bank stabilization will be achieved through the mixed use of bioengineering techniques such as erosion control fabrics (100% biodegradable), seeding, live cuttings, bare root tree and shrubs, willow fascines, and brush mattresses. Outside bends will require more aggressive techniques while straight runs and inside bends may simply require revegetation.



SCALE:
HOR. 1" = 10'
VER. 1" = 5'

NOTE: VERTICAL EXAGGERATION OF 2

DRAFT

figure 1
TYPICAL CREEK RESTORATION SECTION LOCATION 1
WHERE BEDROCK IS ENCOUNTERED
GM REMOVAL ACTION
Bedford, Indiana



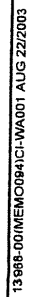


figure 2
TYPICAL CREEK RESTORATION SECTION LOCATION 2
WHERE BEDROCK NOT ENCOUNTERED
GM REMOVAL ACTION
Bedford, Indiana

APPENDIX F

CONSTRUCTION IN A FLOODWAY MITIGATION PLAN - J.F. NEW, AUGUST 25, 2003

August 25, 2003

6640 Parkdale Place, Suite S
Indianapolis, Indiana 46254
Phone: 317-388-1982 ext. 31
Fax: 317-388-1986

Jason Stiner
Project Manager
jstiner@jfnew.com

Danny Gautier
Indiana Department of Natural Resources
Bloomington Field Office
620 South Walker Street
Bloomington, IN 47403-2121

**RE: *Construction in a Floodway Mitigation Plan*
158 Broomsage Road
*Lawrence County, Indiana***

Dear Mr. Gautier:

Enclosed please find the *Construction in a Floodway Mitigation Plan* for the above referenced project. This work is being completed under U.S. Environmental Protection Agency (EPA) supervision, in accordance with Administrative Order by Consent (AOC) under the Comprehensive Environmental, Compensation and Liability Act (CERCLA).

If you have any questions or require additional information, please feel free to contact me at (317) 388-1982.

Sincerely,
J. F. New and Associates, Inc.

Jason Stiner
Project Manager

Enclosures

cc: Marty Maupin (IDEM)

File No. 02-06-55X

**MITIGATION PLAN
CONSTRUCTION IN A FLOODWAY PERMIT**

158 Broomsage Road

**Unnamed Tributary (Bailey's Branch Creek)
to Pleasant Run
Lawrence County, Bedford, Indiana**

Permit Number:
FW-22139

August 22, 2003

Prepared by:



708 Roosevelt Road
Walkerton, IN 46574
574-586-3400

**MITIGATION PLAN
CONSTRUCTION IN A FLOODWAY PERMIT**

**158 Broomsage Road
Lawrence County, Bedford, Indiana
Unnamed Tributary (Bailey's Branch Creek) to Pleasant Run**

The following habitat mitigation plan is proposed to compensate for temporary impacts to fish, wildlife and botanical resources caused by remediation activities involving approximately 750 feet of work within property at 158 Broomsage Road in and along the channel of Bailey's Branch Creek of Pleasant Run. The 158 Broomsage Road property is located south of the intersection of Broomsage Road and Bailey's Branch Creek. Specifically, this property is located in Sections 11 & 12, Township 5 North, Range 1 West, Lawrence County, Indiana.

This mitigation plan specifically addresses impacts to the forested floodway habitat within the work area. Reconstruction of the stream channel within Parcel 22 is addressed in the *Parcel 22 Removal Action Work Plan* dated July 18, 2003, as approved by the U.S. Environmental Protection Agency. This plan specifies the reconstruction and stabilization of the creek banks and the placement of rock in the creek bottom after removal activities are completed.

1. PROPOSED IMPACTS

Temporary impacts to wildlife habitat will occur when trees and shrubs are cleared within the project area to facilitate the removal of contaminated soils. For the purposes of this mitigation plan, impacted wildlife habitat will be considered those wooded areas with a closed canopy that are not maintained in a mowed, grassy condition by the property owner(s). Based upon aerial imagery in conjunction with ground truthing, approximately 0.74 acres of wooded wildlife habitat will be impacted within the property as a result of remediation efforts (Figure 1).

2. GOALS

The overall goal of the mitigation is to minimize the temporary nature of the impacts to wooded wildlife habitat by planting trees and shrubs rather than relying solely on natural recruitment.

3. RIPARIAN HABITAT RESTORATION

Trees and shrubs will be re-planted as shown on Figure 2 on the east side of the creek. Planting on the east side of the creek only will provide the landowner flexibility in maintaining the area around the residence as lawn. Alternatively, should the landowner wish, a portion of the tree plantings could occur on the west side of the creek in cleared areas. The total tree planting area for the construction in the floodway permit will be 0.74 acres.

Restoration of Wooded Riparian Habitat

A mixture of bare root tree and shrub seedlings will be planted at a 10' by 10' spacing (approximately 435 per acre). Specifically, based upon 0.74 acres of impacts to wooded wildlife habitat, approximately 322 bare root tree and shrub seedlings will be planted within Parcel 22. The first row will be planted at least 4 feet from the top of the new channel bank. All replanting will occur within the approximate 0.80-acre replanting area (see Figure 2). Species will be chosen from the table below with no single species comprising more than 20% of the total number planted. Shrubs may comprise no more than 33% of the total. There will be at least three species of shrubs chosen and 5 species of trees of which 2 must be oaks.

