



## SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

## WINSTON THOMAS-TREATMENT PLANT

Westinghouse Electric Corporation

Site Location and Description

The Winston-Thomas Sewage Treatment Plant site refers to the sewage treatment plant contaminated with PCBs from discharges from the Westinghouse Electric Corporation (Westinghouse) facility in Bloomington, Monroe County, Indiana. The treatment plant is located on the southside of Bloomington about 2 3/4 miles south of Monroe County courthouse and a mile southeast of Broadview in a residential area within the limits of Bloomington (fig. 1).

The site is between Walnut Street and the Illinois Central Railroad, about 1/2 mile south of County Club Drive and just north of Gordon Pike. The site is located in the W $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 16, T. 8 N., R. 1 W.

The site (fig. 2) refers to the following:

- ° 17 acre tertiary lagoon (6 inch clay liner reported)
- ° 2 abandoned lagoons
- ° 2 sludge drying beds
- ° 4 sludge storage tanks
- ° 1 trickling filter (1.5 acre concrete structure 8 feet deep)
- ° 4 digesters (2-40 feet diameter, 2-50 feet diameter)
- ° Pumps, pipes, valves, etc.
- ° General land area of the plant and lagoon.

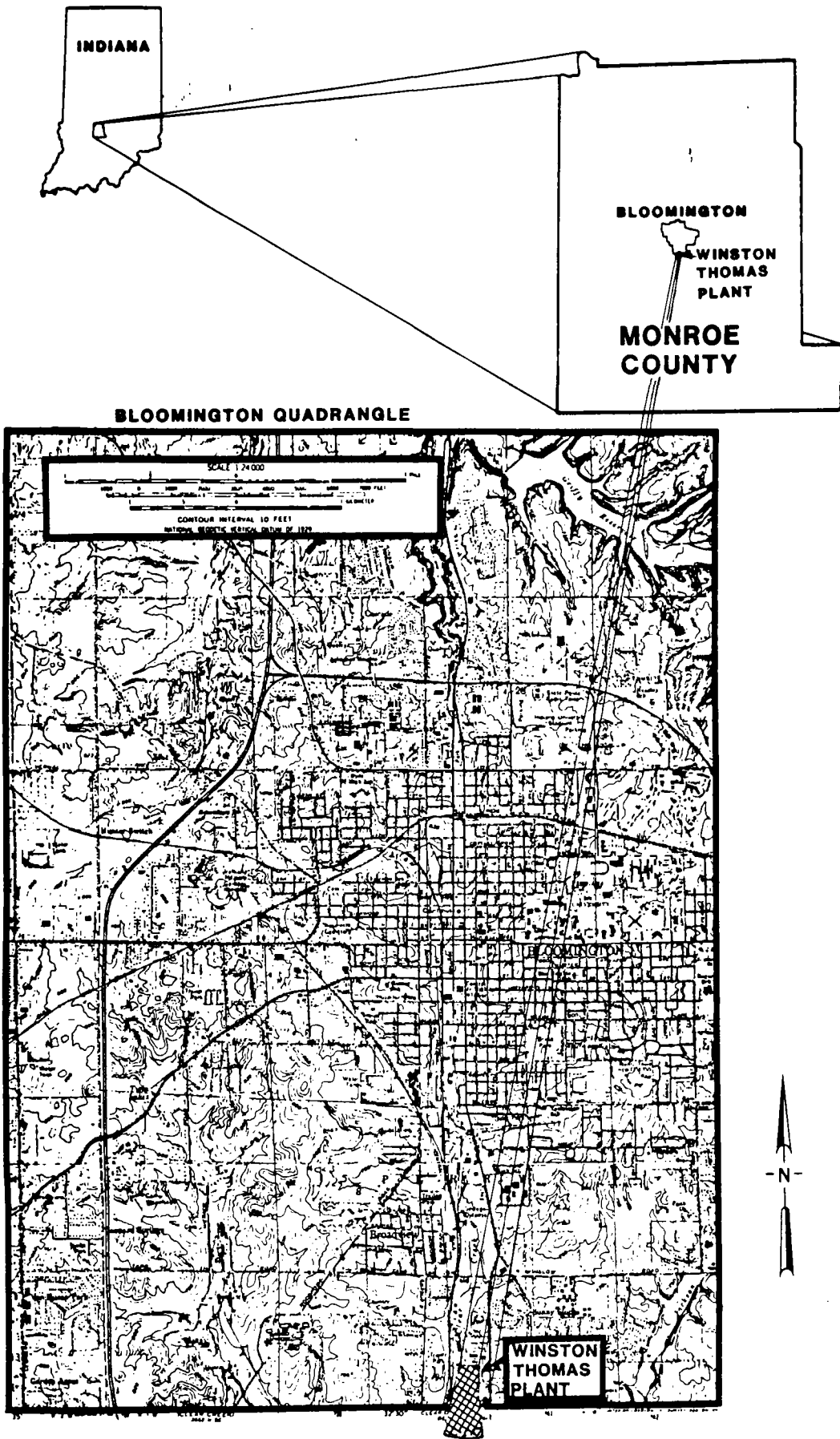
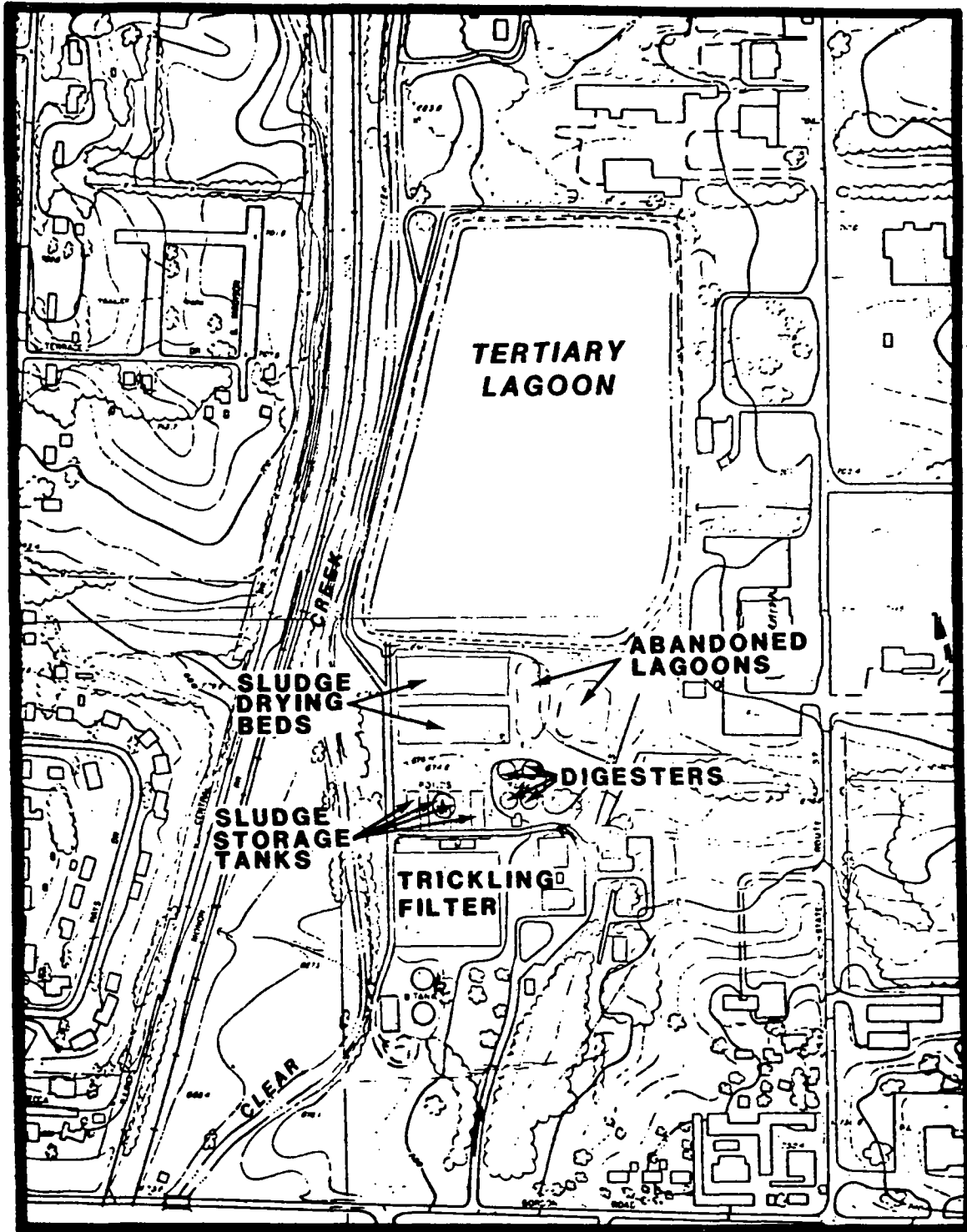


