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EPA/NCERQA Corrective Action Conference

January 17-18, 2005
Chicago, Illinois

United States Environmental Protection Agency, Region 5
Corrective Action Conference
January 17 and 18, 2001
Chicago, Illinois

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U.S. Environmental Protection Agency
Region 5, Library (PL-12J)
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Chicago, IL 60604-3590

Section I - Presentation Summaries

Day 1 - January 17, 2001

<u>Welcome and Introductory Remarks</u> - Robert Springer, Director, Waste, Pesticides and Toxics Division, United States Environmental Protection Agency (U.S. EPA), Region 5

We have made much progress in the RCRA program during the past two years. Achieving Environmental Indicator determinations (EIs) has been our main priority. For the State programs: Illinois - has been the standard bearer for Region 5 States; Indiana - Our Memorandum of Agreement (MOA) for their voluntary program is almost final, it may be a model for the country to follow; Michigan - Region 5 recently signed a MOA with the State; Minnesota - Has only two CA 725 (human health) and only three CA 750 (groundwater) determinations left to complete. They also have only two facilities that have CA 999 determinations (termination of Corrective Action process) left to complete; Ohio - Has a large number of facilities in their universe to address.

Projections - Our goal is to keep pace while working on our streamlining.

Streamlining - Fewer deliverables required; New Orders will be performance-based; and our goal will be to streamline existing orders.

Region 5 RCRA corrective action strategy: Where we were, are, and where we are going. Future goals will be to get voluntary agreements with all of the states, meet Government Performance and Results Act (GPRA) goals for Environmental Indicators and complete the Corrective Action process (CA 999).

<u>National Perspective</u> - Michael Shapiro, Deputy Assistant Administrator, Office of Solid Waste and Emergency Response, U.S. EPA

Region 5 is leading the country. Region 5 entered into the first Memorandum of Understanding to recognize a State voluntary program (Illinois in July 1997). The Region has also issued five streamlined Corrective Action Orders that implement cleanup with a minimum of process. They have also reached voluntary agreements with six facilities.

This meeting is an invaluable opportunity for dialog and is a

model for other Regions to follow. This is the second such meeting here in Region 5 and we are urging other Regions and States to have similar stakeholder meetings. The States are the key to reaching GPRA goals as 38 states have authorized Corrective Action Programs in place. Also key to meeting GPRA goals is cooperation between U.S. EPA, the States and facilities (private-sector). Other key components are to continue the momentum of Reforms II, site reuse and redevelopment.

The first set of RCRA Corrective Action reforms (July 1999) focused on environmental results over process, enhanced public participation and flexibility. These reforms led to a significant increase in program accomplishments. Nationally, facilities meeting EI determinations increased tenfold since 1997. Last month, in Pontiac, Michigan, General Motors Corporation and EPA celebrated the 500th facility to meet both Environmental Indicator Measures.

In the future cleanups will be more challenging. Last August Assistant Administrator Tim Fields announced that EPA needed to renew our commitment under Corrective Action to achieving our cleanup goals be developing a second round of RCRA Cleanup Reforms that would build upon the 1999 Cleanup Reforms and that would ensure all stakeholders had a voice. Last week at the BP Amoco facility in Wood River, Illinois, U.S. EPA announced the RCRA Cleanup Reforms II.

The 2001 Cleanup Reforms focus on several themes. These include: Pilots to ground-test innovative and protective approaches to cleanup; Cultural change, Changing the way people interact and implement the program in the field; Information, Effective access to timely information to increase public awareness and opportunity for involvement at Corrective Action sites; and Redevelopment and reuse of sites. Capitalizing on redevelopment potential at sites can motivate interested parties in expediting cleanup and help to revitalize communities.

Some of the highlights of the 2001 RCRA Cleanup Reforms include: At least 25 innovation pilots, at least one in each Region for 2001. The new pilot program will support State and Regional offices in their efforts to use innovative, results-oriented and protective approaches to speed up EI determinations and final cleanups; U.S. EPA will take actions to accelerate culture change in implementing the program including hosting a stakeholder meeting, provide the public with more access to information (EI forms and site summaries on-line) and encourage stakeholders top to capitalize on brownfields reuse.

<u>Industry Perspective</u>, John Quarles, Esq., Counsel, RCRA Corrective Action Project

Key to program success is the application of concepts and spending funds on cleanups versus studies. In April 1997, the RCRA Corrective Action Program was in need of reform. There were too many sites stuck in the study phase. There was a need to communicate recommendations to U.S. EPA for program changes and both U.S. EPA and industry were in agreement that reforms to the RCRA Corrective Program should be made. There were two categories of reforms in 1999, change in process and change in approach. The original Corrective Action process was very rigid. The reforms were implemented to change the program to a results-based approach. Oversight was tailored to speedup the process. A holistic approach was used to look at the entire facility (not one solid waste management unit at a time). Procedural flexibility was stressed. U.S. EPA was to set performance standards (define objective) and leave it up to industry how to get there. Data collection was targeted to that which the agency felt was really needed and only go back if more data were required.

The government should address the issue, "how clean is clean." A relationship between cost and benefits must be considered. The cost effectiveness of the cleanup must take into account future land use (industrial standards versus residential). Use of Institutional controls at sites. Groundwater standards need to be reevaluated.