TREES

<u>Botanical Name</u>	<u>Common Name</u>
<i>Quercus palustris</i>	Pin Oak
<i>Quercus shumardii</i>	Shumard's Oak
<i>Quercus macrocarpa</i>	Burr Oak
<i>Nyssa sylvatica</i>	Black Gum
<i>Quercus imbricaria</i>	Shingle Oak
<i>Prunus serotina</i>	Black Cherry
<i>Carya laciniosa</i>	Shellbark Hickory
<i>Carya cordiformis</i>	Bitternut Hickory
<i>Juglans nigra</i>	Black Walnut
<i>Acer rubrum</i>	Red Maple

SHRUBS

<i>Amorpha fruticosa</i>	Indigobush
<i>Cornus racemosa</i>	Gray Dogwood
<i>Viburnum prunifolium</i>	Blackhaw
<i>Lindera benzoin</i>	Spicebush
<i>Sambucus canadensis</i>	Elderberry

Plantings will be performed between April 15 and June 15 the spring following completion of site cleanup.

All planted areas will be planted with a restoration cover crop appropriate for a wooded riparian area:

WOODED UNDERSTORY SEED MIX

Permanent Grasses/Sedges

<i>Calamagrostis Canadensis</i>	Blue joint grass	2.0 ounces/acre
<i>Carex crinita</i>	Fringed sedge	1.5 ounces/acre
<i>Carex hystericina</i>	Porcupine sedge	4.0 ounces/acre
<i>Carex lupulina</i>	Common hop sedge	6.0 ounces/acre
<i>Carex vulpinoidea</i>	Brown fox sedge	2.75 ounces/acre
<i>Echinochloa crusgalli</i>	Barnyard grass	12.0 ounces/acre
<i>Elymus canadensis</i>	Canada wild rye	8.0 ounces/acre
<i>Elymus virginicus</i>	Virginia wild rye	8.0 ounces/acre
<i>Glyceria striata</i>	Fowl manna grass	2.0 ounces/acre
<i>Leersia oryzoides</i>	Rice cut grass	4.0 ounces/acre
<i>Panicum virgatum</i>	Switch grass	4.0 ounces/acre
<i>Scirpus atrovirens</i>	Dark green rush	3.0 ounces/acre
<i>Spartina pectinata</i>	Prairie cord grass	2.5 ounces/acre

Temporary Cover:

<i>Agrostis alba</i>	Redtop	2 pounds/acre
<i>Avena sativa</i>	Seed oats	32 pounds/acre
<i>Lolium multiflorum</i>	Annual rye	6.25 pounds/acre
<i>Phleum pratense</i>	Timothy	3 pounds/acre

Forbs:

<i>Actinomeris alternifolia</i>	Wingstem	1 ounce/acre
<i>Alisma subcordatum</i>	Common water plantain	3 ounces/acre
<i>Aster umbellatus</i>	Flat-top aster	1.25 ounces/acre
<i>Bidens cernua</i>	Nodding bur marigold	3.0 ounces/acre
<i>Chelone glabra</i>	Turtlehead	1.25 ounces/acre
<i>Helenium autumnale</i>	Sneezeweed	1.5 ounces/acre
<i>Lobelia siphilitica</i>	Great blue lobelia	1.5 ounces/acre
<i>Mimulus ringens</i>	Monkey flower	1.75 ounces/acre
<i>Rudbeckia laciniata</i>	Wild golden glow	0.5 ounce/acre

Success Criteria

The mitigation habitat will be monitored for a period of three years. At the end of the three-year monitoring period, the restored tree and shrub planting area will have a density of at least 305 trees/shrubs per acre (equivalent to 70% survival of planted stock and based on the 435 trees per acre planting criteria). Specifically, a combination of at

least 225 trees/shrubs will be present in the impacted wooded wildlife habitat replanting area (based on 0.74 acres impacts).

Conservation/Deed Restriction

Due to the temporary nature of the impacts of this project, no deed restriction or conservation easement of the restoration areas is proposed. General Motors does not own the property at 158 Broomsage Road.

Schedule

Site clearing and remediation efforts are expected to begin in 2003 and be completed by 2004. Replanting is expected to occur in 2005 or the first spring following site cleanup.

Reporting

A report will be submitted to the Environmental Biologist at the Bloomington office at 553 East Miller Drive, Bloomington, IN 47401 by December 31 of each year to monitor the initiation, progress, and success of the restoration site. The report will include appropriate photographs of the tree and shrub plantings. A narrative will describe the activity accomplished to date, acres planted, number of trees planted, and the progress of other requirements of the mitigation plan including survival of the vegetative plantings. Reports will be submitted each year, even if the work has not been initiated on the site, and continue to be submitted for a maximum of three years after restoration, or until the restoration site is complete and is determined to be successful. If after three years the site is not determined to be successful a contingency plan will be submitted to correct the identified problems.

APPENDIX G

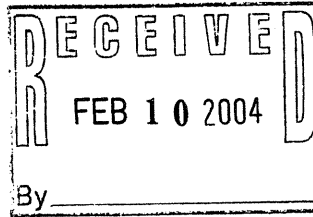
IDNR LETTER DATED FEBRUARY 3, 2004



Indiana Department of Natural Resources

013968-CC
Gm Bedford
Joseph E. Kernan, Governor
John Goss, Director

Division of Water
402 W. Washington Street
Room W264
Indianapolis, IN 46204-2641
PH: (317) 232-4160
Toll Free: 1-877-WATER55
FAX: (317) 233-4579



February 3, 2004

Ashley Valentine, PE
Conestoga-Rovers Associates
9033 Meridian Way
West Chester, OH 45069-6538

Re: CTS # 1436
Lawrence - Bartlettsville/Oolitic
Unnamed Tributary Pleasant Run Creek
Remediation Project
Basin # 21

Dear Mr Valentine:

Reference is made to your letter dated January 6, 2004, concerning a remediation project. The project site is located along an Unnamed Tributary Pleasant Run Creek in Lawrence County near Bedford. A site location map is enclosed.

