



# GM POWERTRAIN BEDFORD FACILITY BEDFORD, INDIANA

RCRA CORRECTIVE ACTION PROGRAM/REMOVAL ACTION

G M P O W E R T R A I N B E D F O R D P L A N T B E D F O R D , I N D I A N A

## Welcome to the 2<sup>ND</sup> Quarter 2005 Public Information Session

June 2, 2005

- History of the GM Bedford Powertrain Facility
- Overview of the project



- Facility located on 152.5 acres and is approximately 1,000,000 square feet
- Approximately 1,000 employees



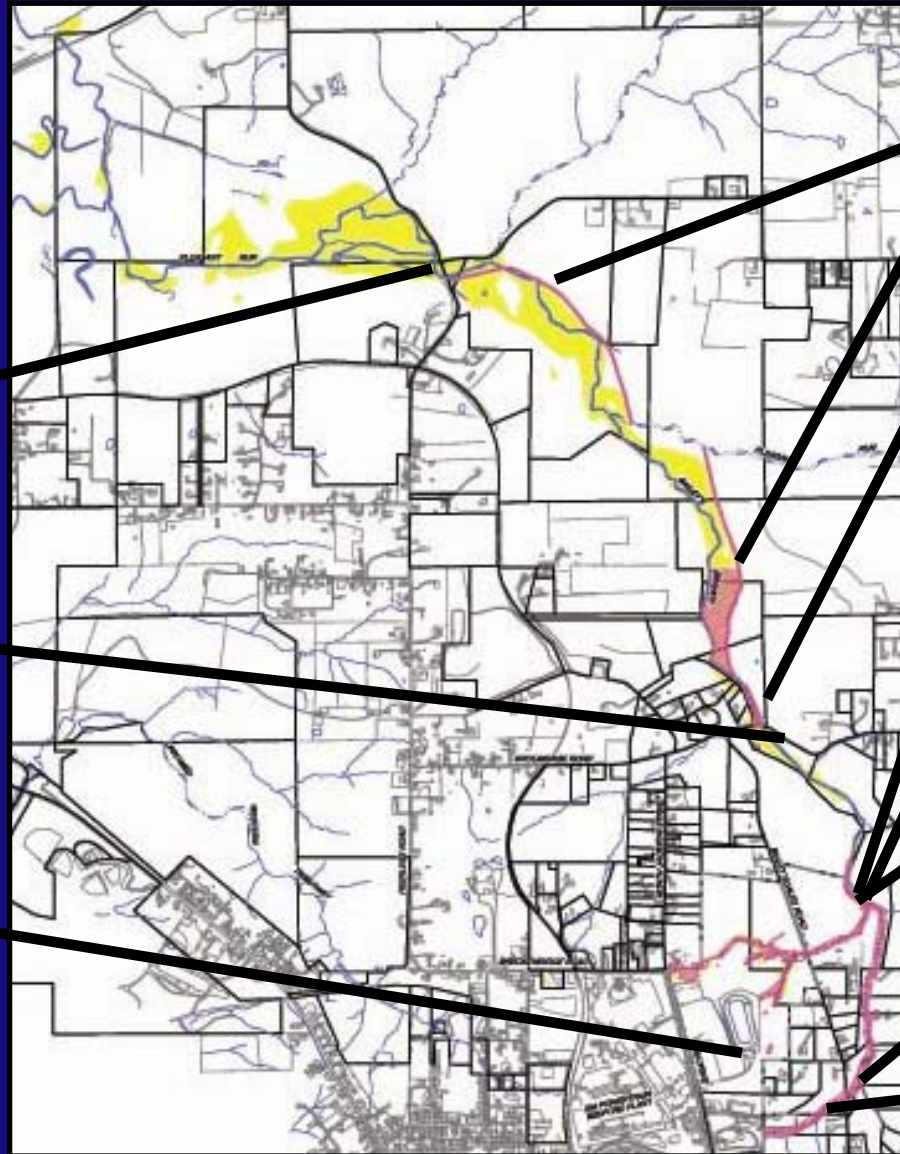
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Removal Action (RA)
  - Bailey's Branch and Pleasant Run PCB cleanup of creek sediments and floodplain soil.
  - RA Elements:
    - Control of impacted springs and seeps along creeks;
    - Removal of floodplain soil to 1.8 ppm and sediment to 1 ppm in the creek