<u>State Perspective</u>, William Child, Chief Bureau of Land, Illinois Environmental Protection Agency

In the State of Illinois, Corrective Action is a subset of the Illinois Cleanup Program. Illinois goals are to properly remediate Solid Waste Management Units. Illinois has a flexible process for cleanups. We negotiate with industry to reach mutually acceptable goals. Illinois expects to meet the GPRA goals for 2005.

Illinois uses a tiered approach to Corrective Action referred to as "TACO" (Tiered Approach to Cleanup Objectives). It is a risk based standard (10 -6) and used in all our cleanup programs. There are three tiers (I - Residential, II - Site Specific Calculations and III - Risk Modeling).

Another component of the Illinois cleanup program is the groundwater management zone. This consists of source removal and managing remaining waste in a defined zone.

Corrective Action Management Units - there are three facilities in Illinois that have consolidated wastes into one unit.

Remedial Action Plan Permit - To date Illinois has issued three final and five draft permits. Illinois was able to issue the draft permits within 90 days. This approach allows for faster and more cost effective cleanups.

Illinois has learned the following lessons from our past experiences. First, the command and control that we had used in the past were not the best option. We will accomplish more by offering cleanup incentives to facilities. We need to tie our other cleanup programs to the RCRA Corrective Action Program.

Illinois is currently working on an Ecological TACO. We should have this finished by the end of the year. We also plan on continued teamwork and open communication with the stakeholders. We also want to continue looking for new and innovative ways to manage the program. We are open to new ideas from industry.

Voluntary Efforts by the Private Sector, Robert Johnson, Executive Vice President, Wildlife Habitat Council

The Wildlife habitat Council (WHC) was established in 1988. Our main objective is to work with companies and Federal and State agencies to increase wildlife habitat through improvement of marginal or unused portions of property. To date, WHC has assisted its members to plan wildlife enhancement opportunities at more than 750 facilities. These programs encompass more than 1.5 million acres. The WHC works with and encourages industry to work with WHC on sites involving RCRA and Superfund program cleanups. WHC believes it is possible to achieve acceptable risk levels. WHC focuses on results and innovation. Two cleanup sites that WHC has provided assistance to were the Bridgestone/Firestone Woodlawn Landfill in Cecil County, Maryland and the Lime Lakes project at PPG in Barberton, Ohio. The PPG Barberton site consisted of six above ground waste impoundments containing more than 33 million metric tons of lime wastes. Initial cost estimates indicated remediation would take more than fifty years to complete at a cost of more than $100 million. The final decision was to use land treatment and ecological enhancements where sewerage sludge was used to amend the lime wastes to produce a soil that sustained a vegetative cover stimulating wildlife habitation.

Benefits to industry include enhanced wildlife habitat, increased employee morale and productivity, better community relations, maintenance cost savings and improved relationships with governmental agencies.

WHC will be holding a sequel conference to our June 2000 conference. It will be held on July 10 and 11, 2001 in Washington, D.C.

<u>Performance-Based Orders</u>, Jean Caufield, Remediation Group, General Motors Corporation and Gerald Phillips, Corrective Action Process Manager, Region 5

Drawbacks of the traditional order were that it had an unlimited scope of work, negotiation was a lengthy process delaying cleanups, the work was too detailed and focused on minutiae and generated ill-will between the facility and government.

U.S. EPA's objectives to streamlining include less oversight and more owner/operator response. Achieving Environmental Indicators are still a priority.

The positive features of the new streamlined order include:
- Enforceable deadlines, recourse for disputes and penalties stop accruing until U.S. EPA notifies.
- The facility has more responsibility.
- Innovative technologies are welcomed.
- It features a risk basis for remediation.
- Reduced time in completing the cleanup is achieved due to less review time.

The streamlined order has the following key legal provisions:
- Delay of one year for dispute resolution proceedings to allow for negotiation between the project managers.
- Feature the same work products but the process is different: There is a team approach, steps are eliminated, the team meets in lieu of approvals.
- The order requires two meetings per year.

Results:
- The facility and the Agency are working more informally (team approach to work product review). It has eliminated detailed review of planning documents.
- The facility seeks EPA approval even when not required by the order for comfort.
- EPA has been responsive to requests for meetings which has helped with coordination with TSCA.
- The speed of the process has increased dramatically.
- All of General Motors Corporation's facilities are on schedule.

<u>Voluntary Agreements</u>, Hak Cho, Chief, Corrective Action Section, Waste Management Branch, U.S. EPA, Region 5 and Monica Satrape, Environmental Action Manager, Hoover Company

<u>Hak Cho</u>:

A voluntary agreement is performance-based. There is a minimized oversight involvement by U.S. EPA. The owner/operator does not have to wait for formal U.S. EPA approval to begin the cleanup. Key points that are noted in the agreement are Environmental Indicators (CA725 - human health and CA750 - groundwater) and the final remedy. The voluntary agreement is a non-enforceable document, there are no penalties and either party can terminate the agreement with or without cause. The goal is to achieve Environmental Indicator determinations and to achieve final site-wide cleanup. Enhanced public participation is required and is critical to the process. The facility must submit and maintain all documentation required. The facility is required to act in a timely manner. There are currently six voluntary agreements signed in Region 5.