The Department of Natural Resources does not require a permit to construct in a floodway for any construction, excavation, or filling directly related to the clean-up and remediation of a designated Superfund site. Based on the plans and information received, the Department has determined that the proposed project is essential to the restoration of the Superfund site and therefore, approval by the Department is not required.

You should not construe this letter to be a building permit or a waiver of any local building and zoning ordinances. Additionally, this letter does not relieve you of the responsibility of obtaining permits, approvals, easements, etc., as required by other, federal, state and local agencies.

If we can be of further assistance, please contact Becky Davis, Environmental Scientist, in our Technical Services Section, Division of Water, at (317) 232-4160 or toll free at (877) 928-3755.

Sincerely,

James J. Hebenstreit, PE
Assistant Director
Division of Water

JJH/BSO
Enclosure: Site Location Map

APPENDIX H

HABITAT RESTORATION AND ENHANCEMENT MATERIALS TABLES

TABLE H.1
LAWN SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Perennial Rye Grass	<i>Lolium perenne</i>	pounds/acre	45 - 60
Kentucky Bluegrass	<i>Poa pratensis</i>	pounds/acre	70 -90

TABLE H.2
RIPARIAN FOREST SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses and Sedges			
Blue Joint Grass	<i>Calamagrostis canadensis</i>	ounces/acre	2.0
Fringed Sedge	<i>Carex crinita</i>	ounces/acre	1.5
Porcupine Sedge	<i>Carex hystericina</i>	ounces/acre	4.0
Common Hop Sedge	<i>Carex lupulina</i>	ounces/acre	6.0
Brown Fox Sedge	<i>Carex vulpinoidea</i>	ounces/acre	2.75
Barnyard Grass	<i>Echinochloa crusgalli</i>	ounces/acre	12.0
Canada Wild Rye	<i>Elymus canadensis</i>	ounces/acre	8.0
Virginia Wild Rye	<i>Elymus virginicus</i>	ounces/acre	8.0
Fowl Manna Grass	<i>Glyceria striata</i>	ounces/acre	2.0
Rice Cutgrass	<i>Leersia oryzoides</i>	ounces/acre	4.0
Swithgrass	<i>Panicum virgatum</i>	ounces/acre	4.0
Dark Green Bulrush	<i>Scirpus atrovirens</i>	ounces/acre	3.0
Prairie Cord-Grass	<i>Spartina pectinata</i>	ounces/acre	2.5
Temporary Cover			
Redtop	<i>Agrostis alba</i>	pounds/acre	2.0
Seed Oats	<i>Avena sativa</i>	pounds/acre	32
Annual Rye	<i>Lolium multiflorum</i>	pounds/acre	6.25
Timothy	<i>Phleum pratense</i>	pounds/acre	3.0
Forbs			
Wingstem	<i>Actinomeris alternifolia</i>	ounce/acre	1.0
Common Water Plantain	<i>Alisma subcordatum</i>	ounce/acre	3.0
Flat-Top Aster	<i>Aster umbellatus</i>	ounce/acre	1.25
Nodding Bur Marigold	<i>Bidens cernua</i>	ounce/acre	3.0
Turtlehead	<i>Chelone glabra</i>	ounce/acre	1.25
Sneezeweed	<i>Helenium</i>	ounce/acre	1.5
Great Blue Lobelia	<i>Lobelia siphilitica</i>	ounce/acre	1.5
Monkey Flower	<i>Mimulus ringens</i>	ounce/acre	1.75
Wild Golden Glow	<i>Rudbeckia laciniata</i>	ounce/acre	0.5

TABLE H.3
SLOPE FOREST SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses and Sedges			
Big Bluestem Grass	Andropogon gerardii	ounces/acre	20
Little Bluestem Grass	Andropogon scoparius	ounces/acre	32
Side-Oats Gramma	Bouteloua curtipendula	ounces/acre	3
Canada Wild Rye	Elymus Canadensis	ounces/acre	5
Switch Grass	Panicum virgatum	ounces/acre	12
Indian Grass	Sorghastrum nutans	ounces/acre	24
Temporary Cover			
Redtop	Agrostis alba	pounds/acre	16
Seed Oats	Avena sativa	pounds/acre	512
Annual Rye	Lolium multiflorum	pounds/acre	160
Timothy	Phleum pratense	pounds/acre	64