# REMOVAL ACTION STATUS

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DIVERSION CHANNEL

EXCAVATION PARCELS 23, 25, AND 76

EXCAVATION PARCELS 15 AND 216

PARCEL 15 RESTORATION

ROCK BREAKING

RESTORATION EAST OF BAILEY SCALES ROAD

RESTORATION WEST OF BAILEY SCALES ROAD

NEW PEERLESS ROAD BRIDGE

ROAD WORK

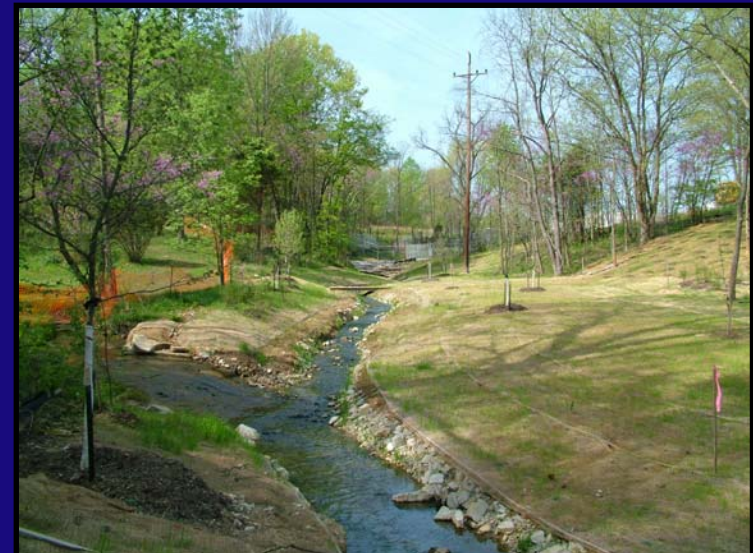
NEW REMEDIATION WATER TREATMENT FACILITY



# RESTORATION – WEST OF BAILEY SCALES ROAD

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# RESTORATION – EAST OF BAILEY SCALES ROAD

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# RESTORATION – EAST OF BAILEY SCALES ROAD

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# RESTORATION – EAST OF BAILEY SCALES ROAD

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Waterfall/  
Pool and  
Riffle  
Sequences



Fascine  
Bundles



Vernal Ponds



Rock  
Weir



Rootwad

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# ROCK BREAKING

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# PARCEL 15 RESTORATION

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# EXCAVATION – PARCELS 15 & 216

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# DOWNSTREAM PARCELS EXCAVATION

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# REMOVAL ACTION ACTIVITIES

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# DIVERSION CHANNEL

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# NEW PEERLESS ROAD BRIDGE

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# ROAD WORK

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# NEW REMEDIATION WATER TREATMENT FACILITY

RCRA CORRECTIVE ACTION PROGRAM/REMOVAL ACTION

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- RCRA Corrective Action
  - Conducted under a performance-based agreement with the U.S. EPA Region V. The agreement was signed on March 20, 2001 and amended on October 1, 2002.
  - Continuing to perform soil and groundwater investigation
  - Continuing Ecological Risk Assessment
  - East Plant Area Interim Measure
    - Proposed conceptual remedy



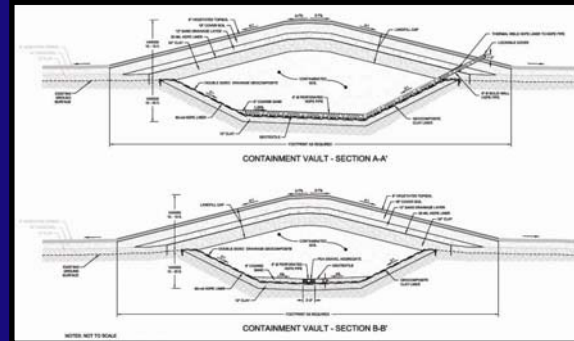
# STATUS OF RCRA CORRECTIVE ACTION

RCRA CORRECTIVE ACTION PROGRAM/REMOVAL ACTION

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## East Plant Area Interim Measure

- Cover System
- Re-use of low PCB Removal Action soil
- Select soil removal
- Landfill cell
- Perimeter Groundwater Collection System
- Long-term maintenance and monitoring





# STATUS OF RCRA CORRECTIVE ACTION

RCRA CORRECTIVE ACTION PROGRAM/REMOVAL ACTION

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## UPCOMING ACTIVITIES 2005

- Ongoing monitoring for the on-Site dye trace tests in East Plant Area
- Ongoing investigation in the East Plant Area, in support of proposed IM
- Design and Implement Dye Trace testing at AOI 9
- Excavation around storm grate on plant property near creek
- Begin implementation of East Plant Area proposed IM





# COMMUNITY RELATIONS ACTIVITIES

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- Community meetings are held on a quarterly basis
  - The last meetings were on March 30 & 31, 2005.
  - Continuing to experiment with format.
  - Presentations have been and will continue to be posted to the website.
  - The next community meetings are likely to be in September 2005.
- The next project update meeting with the Community Liaison Panel is scheduled for June 3, 2005.