<u>Monica Satrape</u>:

The facility (Hoover Company) is in the middle of a small town (North Canton, Ohio). Closure issues were addressed by the Ohio Environmental Protection Agency (OEPA). OEPA did not have the resources to address corrective action issues. Hoover Company chose a voluntary agreement because there was trust and a sense of partnership and the company is concerned with the people and the community. Hoover Company wanted a shorter process than with the traditional Corrective Action Order. Hoover Company received support from OEPA with an extension for their closure plan execution. The agreement required commitment from both U.S. EPA and Hoover Company. U.S. EPA increased the facility from a medium priority to a high priority facility and Hoover Company committed to the agreement. Hoover Company plans to achieve their EI determinations by August 2001, which is 22 months after the agreement was signed. The final remedy is planned to be finished by December of 2003. The agreement features focused deliverables. Implementing the plan included starting at the perimeter of the facility to address community concerns. Hoover Company has completed interim measures. The on-site investigation is currently ongoing. Achieving EI determinations may be challenging because Hoover Company has only two construction seasons. This requires a constant strategy and focus on the EIs. The voluntary agreement is more efficient because it is less prescriptive and it has a maximum term of five years. Hoover Company is saving money with this process. The community is being supportive, and Hoover Company gained the

support of a previously skeptical environmental group.

<u>Streamlining Under Existing Instruments</u>, Tammy Ohl, Corrective Action Project Manager, Region 5; Roger Schumer, Project Manager. International Paper; Richard Menozzi, Director of Environmental Remediation, U.S. Steel; Gale Hruska, Corrective Action Project Manager, Region 5; and Douglas Bley, Senior Projects Coordinator, Bethlehem Steel Company

<u>Tammy Ohl and Roger Schumer</u>:

U.S. EPA negotiated a new order for the remedy implementation. The impetus for streamlining came from International Paper's upper management. They separated the Solid Waste Management Units by priority and set time goals. They then planned what work they could achieve in that time span. The preset schedule made the process less formal. All decision-makers were present at all meetings to prevent delays needed for consulting. They completed the remedies on time. The motivation for adhering to this process was that it is more efficient and it saves money. Fewer documents were necessary to prepare formally. Documents were conditionally approved rather than going through a round of revisions. The catalyst for action was schedule constraints, the aggressive schedule meant that there wasn't time to argue, the atmosphere encouraged problem solving. In return, there was quick turnaround for reply.

<u>Tammy Ohl and Richard Menozzi</u>, U.S. Steel Streamlining:

Previous negotiations were "stop and go." There was an attempt to develop a MOA and then to modify the existing order. Neither option was achieved. US Steel agreed to set a schedule to expedite work at the site.

Pitfalls of the negotiations: The current order may have already had the flexibility required, if both parties agreed on the goals, the order can be amended. If the parties disagree, no progress will be made regardless of the type of order. If we intend to renegotiate an order, go on a parallel track with the old order to maintain progress. The negotiations can be used to establish trust. Both parties should align their objectives and understanding each other's goals is important. Both parties should identify their "must haves." Setting a schedule was also important. Key decision-makers should be at all meetings so a steering committee was established to include project managers and management.

Gale Hruska and Douglas Bley, Bethlehem Steel streamlining:

The facility had a permit for underground injection which included corrective action. The permit was not specific about work to be performed. It required development of a corrective action plan, and implementation of that plan. The permit is about to expire. The new permit will include the specifics and flexibility that were missing. Partnership is important to speed up communications. There must be a smooth transition from the expiring permit with incorporation of past work, such as the Quality Assurance Project Plan. The new instrument must incorporate flexibility and be less process oriented. There is a citizen's advisory committee that is interested in the South Landfill Area at the site. The interest in this area makes it a high priority and the facility wants to remediate it quickly. The South Area will be addressed first. The rest of the facility will then be addressed to expedite the cleanup.

Property Reuse, David Kalet, Environmental Business Manager, BP Amoco, Whiting Refinery and Keith West, Remediation Group, General Motors Corporation

David Kalet:

Establish a vision for the future use of the property. The future use of the property will be market driven. Identifying the stakeholders (community and external market) is important. Identify the positive and negative attributes of the site. What aspects of the site will be attractive to outside sources and investors. Investors will be concerned about risks of environmental liability. Stakeholders (users, community and investors) will be more involved than the regulator agencies or property owners. Relevant user needs such as access, community concerns such as creation of jobs, taxbase and additional greenspace. The Brownfield's equivalent of a RCRA Conceptual Site Model is the site master plan.

Keith West:

In smaller towns, the facility may be the major employer. Assessment of impact to communities must be considered. Redevelopment of the facility should be included in corrective action to create jobs after the facility is gone. The Corrective Action process should mirror the business process. The approach was to create a redevelopment strategy. This included discussing future plans for the site with stakeholder including decommissioning the buildings, performing the environmental site assessment and, and prioritizing the environmental issues (do the interim measures first, and then address the larger problems at

the site).

From the beginning the development of a current conditions report that identifies environmental concerns at the site and sets the tone of the remediation. For example: Centerpoint Business Campus which was formerly a General Motors Corporation truck plant. One production building was decommissioned and scaled down to an office building. U.S. EPA had identified 28 SWMUs, GM found 43 more. Interim measures were used extensively to get the work started. The new uses for the plant are: GM offices, GM plant, hotels, restaurants and commercial businesses.
Keys for success are the facility must be proactive and trust EPA. Address immediate issues with interim measures and finally, be flexible. Realize that the requirements of the developer may be more stringent than EPA's requirements.