TABLE H.4
GRASS/WILDFLOWER SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses			
Big Bluestem Grass	<i>Andropogon gerardii</i>	ounces/acre	66
Blue Joint Grass	<i>Calamagrostis canadensis</i>	ounces/acre	4
Canada Wild Rye	<i>Elymus canadensis</i>	ounces/acre	16
Switch Grass	<i>Panicum virgatum</i>	ounces/acre	2
Indian Grass	<i>Sorghastrum nutans</i>	ounces/acre	2
Prairie Cord Grass	<i>Spartina pectinata</i>	ounces/acre	6
Temporary Cover			
Redtop	<i>Agrostis alba</i>	ounces/acre	8
Seed Oats	<i>Avena sativa</i>	ounces/acre	360
Annual Rye	<i>Lolium multiflorum</i>	ounces/acre	100
Timothy	<i>Phleum pratense</i>	ounces/acre	3
Forbs			
Heath Aster	<i>Aster ericoides</i>	ounces/acre	2.00
New England Aster	<i>Aster nova-angliae</i>	ounces/acre	1.25
White Wild Indigo	<i>Baptisia leucantha</i>	ounces/acre	1.50
Partridge Pea	<i>Cassia fasciculata</i>	ounces/acre	3.50
Tall Coreopsis	<i>Coreopsis tripteris</i>	ounces/acre	1.25
Illinois Tick Trefoil	<i>Desmodium illinoense</i>	ounces/acre	1.00
Rattlesnake Master	<i>Eryngium yuccifolium</i>	ounces/acre	3.00
Bottle Gentian	<i>Gentiana andrewsii</i>	ounces/acre	1.00
Sneezeweed	<i>Helenium autumnale</i>	ounces/acre	1.25
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>	ounces/acre	2.00
Round-Headed Bush Clover	<i>Lespedeza capitata</i>	ounces/acre	3.00
Marsh Blazing Star	<i>Liatris spicata</i>	ounces/acre	4.00
Prairie Bergamot	<i>Monarda fistulosa</i>	ounces/acre	0.75
Wild Quinine	<i>Parthenium integrifolium</i>	ounces/acre	2.50
Obedient Plant	<i>Physotegia virginiana</i>	ounces/acre	1.00
Common Mountain Mint	<i>Pycnanthemum virginianum</i>	ounces/acre	0.50
Yellow Coneflower	<i>Ratibida pinnata</i>	ounces/acre	3.50
Black-Eyed Susan	<i>Rudbeckia hirta</i>	ounces/acre	1.50
Wild Golden Glow	<i>Rudbeckia laciniata</i>	ounces/acre	2.00
Sweet Black-Eyed Susan	<i>Rudbeckia subtomentosa</i>	ounces/acre	1.25
Rosin Weed	<i>Silphium integrifolium</i>	ounces/acre	2.00
Compass Plant	<i>Silphium laciniatum</i>	ounces/acre	3.00
Cup Plant	<i>Silphium perfoliatum</i>	ounces/acre	3.00
Prairie Dock	<i>Silphium terebinthinaceum</i>	ounces/acre	2.00
Early Goldenrod	<i>Solidago juncea</i>	ounces/acre	2.00
Stiff Goldenrod	<i>Solidago rigida</i>	ounces/acre	2.00
Rough Goldenrod	<i>Solidago rugosa</i>	ounces/acre	2.50
Common Spiderwort	<i>Tradescantia ohiensis</i>	ounces/acre	1.25
Hairy Tall Ironweed	<i>Veronia altissima taeniotricha</i>	ounces/acre	3.00
Culver's Root	<i>Veronicastrum virginicum</i>	ounces/acre	1.00
Golden Alexanders	<i>Zizia aurea</i>	ounces/acre	0.50

TABLE H.5
GRASS/FORB BENCH SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses/Sedges/Rushes			
Brown Fox Sedge	Carex vulpinoidea	ounces/acre	8
Barnyard Grass	Echinochloa crusgalli	ounces/acre	16
Blunt Spike Rush	Eleocharis obtusa	ounces/acre	2
Fowl Manna Grass	Glyceria striata	ounces/acre	4
Common Rush	Juncus effusus	ounces/acre	4
Torrey's Rush	Juncus torreyi	ounces/acre	3
Rice Cut Grass	Leersia oryzoides	ounces/acre	2
Great Bulrush	Scirpus validus	ounces/acre	12
Temporary Cover			
Redtop	Agrostis alba	pounds/acre	16
Seed Oats	Avena sativa	pounds/acre	360
Annual Rye	Lolium multiflorum	pounds/acre	100
Forbs			
Wingstem	Actinomeris alternifolia	ounces/acre	2
Common Water Plantain	Alisma subcordatum	ounces/acre	3.25
Swamp Milkweed	Asclepius incarnata	ounces/acre	2.5
Beggarstick	Bidens sp.	ounces/acre	2
Buttonbush	Cephalanthus occidentalis	ounces/acre	4
Rosemallow	Hibiscus sp.	ounces/acre	3.5
Monkey Flower	Mimulus ringens	ounces/acre	3
Ditch Stonecrop	Penthorum sedoites	ounces/acre	2.5
Pinkweed	Polygonum pennsylvanicum	ounces/acre	4
Common Arrowhead	Sagittaria latifolia	ounces/acre	8

TABLE H.6
EMERGENT WETLAND SEED MIX

Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses			
Barnyard Grass	<i>Echinochloa crusgalli</i>	ounces/acre	12
Blunt Spike Rush	<i>Eleocharis obtusa</i>	ounces/acre	3
Common Rush	<i>Juncus effusus</i>	ounces/acre	3.030
Rice Cutgrass	<i>Leersia oryzoides</i>	ounces/acre	4
Great bulrush	<i>Scirpus validus creber</i>	ounces/acre	28
Temporary Cover			
Redtop	<i>Agrostis alba</i>	pounds/acre	8
Seed Oats	<i>Avena sativa</i>	pounds/acre	360
Annual Rye	<i>Lolium multiflorum</i>	pounds/acre	100
Timothy	<i>Phleum pratense</i>	pounds/acre	3
Forbs			
Sweet Flag	<i>Acorus calamus</i>	ounce/acre	8.50
Common Water Plantain	<i>Alisma subcordatum</i>	ounce/acre	8
Blue Flag, Iris	<i>Iris virginica shrevei</i>	ounce/acre	4
Cardinal Flower	<i>Lobelia cardinalis</i>	ounce/acre	0.75
Great Blue Lobelia	<i>Lobelia siphilitica</i>	ounce/acre	1
Monkey Flower	<i>Mimulus ringens</i>	ounce/acre	2
Arrow arum	<i>Peltandra virginica</i>	ounce/acre	16
Smartweed	<i>Polygonum pennsylvanicum</i>	onces/acre	6
Pickrel Weed	<i>Pontederia cordata</i>	ounce/acre	8
Common Arrowhead	<i>Sagittaria latifolia</i>	ounces/acre	8
Common Burreed	<i>Sparganium eurycarpum</i>	ounces/acre	10