# COMMUNITY RELATIONS ACTIVITIES

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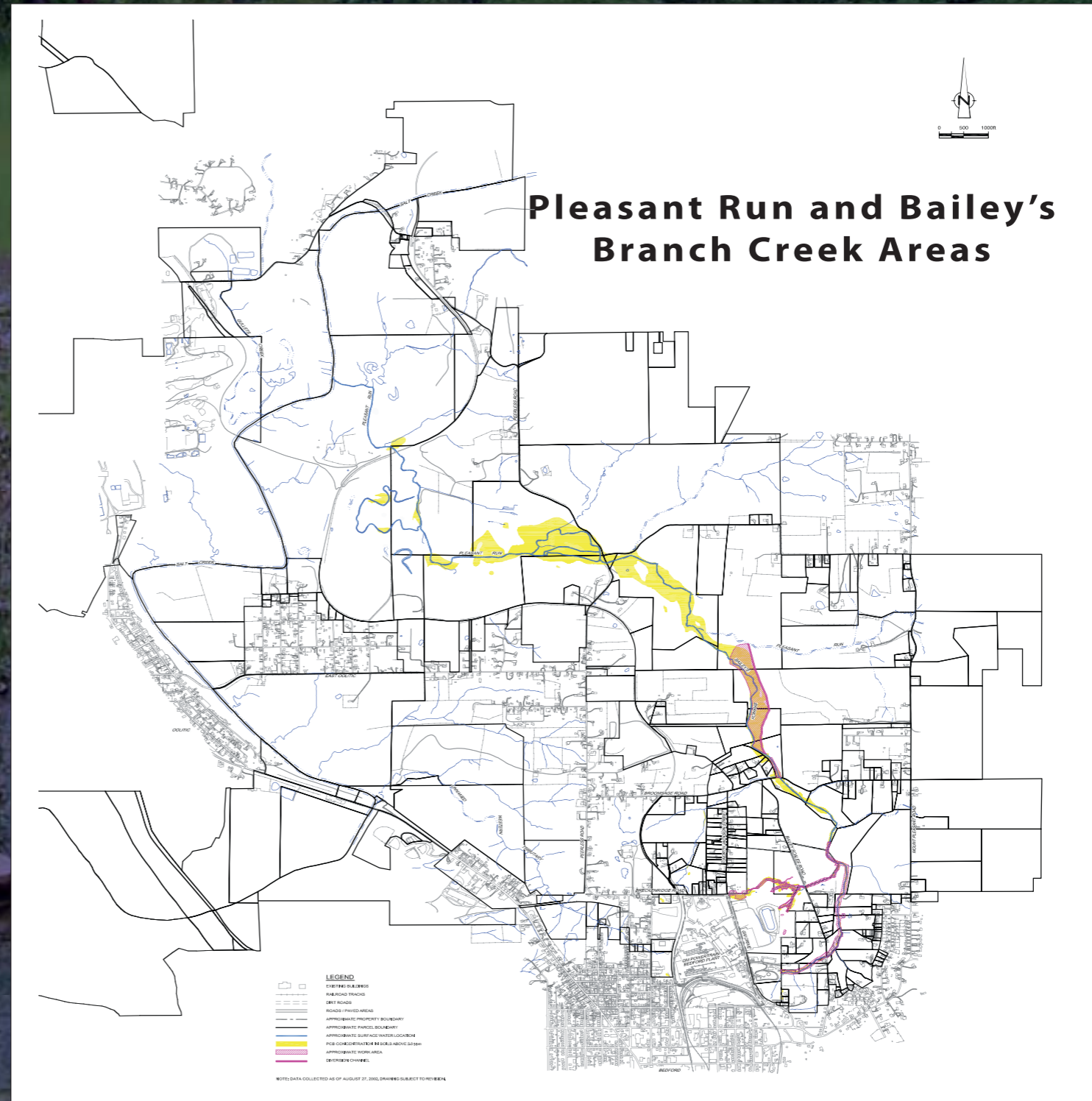
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- Project website at:  
<http://www.BedfordPowertrainCorrectiveAction.com>
- Quarterly Community Meetings now available on the website
- GM Community Relations Contact person is Becki Akers  
The toll-free number remains (866)223-0856
- Public Information Repository (GM Plant)  
Currently by appointment
- Public Information Repository (Library)
- Community Liaison Panel (CLP)
- Periodic information sessions
- Periodic Project Fact Sheets (eleven issued to date)