Alternative Remedy (Phytocover), Martin Hamper, Principal Scientist, Arcadis, Geraghty and Miller and Dr. David Tsao, Environmental Research Engineer, BP Amoco

Martin Hamper:

Phytoremediation provides containment and removal of water content from a site through evapotranspiration and degradation of the hazardous waste constituents. A 25-year-old tree can transpire 5 gallons per day. The system needs to be designed to meet RCRA regulations. A conservative design concept was developed. Water balance analysis is crucial for success. The benefits are that the regulatory requirements can be met in a cost-effect manner. The phytocover provides greenspace. Operation and maintenance costs decrease over time.

David Tsao:

During the mid-1990's, properties adjacent to the Mississippi River such as BP Amoco's Closed Disposal Facility (CDF) in Wood River, Illinois, were subjected to inundation as the river reached 500-year flood stages. As the waters eventually receded, the potentiometric gradient between the inside and outside of the CDF began to build. Concerns were raised that this gradient could potentially push the contained hydrocarbons (petroleum wastes in the form of hydrocarbon sludge) through the containment wall surrounding the CDF. In order to remedy this situation, BP Amoco, in cooperation with Illinois EPA, investigated the use of phytoremediation for its abilities to evapotranspire significant volumes of water from the subsurface. Initially, plant screening experiments were conducted in the greenhouse using hydrocarbon material acquired from the CDF. These experiments provided valuable insights into the potential species that could be used

to send their roots into the subsurface of the CDF, possibly encounter hydrocarbons, survive, and transpire out the contained moisture. Both groundcover species as well as trees were tested. Once a list of candidate species was developed, three-year field trials were initiated which included planting several plots of groundcover plants as well as stands of different tree species. The groundcover plots were designed to intercept incoming rainfall and prevent further infiltration into the subsurface while the trees were designed to provide a slow pressure release of the existing subsurface moisture. When used in conjunction with one another, the combined vegetative cover should lead to a reduction in liquid levels within the CDF. The site had ponding due to flooding of the Mississippi River which was contained in the site by a previously-installed slurry wall. The pump and treat option was not feasible due to the lack of an electric utility. Water would have to be collected and trucked away. The cost was estimated at around two million dollars. The second option was phytocover which would not require utility connections. The estimated cost was $250,000 to $500,000.

Day 2 - January 18, 2001

Opening Remarks, David Ullrich, Deputy Regional Administrator, U.S. EPA, Region 5

This year and the next several years will continue our efforts to improve the effectiveness of RCRA Corrective Action. Yesterday you heard about some new initiatives and some successful new tools for program implementation. Today we will have a chance to get State perspectives on Corrective Action in their Breakout sessions. I support the streamlining efforts that have been implemented and I encourage continued efforts to reform RCRA. I want to stress that the Corrective Action program is key to achieving both agency and regional priorities. These include reducing toxics, Brownfield redevelopment, protecting people at risk, especially children and environmental justice communities and protecting and restoring ecosystems.

I want to encourage you to provide your suggestions, insights and experience today during this afternoon's open discussion. I believe that it is through effective communication that improvements in the way we all work together can be achieved. We look forward to working with you and thank you for coming to our second conference on RCRA Corrective Action.

State Breakout Sessions - Individual States with Industry

Illinois

Joe Zlogar, URS Corporation - Industry will encourage streamlining in Illinois. Creative ideas, trust, and communication are needed. Innovative programs such as RAPs and CAMU are also needed. Perceived barriers include failed promises, lack of progress, site specifics in discussions and State interpretation of U.S. EPA guidance.

Indiana

Tom Linson, Indiana Department of Environmental Management - Indiana's Risk Integrated System of Closure(RISC) (consistent clean up standards) was adopted last Wednesday. It allows for more flexibility in their cleanup program. RCRA reforms when permits and orders appropriate (site specific issues were discussed). Other discussion topics during their break out session were the Corrective Action Program organizational structure, Groundwater Rule (currently under development), land use restrictions especially industrial closure scenarios (more agency authority to enforce and transition)(implementation of RCRA reforms).

Michigan

De Montgomery, Michigan Department of Environmental Quality (MDEQ) - Michigan's cleanup criteria is land use risk based (1995), their Part 201 cleanup program. In November 2000, U.S. EPA recognized Michigan's cleanup standards and they now have a recognized Voluntary Action Program with U.S. EPA. MDEQ will be training their personnel on the Part 201 cleanup standards. Project managers will also adopt streamlining. MDEQ has formulated a strategy to complete Corrective Action in Michigan. Michigan identified "pilot" issues - waste identification (listed waste classification versus risk-based cleanup criteria), bioavailability determination (as opposed to more traditional analytical procedures for identification of risk-based pathways), and PCB Federal process (Michigan wants to pursue site specific standards). Waste classification listed vs. risk based clean or still listed. On May 1, 2001, MDEQ will host a Corrective Action conference in Troy, Michigan with Michigan facilities.

Minnesota

Bruce Brott, Minnesota Pollution Control Agency - There were no facilities attending the conference from Minnesota. Minnesota is just about through with GPRA Corrective Action work. GPRA

necessitated the issuance of a few additional permits with CA agreements to address all sites.