TABLE H.7**TREE SPECIES FOR PRIVATELY OWNED PARCELS**

Common Name	Scientific Name
Box Elder	<i>Acer negundo</i>
Red Maple	<i>Acer rubrum</i>
Silver Maple	<i>Acer saccharinum</i>
Shellbark Hickory	<i>Carya lacinosa</i>
Bitternut Hickory	<i>Carya cordiformis</i>
Black Walnut	<i>Juglans nigra</i>
Sweet Gum	<i>Nyssa sylvatica</i>
Black Gum	<i>Liquidambar styraciflua</i>
American Sycamore	<i>Platanus occidentalis</i>
Black Cherry	<i>Prunus serotina</i>
Shingle Oak	<i>Quercus imbricaria</i>
Shumard Oak	<i>Quercus shumardii</i>
Burr Oak	<i>Quercus macrocarpa</i>
Pin Oak	<i>Quercus palustris</i>

TABLE H.8
TREE SPECIES FOR GM PARCELS

Common Name	Scientific Name
Burr Oak	<i>Quercus macrocarpa</i>
Pin Oak	<i>Quercus palustris</i>
Shingle Oak	<i>Quercus imbricaria</i>
Shumard Oak	<i>Quercus shumardii</i>
Black Gum	<i>Liquidambar styraciflua</i>
Black Cherry	<i>Prunus serotina</i>
Bitternut Hickory	<i>Carya cordiformis</i>
Shellbark Hickory	<i>Carya lacinosa</i>
Black Walnut	<i>Juglans nigra</i>
Red Maple	<i>Acer rubrum</i>

TABLE H.9

SHRUB SPECIES FOR PRIVATELY OWNED AND GM PARCELS

Common Name	Scientific Name
Indigobush	<i>Amorpha fruticosa</i>
Gray Dogwood	<i>Cornum racemosa</i>
Blackhaw	<i>Virburnum prunifolium</i>
Spicebush	<i>Lindera benzoin</i>
Elderberry	<i>Sambucus canadensis</i>

APPENDIX I

RULE 5: NOTICE OF SUFFICIENCY DATED MARCH 17, 2003



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*Frank O'Bannon
GovernorLori F. Kaplan
Commissioner

March 17, 2003

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

Dear Storm Water General Permit Applicant:

Re: **Notice of Sufficiency**
Upstream Parcel Interim Measure
Lawrence County

The Notice of Intent (NOI) letter submitted to the Indiana Department of Environmental Management (IDEM) for the above-mentioned project is sufficient to comply with the NOI letter requirements of 327 IAC 15-5 (Rule 5). Enclosed please find a copy of Rule 5, the NPDES General Permit for Storm Water Runoff Associated with Construction Activity. **You must comply with all of the requirements of this rule. In accordance with 327 IAC 15-5-10, you are required to implement your Soil Erosion Control Plan, maintain the erosion control structures until your project is complete, and amend your NOI as dates or other facts are altered. All Notices of Intent submitted for Rule 5 NPDES General Permit coverage are automatically limited to a maximum term length of 5 years. IAW with 40 Code of Federal Regulations 122.46(a), regardless of the estimated end date provided on the Notice of Intent form/letter. All projects requiring coverage beyond the 5 years must reapply for a new permit 90 days prior the expiration date.**

The name of this project is Upstream Parcel Interim Measure and is located in Lawrence County. This name and county name should be included on any type of correspondence that is submitted to IDEM pertaining to this project.

___ If marked with an X, please review the enclosed sheet titled "Developer's Continuing Responsibility" and submit an amended timetable which includes home or building construction, installation of roads and utilities, and revegetation of cleared areas after all construction is complete.

NOTE: This Notice of Sufficiency does not constitute approval of your Erosion/Sediment Control Plan (E/SCP), nor does it supersede the requirements of your local Soil & Water Conservation District Office (SWCD) or the Indiana Department of Natural Resources, Division of Soil Conservation (DNR). Questions regarding the development or implementation of the E/SCP may be directed to the local county SWCD or if you are unable to reach the SWCD, please contact DNR at 317/233-3870. Any other questions regarding Rule 5 requirements may be directed to the IDEM Rule 5 Coordinator at 317/233-1864 or 800/451-6027 ext.31864. For info and forms visit:
www.state.in.us/idem/owm/facmang/storm/stormindex.html

Sincerely,

Reggie Baker, Jr., Chief
Urban Wet Weather Section
Office of Water Quality

Enclosure

08/04/2003

09:05

IDEM OWM → 815139428585

NO. 064 001



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*Frank O'Bannon
GovernorLori F. Kaplan
Commissioner

July 14, 2003

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 481-8027
www.in.gov/idem

Dear Storm Water General Permit Applicant:

Re Notice of Sufficiency
GM Upstream Parcel Interim Measure phase 2
Lawrence County

The Notice of Intent (NOI) letter submitted to the Indiana Department of Environmental Management (IDEM) for the above-mentioned project is sufficient to comply with the NOI letter requirements of 327 IAC 15-5 (Rule 5). Enclosed please find a copy of Rule 5, the NPDES General Permit for Storm Water Runoff Associated with Construction Activity. You must comply with all of the requirements of this rule. In accordance with 327 IAC 15-5-10, you are required to implement your Soil Erosion Control Plan, maintain the erosion control structures until your project is complete, and amend your NOI as dates or other facts are altered. All Notices of Intent submitted for Rule 5 NPDES General Permit coverage are automatically limited to a maximum term length of 5 years. IAW with 40 Code of Federal Regulations 122.46(a), regardless of the estimated end date provided on the Notice of Intent form/letter. All projects requiring coverage beyond the 5 years must reapply for a new permit 90 days prior the expiration date.