# CERCLA Removal Action Status

- The yellow areas represent the areas requiring excavation as part of the Removal Action
- The red hatched areas represent areas in which excavation has been completed or is currently underway



# Removal Action

## Delineation Sampling

- Thousands of delineation samples collected over 5 miles of creek
- Creek sediments and floodplain soils sampled
- Clearing of trees in work area

## Site Setup

- Mobilization, site security, site trailers
- Erosion controls
- Access roads and parking areas

## Water Control

- Soil berms and swales to route clean water around work areas
- Water within work areas contained and collected
- Potentially impacted water treated prior to discharge
- Constructed temporary on-site wastewater treatment facility to treat water prior to discharge

## Excavation

- Dust and erosion control measures in place prior to excavation
- Creek sediments and soil above cleanup criteria excavated
- Controls maintained until restoration complete

## Soil Pile

- Excavated material managed in a contained area pending shipment for off-site disposal

## Verification Sampling

- Creek and floodplain sampled to ensure cleanup criteria are met
- Additional excavation completed, if necessary, and additional verification samples collected

## Restoration

- Excavated areas backfilled to generally match pre-existing conditions
- Vegetation re-established
- Habitat features added to creek and floodplain





## RESTORATION

GM is committed to restoring the Bailey's Branch and Pleasant Run creek system in a manner that protects water quality and ecology of the area.

### Vernal Ponds

- Small depressions near the stream channel collect rain water and stream flood waters. The water may remain for only hours or a few days.
- Temporary (intermittent) ponds provide habitat for plants and insects, which in turn attract other insects, birds and other small predator animals.
- Vernal ponds also provide important breeding habitat for frogs, toads, and salamanders.
- Provide for and support a greater ecological diversity in the creek valley.

### Fascine Bundles

- Much of the Bailey's Branch Creek bank is protected from erosion by the roots of trees and shrubs and even grasses.
- Fascine Bundles are live roots and small branches, bundled together along the stream bank, that provide a quick start for the growth of this protective root mass structure. Even before the roots and branches sprout, the bundles provide some protection against erosion of the stream bank soil.
- Often used in combination with log habitat features, or log "stream flow deflectors"

### Log Habitat Features

- The natural creek valley, before restoration, had remnant trunks and branches from fallen dead trees along its stream bank floor.
- Trunks or logs provided small local protection for plants and animals.
  - Small animals use the logs as perches.
  - Logs also provide a source of nutrients for plants and insects that live in the soil.
- Along the creek bank, and even across the creek, fallen logs provide protection against erosion. Where providing protection to the stream bank, log features are often used in combination with root wad features.
- Logs also are used to direct the flow of the creek around bends and meanders.

### Root Wad Features

- "Root wad" features are simply tree stumps with substantial root structure still attached. Much of the creek bank is protected from erosion by the tree roots and these root wad features duplicate the larger stumps.
- Provide shelter and nutrients for plants, whose root will further protect the stream bank from erosion.
- Larger root wad features placed close to the water in the creek, provide shelter for fish from bird predators, and from the heat of the sun.
- Used to direct the flow of the creek around bends and meanders protecting the stream bank from erosion.
- Often used in combination with "live stakes" (plant rootings), log features and fascine bundles.

### "Roughback" Exposed Stone Stream Banks

- Roughbacks are large rock slabs obtained from a quarry, and are used to build up and or stabilize the creek banks where there were bedrock outcrops. Roughbacks also are used where root wad and log features are not strong enough to provide protection against erosion.
- These bare rock patches are sometimes used on stream bends and meanders and where the creek has cut along the valley hillsides.
- Portions of the upper reaches of Bailey's Branch Creek have banks formed of bedrock or shale outcroppings.