Ohio

Dave Sholtis, Ohio Environmental Protection Agency - Overview of Corrective Action is at 85 GPRA baseline facilities, almost an even split between U.S. EPA versus State lead (work sharing is ongoing). Concerns are that there is a smooth transition from U.S. EPA to State lead. A lot of coordination will be required as well as work sharing and getting the State involved early in the transition process. Perceived barriers to streamlining include getting ideas across and focusing on new methods, putting things in writing at State level. Facilities with units subject to closure rules sometimes want to be more flexible and move ahead with site-wide cleanups, but run into authorization problems. Closure requirements can get in the way of site-wide cleanup (e.g., groundwater monitoring in cleanup areas to comply with closure regulations). State requirements' conflict with Federal requirements. Need to engage U.S. EPA on how to deal with these types of scenarios.

Wisconsin

Mark Gordon, Wisconsin Department of Natural Resources - Pilot projects expand liability exemption for government and lenders. It expands EPA's area of contamination policy. Also, request an MOU with Region 5 to recognize Wisconsin's voluntary program.

Federal

Cultural changes are needed to convert from process-based to performance-based Corrective Action Program. October 13, 2000, Region 5 Guidance on performance-based Corrective Action is key to implementation of these changes. The Corrective Action Program is in transition and we need to maintain the momentum of the past few years. We need to concentrate on useful data collection at sites (only collect data that is needed). Use an iterative nature to collect data. Paula Williams, Region 5 is working on risk-based guide (clean facility to risk point then manage risk on a site specific basis). For all programs in Waste, Pesticides and Toxics Division, involvement with all stakeholders (community, citizens and local officials) as well as facility. It is important to identify stakeholders at the beginning of the process. Owner/operator cooperation and communication (need a level of cooperation to develop a partnership). A strong partnership with the States is also critical. Make the process transparent. Encourage innovation and skip steps as appropriate. Working on exit process and how clean

is clean. The EI determinations are a key step in the process, but we need to finish the cleanups and terminate the process before we are really finished at a site. We are currently revising the Exit strategy. We still need to finish 162 GPRA facilities and 1,600 sites that haven't been started yet (non-GPRA facilities). U.S. EPA role in permit-driven Corrective Action will be replaced by States over time as we transition from Federal to State lead.

Superfund's sharing of information (set up exchange of ideas and informal communication between project managers). Waste, Pesticides and Toxics Division wants to incorporate that among RCRA Corrective Action Project Managers.

U.S. EPA needs to mirror the performance-based approach to encourage States to embrace RCRA reforms as well. Headquarters assistance and support will help dealing with non-cooperative sites.

Corrective Action Awards, Presented by Robert Springer and Karl Bremer, Chief, Waste Management Branch, Region 5

Leadership Award - Hoover Company, accepted by Monica Satrape, Environmental Action Manager. Recognized for outstanding facility leadership in the Corrective Action Program and the development and implementation of a model Voluntary Agreement.

Progress Award - Argonne National Laboratory East, accepted by Greg Borland and Angela Harvey, United States Department of Energy. Recognized for outstanding facility progress in the Corrective Action Program in streamlining and completing work at its facility.

Special State Commendation - State of Illinois, Environmental Protection Agency, accepted by William Child, Chief, Bureau of Land. Recognized for outstanding leadership and support of streamlining the Corrective Action Program and efforts in completing Environmental Indicator determinations.

Honorable Mentions - Industry: Safety-Kleen and State: Michigan Department of Environmental Quality.

The New RCRA Reforms, Steve Heare, Director, Permits and State Programs Division, Office of Solid Waste, U.S. EPA

U.S. EPA Headquarters wants to thank the Region, States and facilities for the progress achieved in the Corrective Action program. Review of past reforms HPV to GPRA, stabilization to EI determinations. Environmental Indicator determinations are our

top priority. 2005 is the deadline imposed by GPRA. We have tools in place, regulations and policy to allow programs to take off and meet these challenges. The RCRA Corrective Program will be different in the future. It will be results not process that will be stressed. Creativity and innovation by the Regions, States and facilities will be key. RCRA Cleanup Reforms II center around making cultural changes on how to do business. Pilot innovative approaches. Twenty-five pilot projects for 2001 is our goal. We need to accelerate changes in culture in all Regions. It is important to have these kind of conferences where the stakeholders are present. Training, Corrective Action workshops and partnering with industry to assist with training are things we would like to see. Internet web-based communication also linked to State sites to foster information exchange. A summary pamphlet to summarize web information for the public is another. Indoor air issues and such related to EI determinations, connecting communities to clean ups (TOSC grants to help communities understand problems and options for cleanup). Brownfields and TSE targeted sites are issues that could hold things up (chance to work thru barriers). Outreach and training (success of cleanup stories) should be communicated to stakeholders. Also, comfort letters to keep U.S. EPA out of the loop. Guidance and letter drafted and coming out soon.
The latest round of guidance coming out will be groundwater and exit strategy. Most likely no new national policy but clarity is needed. There are no current plans to issue perspective purchaser policy/guidance. The Region plans to pursuing voluntary program MOUs to recognize State programs rather than issuing "comfort letters" on a case by case basis.