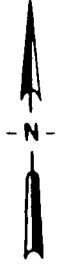
FIGURE 1. LOCATION OF WINSTON THOMAS PLANT



400 0 400 800



SCALE IN FEET



**FIGURE 2. WINSTON THOMAS PLANT SITE MAP.**

Based on data available for the region, the site is underlain by 1-15 feet of soil over 80 feet of Harrodsburg Limestone which overlays the Borden Group Formations. The Harrodsburg Limestone is a well-cemented white limestone and is not generally well karstified. However, small sinkholes are fairly common. The underlying Borden Group Formations consist of siltstone and shale units and is not prone to the development of sinkholes.

On the basis of aerial photographic interpretation, two east-west fracture traces traverse the site and Clear Creek Valley may also be along a fracture trace or a major north-south regional lineation. The northern east-west fracture passes through about the center of the lagoon and the southern trace passes through the site between the sludge drying beds and the sludge storage tanks and under the two northern digesters.

The Clear Creek Valley runs along the western edge of the site and all surface drainage is to Clear Creek, either by direct runoff or via a storm sewer which is located beneath the lagoon.

Domestic ground-water supply may be developed from the overburden, Harrodsburg Limestone or Borden Group. Wells produce sufficient water for domestic supply. No site specific subsurface or ground water data have been collected to date.

#### Site History

PCBs were discovered in the sewage system and Winston-Thomas sewage treatment plant in 1975. The PCBs entered the Winston-Thomas

sewage treatment plant through outfall sewer lines from the Westinghouse facility in Bloomington, also in 1975. The sewage treatment plant was decommissioned, a new plant built and six miles of sewage lines were cleaned. The sludge ponds and sludge drying beds were covered with clay, vegetated, and sloped with ditching to control surface run-on and run-off. A pump was installed in the the 17 acre lagoon to direct water through an activated charcoal filter system as needed and then to the Dillman Road Sewage Treatment Plant.

From 1975 to present several investigations have been performed at the site to determine the extent and degree of PCB contamination at the site. A summary of these investigations is included in table 1.

Investigations conducted by Westinghouse have concentrated on the 17 acre lagoon since it is considered to be the highest potential source for contribution of PCB into the subsurface.

Westinghouse has completed boring studies in the 17 acre lagoon. Samples from borings were analyzed for PCB concentrations. PCB concentrations averaged 1410 ppm dry weight in sludge samples.

The top three (3) inches of the clay liner in the lagoon was sampled in 1983 and May 1984, and analyzed for PCB concentrations. The PCB concentrations were all <2 in the desiccated sediment except for one sample which was 660 ppm.

The filter media of the trickling filter pond was sampled and analyzed for PCB concentrations. PCBs were found in all the various medias analyzed.

TABLE I  
WINSTON-THOMAS  
PCB Concentrations

SITE	PCB CONCENTRATION RANGE
Tertiary Lagoon Sludge	222 to 4,440 ppm
Tertiary Lagoon Clay	<1.0 to 660 ppm
Abandoned Lagoon	<1.0 to 700 ppm
Trickling Filter	0.032 to 0.221 ppm
Crushed Rock	0.150 to 0.171 ppm
Rock Debris	2.0 to 146 ppm

The abandoned lagoons were sampled and analyzed for PCB concentrations at five (5) locations each. PCB concentrations ranged from <1 to 700 ppm dry weight. A summary of all PCB concentrations determined during investigations is included in Table 1.