The name of this project is GM Upstream Parcel Interim Measure phase 2 and is located in Lawrence County. This name and county name should be included on any type of correspondence that is submitted to IDEM pertaining to this project.

___ If marked with an X, please review the enclosed sheet titled "Developer's Continuing Responsibility" and submit an amended timetable which includes home or building construction, installation of roads and utilities, and revegetation of cleared areas after all construction is complete.

NOTE: This Notice of Sufficiency does not constitute approval of your Erosion/Sediment Control Plan (E/SCP), nor does it supersede the requirements of your local Soil & Water Conservation District Office (SWCD) or the Indiana Department of Natural Resources, Division of Soil Conservation (DNR). Questions regarding the development or implementation of the E/SCP may be directed to the local county SWCD or if you are unable to reach the SWCD, please contact DNR at 317/233-3870. Any other questions regarding Rule 5 requirements may be directed to the IDEM Rule 5 Coordinator at 317/233-1864 or 800/451-6027 ext.31864. For info and forms visit: www.state.in.us/idem/owm/facmang/storm/stormindex.html

Sincerely,

Reggie Baker, Jr., Chief
Urban Wet Weather Section
Office of Water Quality

Enclosure

APPENDIX J

RULE 5: EXTENSION REQUEST DATED SEPTEMBER 17, 2003



Indiana Department of Environmental Management
Notice of Termination / Extension Request
 Storm Water Runoff Associated with Construction Activity
 NPDES General Permit Rule 327 IAC 15-5 (Rule 5)

In accordance with 327 IAC 15-5-11: "The operator shall notify the commissioner, in writing, upon completion of the construction activity."

Project Name Upstream Parcel Interim Measure
 County Lawrence
 Operator's Name Cheryl Hiatt
 Company General Motors Corporation
 Date 9/17/03

NOTICE OF TERMINATION

I, _____ (Owner/Developer's Printed Name), do hereby certify that the land disturbing project listed above is complete. This certification will serve as a Notice of Termination of Construction, as required by 327 IAC 15-5-11-11. No future land disturbing activities will take place on this project. If the project is a residential, commercial, or industrial subdivision, all homes/buildings are constructed and the yards, streets, driveways, etc. have been stabilized or seeded/mulched. For all of my future construction projects disturbing more than five (5) acres of total land area, a Notice of Intent will be submitted prior to earth disturbing activity, in compliance with 327 IAC 15-5 (Rule 5).

This project was sold; I am no longer the owner or developer of this project. The new owner's name and address are as follows: _____

(This does not apply to single lots; this covers the sale of an entire project.)

REQUEST FOR RULE 5 PERMIT COVERAGE EXTENSION:

I, CHERYL HIATT (ON BEHALF OF GENERAL MOTORS CORP) (Operator's Name), do hereby request an extension of coverage under the General Permit for Storm Water Runoff Associated with Construction Activity (Rule 5) for the above-listed project. The projected end date for completion of land disturbing activity is as follows: 9/2008 (Month/Year).

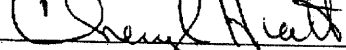
Please Note: A "larger common plan of development or sale" is a contiguous area where multiple, separate, and distinct construction activities may be taking place at different times on different schedules under one plan. For example, if a developer buys a 20-acre lot and builds roads, installs pipes and runs electricity with the intention of constructing homes or other structures sometime in the near future, this would be considered a common plan of development or sale. When the land is parceled off or sold, and construction occurs on plots that are less than five acres by separate, independent builders, this activity would still be subject to the storm water permitting requirements.

(Continued on Reverse Side)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signatory requirements are defined in 327 IAC 15-4-3 (g)

Responsible Person's Printed Name CHERYL HEATT

Responsible Person's Signature  Date 9/24/03

ON BEHALF OF GENERAL MOTORS CORP.

Mail to: Indiana Department of Environmental Management
Office of Water Quality, Storm Water (Rule 5) Desk
100 North Senate Avenue, P.O. Box 6015
Indianapolis, IN 46206-6015



Indiana Department of Environmental Management
 Notice of Termination / Extension Request
 Storm Water Runoff Associated with Construction Activity
 NPDES General Permit Rule 327 IAC 15-5 (Rule 5)

In accordance with 327 IAC 15-5-11: "The operator shall notify the commissioner, in writing, upon completion of the construction activity."

Project Name Upstream Parcel Interim Measure - Phase 2

County Lawrence

Operator's Name Cheryl Hiatt

Company General Motors Corporation

Date 9/17/03

NOTICE OF TERMINATION

I, _____ (Owner/Developer's Printed Name), do hereby certify that the land disturbing project listed above is complete. This certification will serve as a Notice of Termination of Construction, as required by 327 IAC 15-5-11-11. No future land disturbing activities will take place on this project. If the project is a residential, commercial, or industrial subdivision, all homes/buildings are constructed and the yards, streets, driveways, etc. have been stabilized or seeded/mulched. For all of my future construction projects disturbing more than five (5) acres of total land area, a Notice of Intent will be submitted prior to earth disturbing activity, in compliance with 327 IAC 15-5 (Rule 5).