Open Issues Discussion, Steve Heare, John Quarles and Gerald Phillips (moderated by Robert Springer)

Ground rules for pilots have not yet been published. The way U.S. EPA currently envisions the process is to register them with U.S. EPA Headquarters for information purposes (what it is, what will it achieve and what we learned from the pilot). No formal approval will be required from Headquarters. The pilot project should demonstrate streamlining. We are looking at one per State as a good idea. Headquarters would encourage the pursuit of a pilot if it is something that makes sense and the company, State and Region agree on it. Wisconsin is looking at some sort of lender liability protection pilot. We need to use pilots to test new concepts to see if something will really work. The RCRA Corrective Action Program is run on the basis of existing guidance. The challenge is to find flexibility that currently exists and to take the general framework of the guidance and successfully applying it in practice, achieving results and reporting out on successes.

Brownfields are part of managing property. Reuse is part of the decision making process for an owner. What is it about Brownfields that RCRA Corrective Action project managers should be paying attention to? The business process is the leading issue. When is the corrective action process done at a site? Property developers and managers want the corrective action process to be out of their way. Does the absence of a proactive Brownfields program in the RCRA arena restrict business activity? The answer is yes. Companies will warehouse contaminated property and not use it or sell it due to the liability risks. It is a manageable burden for the company, but a devastating burden to society because it is keeping that property out of active use. U.S. EPA needs better tools and training to deal with this problem.

Headquarters as part of Reforms I committed to do a handbook of groundwater policies. What was envisioned was a compilation of existing policies. Into the process it was found that it was contrary to the kind of things they were trying to promote with the reforms. It has since been significantly rewritten and has been distributed for comment. Some of the comments dealt with cleaning up a site to drinking water standards where the existing use is industrial. There needs to be some interim steps. For example, the cleanup level for a facility that is operating may not be the same once it closes. There needs to be continuing dialogue, perhaps in some sort of setting. The current draft will be out in a couple of weeks for Region and State review.

Exit Strategy, George Hamper, Corrective Action Section, Enforcement and Compliance Assurance Branch, U.S. EPA, Region 5

Region 5 is developing a Corrective Action Completion Guide to help Region 5 staff recognize the successful completion of RCRA corrective action work at any individual facility, and describe the situation accurately in the Agency's information database, RCRAInfo. A draft is available for review and comment. It explains that the "Statement of Basis" and the "Final Decision and Response to Comments" are the key documents for public participation and remedy selection. The "Final Decision and Response to Comments" for each corrective action project should explain what needs to be done to complete the corrective action work for that facility. Recently, a workgroup has been formed to try to adapt the Corrective Action Completion Guide for use by a wider audience, including industry representatives and the staff of state agencies. The goal is to have the document finalized by about the end of April 2001.

Risk Management Strategy, Paula Williams, Toxicologist, Corrective Action Section, Enforcement and Compliance Assurance Branch, U.S. EPA, Region 5

Corrective action decisions are largely based on risk. This strategy is designed to unify risk managers' professional judgement and to take a holistic approach to the process. The strategy includes considerations of the big picture (i.e., wetlands, public interest, EI determinations), data quality, ecological concerns, and groundwater use concerns. Using this guidance, project managers will make site specific, risk-based decisions that are consistent with other decisions made in the Region.

Persistent Bioaccumulative and Toxic Chemical Reduction Strategy, Greg Rudloff, Corrective Action Project Manager, Corrective Action Section, Waste Management Branch, U.S. EPA, Region 5

My discussion will be about PBT pollutants and what they are. They are bioaccumulate in the food chain. They are toxic and pose risks to human health and ecosystems. Examples include the following chemicals: cadmium, lead, mercury, PAHs, dioxins/furans, pentachlorophenol, heptachlor, chlorobenzene. The GPRA goal is by 2005 to reduce by 50% of PBT chemicals as compared with a baseline year of 1991. Recovering PBT chemicals that have been released into environment is a key component of the strategy. The RCRA program plans to track and document these chemicals at ten U.S. EPA lead sites.

Performance Based Guide, Gerald Phillips

The Region's Performance-based Corrective Action Guide became effective in October 2000. The purpose of the Guide is to provide a summary of the philosophy behind the Region's efforts to streamline RCRA Corrective Action. The focus of the Guide is on the use of flexibility and prioritized decision making to ensure that the cleanup efforts take precedence over administrative steps. The Guide discusses the use of risk management tools, iterative data collection and decision making as well as the role of the interested stakeholders. The Guide is intended to summarize the cultural changes being implemented by the RCRA Corrective Action program in Region 5.

Section II - Action Items

1. Illinois Environmental Protection Agency will develop Ecosystems-Tiered Approach to Cleanup Objectives (ECO-TACO) guidance.

2. Michigan Department of Environmental Quality will hold a Corrective Action Conference in May 2001. They have offered to share their efforts with the other States.

3. Indiana Department of Environmental Management will finalize its State Risk Guidance (RISC).

4. Region 5 will send some staff to Indianapolis, Indiana for RISC training.

5. Region 5 will send some staff to Lansing, Michigan for State Cleanup Standards "Part 201" training.

6. Region 5 will work with the States to coordinate transition of permitted sites from Federal lead to State lead.

7. Indiana Department of Environmental Management and Wisconsin Department of Natural Resources will request Memoranda of Understanding with Region 5 for acknowledgment of State Voluntary Cleanup Programs.