The lagoon was inspected April 5, 1984, (Westinghouse Corporation Contractors) and recommendations were made for maintenance of the embankments, operating water level in the lagoon, increasing the free-board to avoid overtopping, eliminating seeps, and handling excess surface runoff.

At present, insufficient data is available to determine the hydrology and geology of the site. As a requirement of the Consent Decree, additional investigations will be performed to provide sufficient data.

#### Current Site Status

Investigation of the Winston-Thomas site to date has not provided sufficient data to characterize the site specific hydrology and geology of the site. An evaluation of literature data indicates that the site is underlain by 1 - 15 feet of soil which covers the well cemented Harrodsburg Limestone of Mississippian Age. The Harrodsburg is karstified to some degree so that ground water in the Harrodsburg flows via joint and fracture surfaces and solution channels. No information is presently available on water levels at the site as no site wells exist, therefore the exact direction of ground water movement under the site is presently unknown.

### Enforcement

On October 11, 1983, Mayor Tomi Allison announced that the City of Bloomington and Westinghouse had reached a conceptual agreement to destroy PCB soils and other PCB materials, using proven destruction techniques.

Negotiations were initiated with representatives of Westinghouse, the City of Bloomington, the EPA, and the Indiana State Board of Health in January, 1984 seeking mitigation of endangerment and relief for the affected areas. The Consent Decree requirements provide for the remedy to be undertaken by Westinghouse.

The Consent Decree will require Westinghouse Electric Corporation to undertake such actions as may be necessary to remedy the conditions which may cause, contribute to or present an imminent and substantial endangerment to health and welfare or the environment at Winston-Thomas Treatment Plant, arising out of or in any way relating to the handling, disposal, presence, release or threatened release of solid or hazardous waste or hazardous substances.

### Interim Remedial Measures

The Consent Decree requires that the following interim remedial actions be taken at Winston-Thomas to protect the health, welfare and the environment in the period prior to the removal of PCB contaminated materials at the site.

1. Monitoring of water levels and collection of water samples at selected wells within a 5,000 feet radius of the site. Determinations will be made for pH, specific conductance, and



temperature, and laboratory analyses for PCBs will be completed.

2. Remove sediments with a hydrovacuum in Clear Creek, from a point 25 feet upstream of the northern boundary of the Winston-Thomas site to a point 500 feet downstream of the southern boundary of said site.
3. Remove those sediments removable through the use of a hydrovacuum in Clear Creek which are identified by the State of Indiana as contaminated with PCBs subsequent to the entry of the Consent Decree and prior to April 1, 1985.
4. Following the sediment removal, sample and analyze the stream sediments in order to provide baseline data.
5. Establish a total vegetative cover over all disturbed areas.
6. Control of surface water run-on and run-off at the site.
7. Install any additional diking around the lagoon necessary to maintain a freeboard of 24 inches to prevent overflow in the event of a storm, with the City continuing to pump the lagoon daily to the Dillman Road Sewage Treatment Plant at an average rate of 50 gallons per minute. Any discharge to the Dillman Road Sewage Treatment Plant shall meet applicable state and local pretreatment requirements. Westinghouse shall pay for any additional pumping in excess of an average rate of 50 gallons per minute that may be necessary.
8. Conduct investigative studies, as necessary, to determine the geology and hydrology of the site.

### On-Site Remedial Measures

In the development of the actions described herein, remedies were sought which are based upon the factors considered in selecting a remedy at Neal's Landfill.