This project was sold; I am no longer the owner or developer of this project. The new owner's name and address are as follows: _____

(This does not apply to single lots; this covers the sale of an entire project.)

REQUEST FOR RULE 5 PERMIT COVERAGE EXTENSION:

I, CHERYL HIATT ON BEHALF OF GENERAL MOTORS CORP. Operator's Name), do hereby request an extension of coverage under the General Permit for Storm Water Runoff Associated with Construction Activity (Rule 5) for the above-listed project. The projected end date for completion of land disturbing activity is as follows: September 2008 (Month/Year).

Please Note: A "larger common plan of development or sale" is a contiguous area where multiple, separate, and distinct construction activities may be taking place at different times on different schedules under one plan. For example, if a developer buys a 20-acre lot and builds roads, installs pipes and runs electricity with the intention of constructing homes or other structures sometime in the near future, this would be considered a common plan of development or sale. When the land is parceled off or sold, and construction occurs on plots that are less than five acres by separate, independent builders, this activity would still be subject to the storm water permitting requirements.

(Continued on Reverse Side)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signatory requirements are defined in 327 IAC 15-4-3 (g)

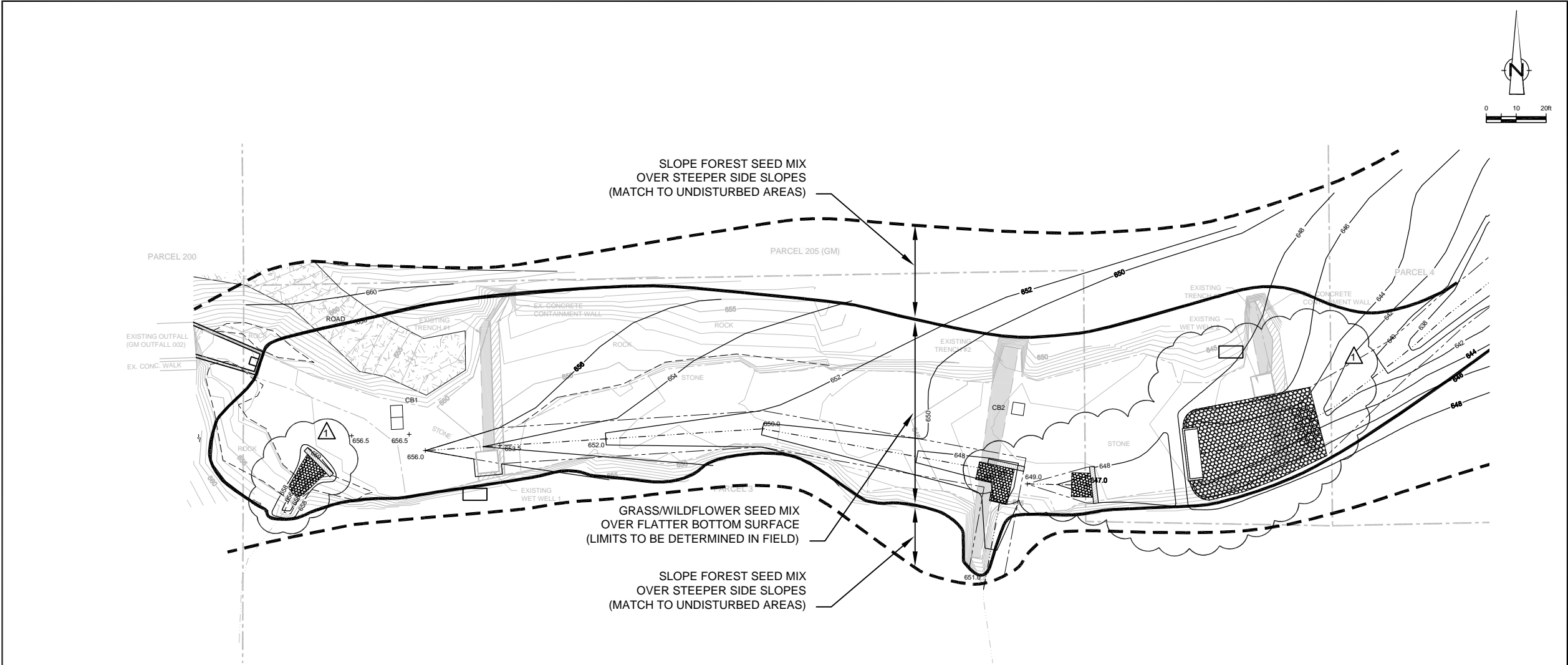
Responsible Person's Printed Name CHERYL HIATT

Responsible Person's Signature *Cheryl Hiatt* Date 9/24/03
ON BEHALF OF GENERAL MOTORS CORP

Mail to: Indiana Department of Environmental Management
Office of Water Quality, Storm Water (Rule 5) Desk
100 North Senate Avenue, P.O. Box 6015
Indianapolis, IN 46206-6015

APPENDIX K

PARCELS 3 AND 205 RESTORATION PLANS



Nº	Revision	Date	Initial
1	POSITION OF NEW OUTFALL STRUCTURE AND NEW DRAINAGE INLETS REVISED. PROPOSED CONTOURS REVISED IN AREAS SHOWN	AUG 20, 2004	AW

LEGEND	
	EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
	APPROXIMATE PARCEL BOUNDARY
	ROADS / UNPAVED AREAS
	APPROXIMATE SURFACE WATER LOCATION
	LIMIT OF EXISTING ROCK OUTCROP
	LIMIT OF DRAINAGE STONE PREGRADE (MAY 2004)
	EXISTING WET WELL STRUCTURE
	PROPOSED CONTOUR
	PROPOSED SWALE / CHANNEL
	PROPOSED CATCHBASIN