8. Region 5 will further test streamlining pilot projects with States using approaches such as:
   a. Achieving cleanup goals more effectively;
   b. Improving stakeholder involvement; and
   c. Enhancing the use of accountable State non-RCRA cleanup programs.

   Region 5 will develop as many as six pilots under RCRA Reforms II, through collaboration with each State.

9. Region 5 will provide more public access to information by publishing Environmental Indicator forms and site summaries on-line.

10. Region 5 will examine common approaches for industry sectors.

11. Stakeholders will resolve property reuse issues.

12. U.S. Environmental Protection Agency Headquarters will issue revised draft groundwater policy (further dialogue with stakeholders will be provided).

13. Region 5 will begin to make property re-use, such as Brownfields, part of the CA approach used by the Region. Links between the two efforts will include how EIs fit, release of property, timing, exit.

14. Region 5 has a workgroup developing a RCRA Corrective Action completion and exit plan. Tied to this, is consideration of alternative institutional controls, available at various levels of government.

15. Region 5 is working to develop consistent risk guidance.

16. Region 5 will pilot test measuring Persistent Bioaccumulative and Toxic chemical reductions at Federal lead sites.

Appendix 1 - Presentation Slides

- Robert Springer - Welcome and Introductory Remarks (13 slides)
- William Child - RCRA Corrective Action, A State's Perspective (10 slides)
- Robert Johnson - Voluntary Efforts by the Private Sector (39 slides)
- Jean Caufield - Streamlined Corrective Action Order (12 slides
- Hak Cho - Voluntary Agreements (4 slides)
- Monica Satrape - Voluntary Agreements (22 slides)
- Richard Menozzi - Streamlining (U.S. Steel)(1 slide)
- Douglas Bley - Streamlining (Bethlehem Steel)(8 slides)
- David Kalet - Property Reuse (19 Slides)
- Keith West - Property Reuse (47 slides)
- Martin Hamper - Phyto-Cover at a RCRA Site (23 slides)
- David Tsao - Phytoremediation at Wood River (25 slides)
- George Hamper - Exit Strategy (2 slides)
- Paula Williams - Risk Management Strategy (2 slides)
- Gregory Rudloff - PBT Strategy (7 Slides)

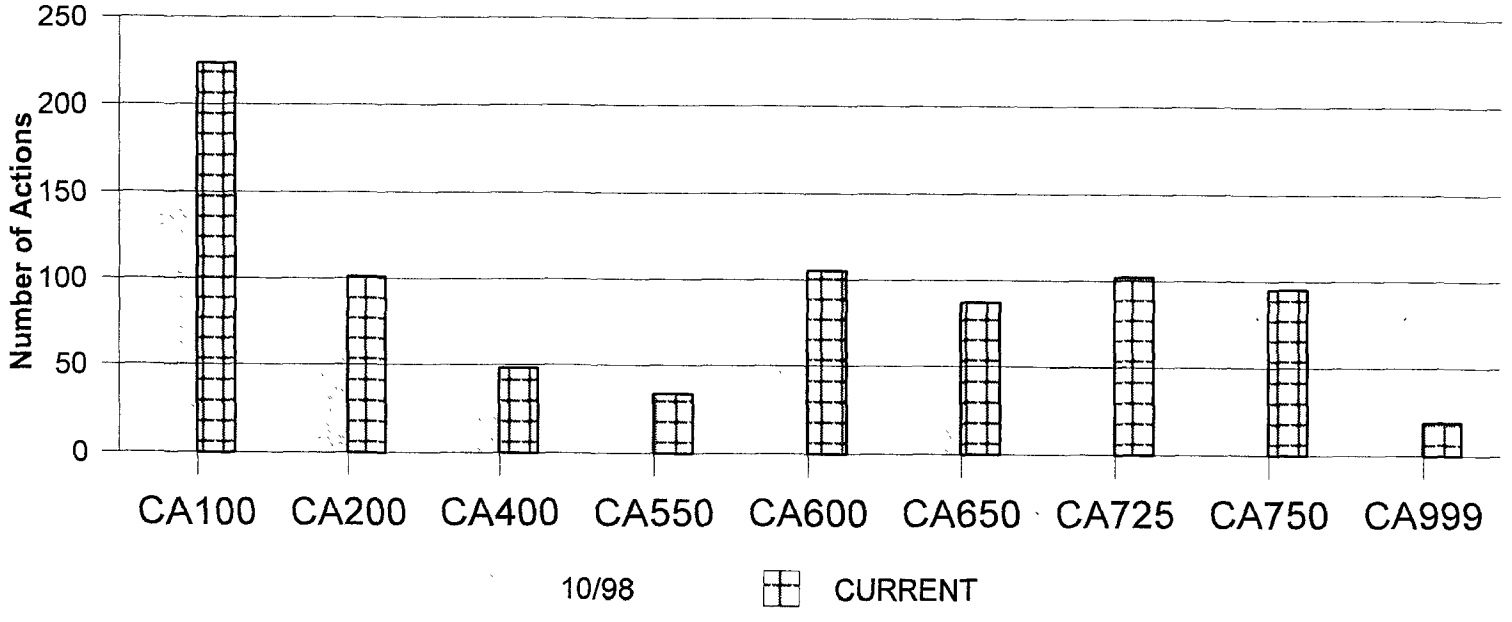
Welcome and Introductory Remarks

presentation by

Robert Springer, Director
Waste, Pesticides and Toxics Division
U.S. EPA, Region 5