### Pool Riffle Sequences

- Riffles are shallow, fast moving areas whereas pools are deeper, slow flowing areas of a stream.
- Floods along Bailey's Branch Creek naturally cause the sand, rock and gravel to sort, forming short steep riffles over the rock and gravels, with pools formed over the sands and gravels. As well, large rocks left behind, that the creek can not move even in floods, also create riffles, with pools dammed up behind. In places, Bailey's Branch Creek ran directly on the bedrock, with little or no gravel or sand over the bedrock.
- These features are highly irregular, reflecting the constantly changing slope of the creek and form by themselves over years of stream action.
- These complex geomorphological features will restore themselves, in a stable way, by providing the creek with adequate sizes and quantities of sands, rock and gravels.
- "Pools and riffles" occur all along Bailey's Branch Creek, down to the Broomsage Road crossing.
- Rock vortex weir and waterfall features are installed to encourage the formation of pool riffle sequences.

### Rock Vortex Weirs

- A pile of larger rocks placed across the stream.
- Used to restore the riffle sequences that were created in nature by the large rocks that the creek could not move.
- Can be formed with a slight bend so as to direct the flow back towards the center of the channel.

### Waterfalls

- Small waterfalls, along the upper portions of Bailey's Branch Creek vary from being a few inches high to being several feet high. Cascades are formed, where the stream flows directly over a series ledges in the bedrock. Waterfalls are being restored using the bedrock where possible or using "roughbacks" where the excavation was deep.
- Aeration of the stream, which increases the dissolved oxygen in the water, occurs from the resulting turbulent flow of water over waterfalls and cascades. Dissolved oxygen is important for aquatic animal life.

VERNAL PONDS



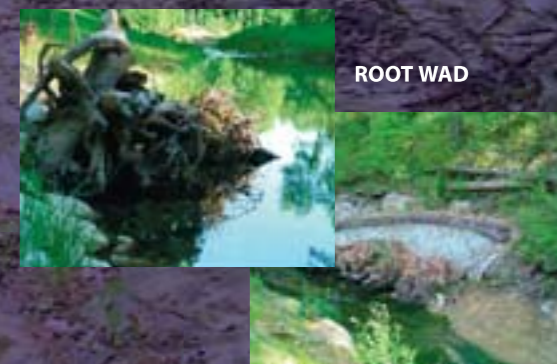
FASCINE BUNDLES



LOG HABITAT FEATURE



ROOT WAD



ROUGHBACKS



WATERFALL



ROCK WEIR

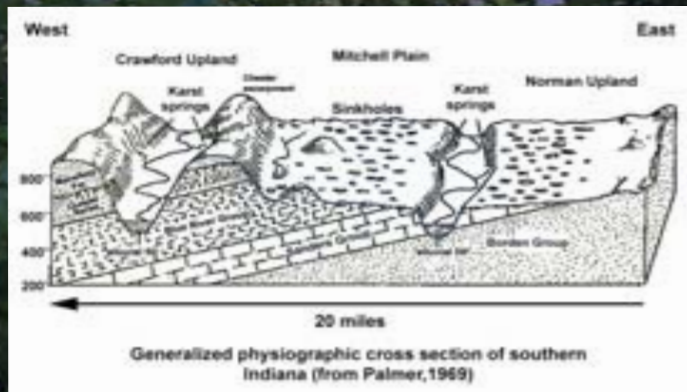








## DYE TRACE INVESTIGATION IN KARST



### Dyes Used During Investigation:

- Rhodamine WT
- Fluorescein
- Eosine

Dyes are non-toxic and U.S. EPA Approved

### Dye Injection Locations

- Sinking Streams (Swallets)
- Groundwater Wells

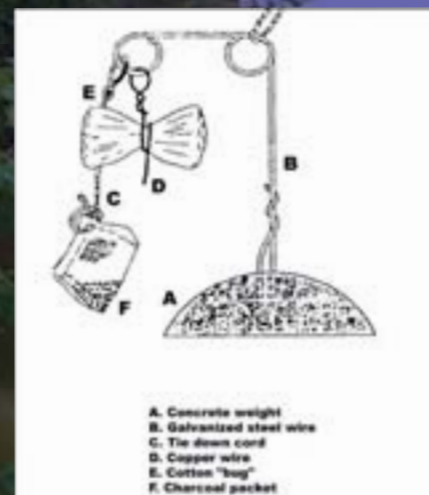


Dye Injection

### Dye Injection Scenarios



ISCO Sampler



Charcoal Sampler



Visible Detection

