Green Remediation at Continental Steel

It just made cents

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History

- 185-acre former steel mill, manufactured rods, wire, fence and nails from scrap metal
- Declared bankruptcy and abandoned in 1986
- Placed on NPL in 1990
- State-lead megasite

1997 Financial Outlook

- Fund-financed site
- $6M spent on emergency & non-time critical removal actions
- $1.5M RI/FS
- $8M estimated interim remedial action cost
- $40M estimated final remediation costs

Key to Success

Willingness of all parties to seek out and incorporate new ideas and designs:

US EPA
IDEM
CH2M HILL
City of Kokomo

Continental Steel Areas

Reuse of contaminated soil for fill material

- **3500 cy Pb-contaminated soil**

- **Reuse as fill saved transport & disposal costs, reduced use of landfill capacity.**

Reuse of slag for fill

- 9-acre area
- 60,000 cy unprocessed slag
- Reduced the amount of general fill needed to backfill Acid Lagoon surface impoundments by ~ 60,000 cy, > 3300 truckloads
- Resulted in nearly nine re-useable acres instead of a limited use slag landfill

Reuse of uncontaminated concrete rubble for fill material

From demo of 125 buildings and structures…

Reuse of uncontaminated concrete rubble for fill material

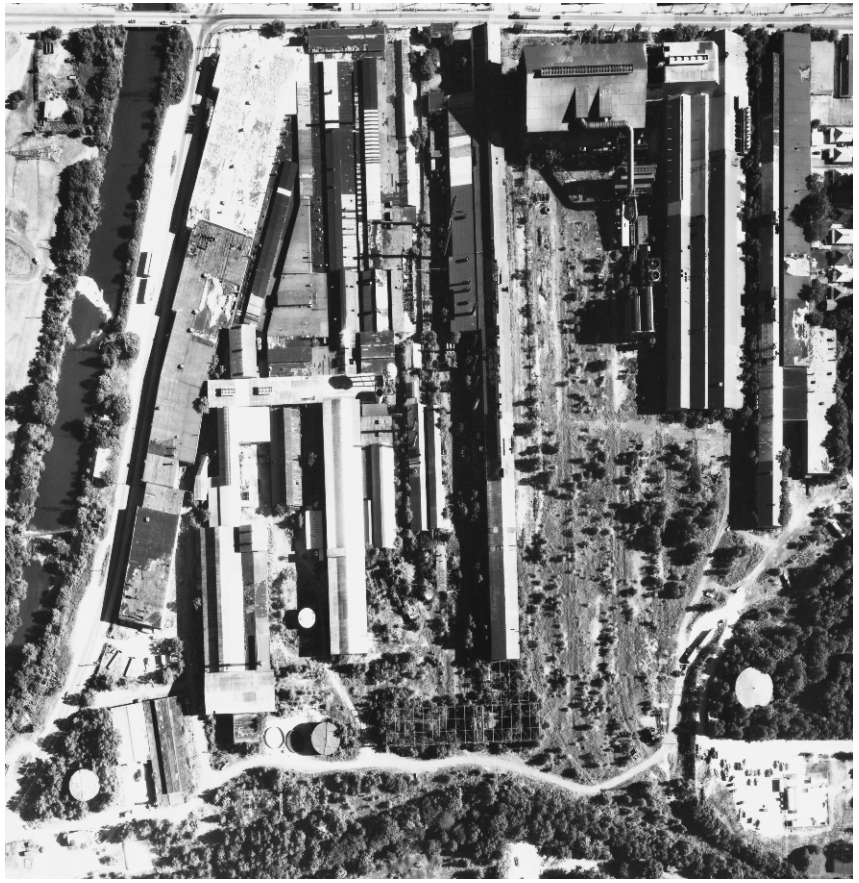
- 4500 cy clean brick to fill basements and voids
- 21,000 cy crushed concrete for stone surfacing
- > 25,000 cy stockpiled concrete rubble to fill low spots
- Approximately 2800 truckloads of material
- Reduced cost of fill material by ~ $169,000. Reduced fuel consumption & transportation related expenses
- Reduced use of landfill capacity and disposal costs

Large field stones used for creek bank restoration

Large granite field stones removed from the topsoil layer, set aside, used to stabilize creek banks

Recycling steel scrap

- 125 buildings & structures demolished
- Recouped $1.6M in scrap value
- $1.9M additional remediation funds
- Reduced fuel, transport, disposal costs, landfill use



Reuse of chipped trees for erosion control.

- Reduced cost, fuel and transportation expenses to transport and dispose of the wood chips at a landfill
- Reduced the cost, fuel consumption and other transportation expenses for erosion control
- Reduced water needed for dust control on site roads
- Reduced the amount of landfill capacity required to remediate the site

1. Stormwater retention areas- partnering with the community

IDEM
We Protect Hoosiers and Our Environment

- Clean fill of 4-acre pond, up to 70 feet deep.

- Needed 380,000 cy fill – 21,000 loads
- City to perform large excavation nearby to provide storm water storage for Kitty Run Drain
- Contractor constructed the retention area, soil excavated from Kitty Run Drain transported directly to Quarry pond.

1. Stormwater retention areas- partnering with the community

- Soil handled and transported only once for both projects
- Short distance (~ 5 miles round trip), minimized use of fuel and other transportation related resources
- Both benefit the environment and community by:
  - eliminating chemical and physical hazards,
  - providing storm water storage,
  - preventing combined sewer overflows, and
  - Preventing bypass of wastewater treatment plant.

2. Stormwater retention areas- partnering with the community

- Markland Quarry: US EPA revised design to incorporate City-proposed storm water retention area
- Prepared within footprint of former pond by filling to 8-10 feet below surrounding grade
- Kokomo will construct and install in- and outlet lines
- Reduced general fill needed to backfill pond by approximately 58,000 cubic yards, over 3000 truckloads
- Allowed construction of retention area without heavy equipment to excavate soil
- Benefit the environment and the community by:
  - eliminating chemical and physical hazards
  - providing storage for storm water
  - preventing combined sewer overflows and the need to bypass the wastewater treatment plant.

Reuse of site fence for Rails to Trails and other site areas

- Beneficial re-use of ~ 95% of site fence: 9700 feet of 8-foot chain link, 574 feet of four-foot chain link
- Rails to Trails removed 75% with own labor/materials
- Reduced community's cost to construct Nickel Plate trail
- EPA used some remaining fence for other site areas
- Reduced the amount of landfill capacity required

Sale of used equipment

- Auction sale of truck scales coordinated through the Indiana Department of Administration in accordance with federal procurement procedures
- Reduced the cost of equipment for the Solid Waste Management District
- Recouped $6,000 in value that was placed in the site-cleanup dedicated fund account
- Achieved beneficial re-use of the equipment

Wind Energy for long term well pump systems

- US EPA and CH2M HILL finalizing specifications for the groundwater extraction system
- Current plans call for installing and using wind energy to power the well pumps
- Would reduce long term energy consumption and related expenses, benefit local economy
  - The wind energy systems (wind mills or wind turbines) manufactured in Kokomo
- Cost estimates (capital and O&M under development