SCALE VERIFICATION

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



Approved

DRAWING STATUS

ISSUED FOR EPA/DEM REVIEW	JULY 29, 2004	CRH
ISSUED FOR CLIENT REVIEW	JULY 19, 2004	CRH
Status	Date	Initial

GM BEDFORD REMOVAL ACTION
SITE SOURCE CONTROL PLAN

ADDENDUM NO. 2

PARCEL 3 AND 205
GRADING PLAN



CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

BASE BY SEVENSON ENVIRONMENTAL SURVEY MAY 13, 2004

Project Manager: J.M.	Reviewed By: J.D.	Date: JULY 2004
Scale: 1" = 20'	Project Nº: 13968-00	Report Nº: 069
		Drawing Nº: figure K.1

15068-00/0600/201.MXD P&E ADD 18/09/04

GRASS/WILDFLOWER SEED MIX			
Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses			
Big Bluestem Grass	<i>Andropogon gerardii</i>	ounces/acre	66
Blue Joint Grass	<i>Calamagrostis canadensis</i>	ounces/acre	4
Canada Wild Rye	<i>Elymus canadensis</i>	ounces/acre	16
Switch Grass	<i>Panicum virgatum</i>	ounces/acre	2
Indian Grass	<i>Sorghastrum nutans</i>	ounces/acre	2
Prairie Cord Grass	<i>Spartina pectinata</i>	ounces/acre	6
Temporary Cover			
Redtop	<i>Agrostis alba</i>	ounces/acre	8
Seed Oats	<i>Avena sativa</i>	ounces/acre	360
Annual Rye	<i>Lolium multiflorum</i>	ounces/acre	100
Timothy	<i>Phleum pratense</i>	ounces/acre	3
Forbs			
Heath Aster	<i>Aster ericoides</i>	ounces/acre	2.00
New England Aster	<i>Aster nova-angliae</i>	ounces/acre	1.25
White Wild Indigo	<i>Baptisia leucantha</i>	ounces/acre	1.50
Partridge Pea	<i>Cassia fasciculata</i>	ounces/acre	3.50
Tall Coreopsis	<i>Coreopsis tripteris</i>	ounces/acre	1.25
Illinois Tick Trefoil	<i>Desmodium illinoense</i>	ounces/acre	1.00
Rattlesnake Master	<i>Eryngium yuccifolium</i>	ounces/acre	3.00
Bottle Gentian	<i>Gentiana andrewsii</i>	ounces/acre	1.00
Sneezeweed	<i>Helenium autumnale</i>	ounces/acre	1.25
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>	ounces/acre	2.00
Round-Headed Bush Clover	<i>Lespedeza capitata</i>	ounces/acre	3.00
Marsh Blazing Star	<i>Liatris spicata</i>	ounces/acre	4.00
Prairie Bergamot	<i>Monarda fistulosa</i>	ounces/acre	0.75
Wild Quinine	<i>Parthenium integrifolium</i>	ounces/acre	2.50
Obedient Plant	<i>Physotegia virginiana</i>	ounces/acre	1.00
Common Mountain Mint	<i>Pycnanthemum virginianum</i>	ounces/acre	0.50
Yellow Coneflower	<i>Ratibida pinnata</i>	ounces/acre	3.50
Black-Eyed Susan	<i>Rudbeckia hirta</i>	ounces/acre	1.50
Wild Golden Glow	<i>Rudbeckia laciniata</i>	ounces/acre	2.00
Sweet Black-Eyed Susan	<i>Rudbeckia subtomentosa</i>	ounces/acre	1.25
Rosin Weed	<i>Silphium integrifolium</i>	ounces/acre	2.00
Compass Plant	<i>Silphium laciniatum</i>	ounces/acre	3.00
Cup Plant	<i>Silphium perfoliatum</i>	ounces/acre	3.00
Prairie Dock	<i>Silphium terebinthinaceum</i>	ounces/acre	2.00
Early Goldenrod	<i>Solidago juncea</i>	ounces/acre	2.00
Stiff Goldenrod	<i>Solidago rigida</i>	ounces/acre	2.00
Rough Goldenrod	<i>Solidago rugosa</i>	ounces/acre	2.50
Common Spiderwort	<i>Tradescantia ohiensis</i>	ounces/acre	1.25
Hairy Tall Ironweed	<i>Veronia altissima taeniotricha</i>	ounces/acre	3.00
Culver's Root	<i>Veronicastrum virginicum</i>	ounces/acre	1.00
Golden Alexanders	<i>Zizia aurea</i>	ounces/acre	0.50

SLOPE FOREST SEED MIX			
Common Name	Scientific Name	Application Rate	
		Units	Rate
Permanent Grasses and Sedges			
Big Bluestem Grass	Andropogon gerardii	ounces/acre	20
Little Bluestem Grass	Andropogon scoparius	ounces/acre	32
Side-Oats Gramma	Bouteloua curtipendula	ounces/acre	3
Canada Wild Rye	Elymus Canadensis	ounces/acre	5
Switch Grass	Panicum virgatum	ounces/acre	12
Indian Grass	Sorghastrum nutans	ounces/acre	24
Temporary Cover			
Redtop	Agrostis alba	pounds/acre	16
Seed Oats	Avena sativa	pounds/acre	512
Annual Rye	Lolium multiflorum	pounds/acre	160
Timothy	Phleum pratense	pounds/acre	64