Upon consideration of the those factors, the remedial action measures in the Consent Decree were developed. Those actions are presented below. The Consent Decree requires that Westinghouse excavate and remove quantities of soils, debris and other materials contaminated with polychlorinated biphenyls ("PCBs") and other associated materials from Winston-Thomas, to construct an incinerator to incinerate said materials in an incinerator in order to prevent and mitigate alleged threats to the public health, welfare and the environment. To satisfy these requirements Westinghouse shall:

1. Remove the contents of the tertiary lagoon. Any water not removed and incinerated shall be treated prior to discharge to a concentration established by the State pursuant to its authority under state and federal law.
2. Excavate and remove all stored sludge and the entire sludge drying beds following a stepwise protocol agreed upon by the parties and transport these materials for incineration. Westinghouse also shall excavate and transport for incineration an additional two feet of soil perpendicular to the surface remaining after all materials have been removed as a "buffer zone".

3. Remove the loose organic material from the filter media by means of a mechanical sieve. After removal of the organic material, the filter media shall be redeposited and covered.
4. Westinghouse shall excavate and transport for incineration the contents of the abandoned lagoons down to the clay layer beneath the lagoon following a stepwise protocol agreed upon by the parties. Westinghouse also shall excavate and transport for incineration an additional two feet of soil perpendicular to the surface remaining after the contents of the lagoons have been removed as a "buffer zone".
5. Remove the sludge stored in the digester tanks and flush with water using high pressure sewer cleaning equipment any sediments remaining in the facility piping system. All flushing shall be transported to the terminal lagoon or other appropriate facility for processing and removal pursuant to state permits. After the sediments are flushed, Westinghouse shall plug the pipes except to the extent that such plugging causes drainage problems.
6. Conduct sampling and analysis upon completion of the activities described above.
7. Implement a surface water, drainage, and sediment control program to prevent or minimize surface water and sediment run on and runoff from the site.
8. Minimize the disturbance of contaminated materials yet to be removed.

9. Provide impermeable protection systems sufficient to cover the active excavation zone.
10. Provide adequate slopes, crowns and ditches to ensure satisfactory drainage at all times.
11. Provide pumps to remove any contaminated water or leachate at the surface during excavation and provide constructed lined, ponds to store such water until it can be removed and treated.
12. Decontaminate equipment.
13. Monitoring of water levels and collection of water samples at selected sites. Determinations will be made for pH, specific conductance, temperature, and laboratory analyses for PCB.
14. Provide maintenance for interim removal and remedial measures, including maintenance of fences, signs, erosion, security fences, diversion ditches, dikes, monitoring wells, and temporary caps.
15. Transport contaminated materials to the incinerator for incineration.

The remedial actions described herein will be performed until such time that the post closure period has been completed.

#### Off-Site Remedial Measures

In the development of the actions described herein, remedies were sought which are based on the factors considered in selection of a remedy at Neal's Landfill. Upon consideration of the those factors,

the remedial action measures in the Consent Decree were developed. Those actions are presented below.

The Consent Decree requires that actions be taken to eliminate the imminent danger to public health via contact with PCB contaminated materials.

The off-site remedies to be performed include:

1. Monitoring of water levels and collection of water samples at selected wells within a 5,000 feet radius of the site. Determinations will be made for pH, specific conductance, and temperature, and laboratory analyses for PCB will be completed. Monitoring activities at all sites will cease sometime between 5 and 30 years after closure of the site, contingent on decisions made by Environment Protection Agency (EPA), Indiana State Board of Health (ISBH), and the City of Bloomington based on monitoring results.
2. Provide an alternative water supply for local residents, if necessary.

#### Closure and Post Closure

The Consent Decree provides for closure and post closure activities to be performed by Westinghouse Electric Corporation. These activities and plans have been developed in accordance with RCRA regulations, State of Indiana regulations and the opinions of technical experts:

1. Results of analyses of water and sediment samples taken from the site.

2. The information available on the geology and hydrogeology of the region.

### Closure

The Consent Decree requires that the following closure measures be performed:

1. Conduct on-site and off-site monitoring.
2. Redeposit and cover the filter media.
3. Close all excavated areas to a grade having a minimum slope of 2 percent and a maximum slope of 25 percent without depressions which would cause ponding of water. To achieve this, Westinghouse shall: first, backfill excavated areas as necessary with suitable fill materials placed in a structurally stable manner to maintain the minimum grades required; secondly, place over the excavated areas a soil cover to effect a two-foot minimum thickness compacted to a modified proctor density of 85 percent capable of vegetative support. Suitable fill materials shall be defined as any materials which are not a hazardous waste, a solid waste or contaminated with PCBs including: rock, stone, earth, and other materials.
4. Implement a surface water, drainage and sediment control program to prevent or minimize surface water and sediment run-on and run-off from the site.
5. Establish a total vegetative cover in all disturbed areas in a timely manner. Vegetative cover shall provide short and long

term erosion control. The root growth of the vegetative cover shall be deep enough to prevent erosion.

#### Post Closure

The Consent Decree requires that the following post closure activities be implemented:

1. Remove from said stream those sediments removable through the use of a hydrovacuum which are identified by the State of Indiana as contaminated with PCBs.
2. Conduct on-site and off-site monitoring.
3. Maintain the soil cover and vegetation to prevent erosion, and correct the effects of settling and subsidence to maintain proper slope. Westinghouse shall reseed as necessary. The root growth of the vegetative cover shall be deep enough to prevent erosion. Westinghouse shall continue to prevent surface water run-on and run-off from eroding or otherwise damaging the soil cover.
4. Maintain integrity of fence until end of post-closure period at which time security fencing (and warning signs) shall be removed.
5. Restrict property use to activity that will not adversely impact upon the integrity of the cover. All agricultural use of property is prohibited.

### Community Relations

The City of Bloomington has been involved in various discussions concerning resolutions of the problem. The dialogue occurred between U.S. EPA, Indiana State Board of Health, and Westinghouse, with the Mayor, the City Council, the Utilities Service Board, and the Environmental Quality and Conservation Commission.

Three local information repositories have been established.

Once the proposed Consent Decree is initialed by the negotiating parties, various community relations activities will occur.

1. The City of Bloomington cannot sign the Decree until it has been discussed publicly in City Council meetings. It is predicted that a minimum of thirty days will be needed to meet this requirement.
2. Indiana Environmental Management Board will also consider the Consent Decree before signing it.
3. The U.S. EPA will advertise in the local press, and conduct a public meeting to brief the public on the terms of the agreement and respond to citizens' questions. The Agency will also distribute fact sheets summarizing the agreement and the many future opportunities for public participation.

Copies of pertinent documents will be added to the three information repositories for public review.

U.S. EPA will continue to implement, with the cooperation of the State and City, various community relations activities to assist citizens in developing informed public participation. This will include informational meetings, documents, and conversations during the thirty day



public comment period required by the Department of Justice, and throughout the RCRA and TSCA permitting processes. The City and the State will conduct public participation activities during their siting approval processes.

#### Consistency With The National Contingency Plan

All on-site and off-site remedial actions required by the Consent Decree are not inconsistent with the objectives of the National Contingency Plan.

Remedies include excavation and removal of soil, debris, and other materials contaminated with PCBs and incineration of these materials in a federally approved high-temperature incinerator to incinerate the PCB, and decontamination of hardware and plugging of pipes associated with the Winston-Thomas Sewage Treatment Plant. Westinghouse will design, construct, and operate an incinerator to be located at the Dillman Road Sewage Treatment Plant. The excavation, transportation to the incinerator, incineration, and disposal of the ash and other by-products of incineration will be in accordance with requirements of law. The site will be remedied to mitigate further releases of contaminants into the environment from the plant site. These remedies form the basis for negotiation with Westinghouse for remedial action plan for the final consent decree. The remedies described herein are consistent with those sought for Winston-Thomas.

### Operation and Maintenance

Operation and maintenance requirements associated with the remedial actions herein will be required. The operation and maintenance costs incurred will be paid by Westinghouse Electric Corporation. The operation and maintenance will include provisions for fences, signs, erosion control devices, site security fences, diversion ditches, dikes, monitoring wells, clay caps and all other technical activities required in the achievement of the provisions of the Consent Decree.