GPRA
Corrective Action Universe
Environmental Indicators

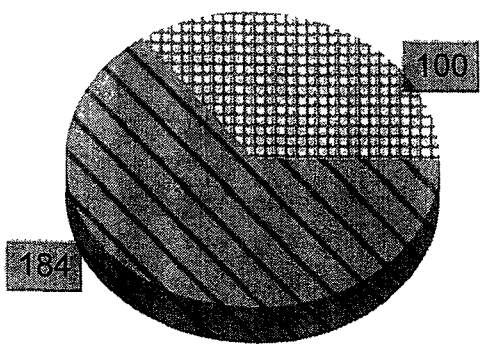
GPRA Update Comparison



- CA100 - RFI IMPOSED
- CA200 - RFI APPROVED
- CA400 - REMEDY SELECTED
- CA550 - REMEDY CONSTRUCTION COMPLETE
- CA600 STABILIZATION MEASURES APPROVED
- CA650 - STABILIZATION MEASURES APPROVED
- CA725 - HUMAN EXPOSURES CONTROLLED
- CA750 - GROUNDWATER RELEASES CONTROLLED
- CA999 - TERMINATED

Region 5 and States Progress

Human Exposure



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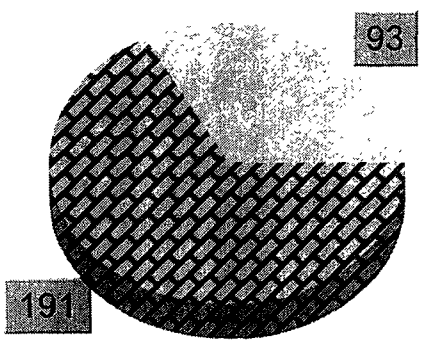
Groundwater Release



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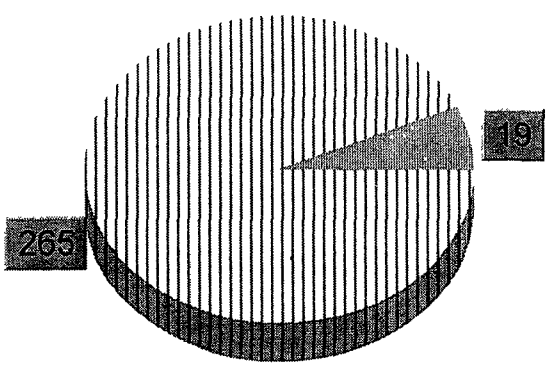
Termination of Corrective Action



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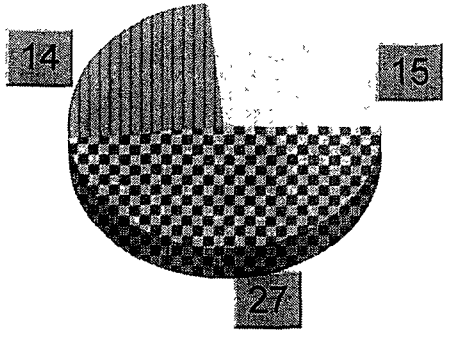
Illinois

Human Exposures



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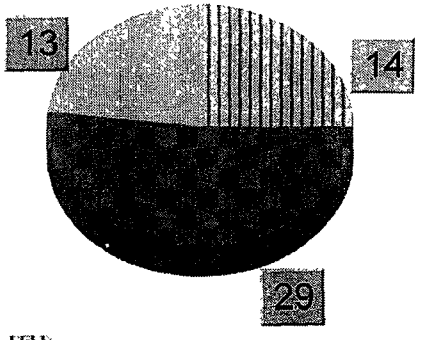
Groundwater Releases



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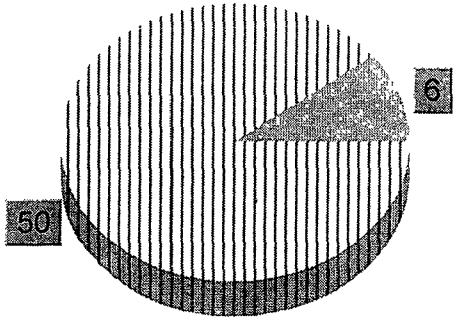
Termination of Corrective Action



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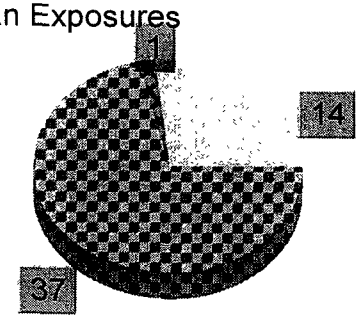
Indiana

Human Exposures



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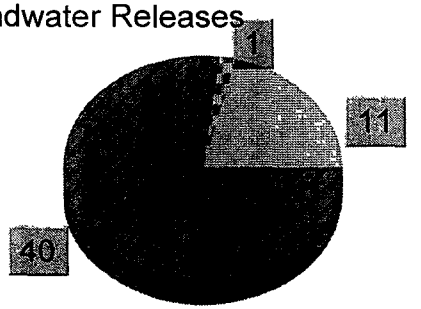
Groundwater Releases



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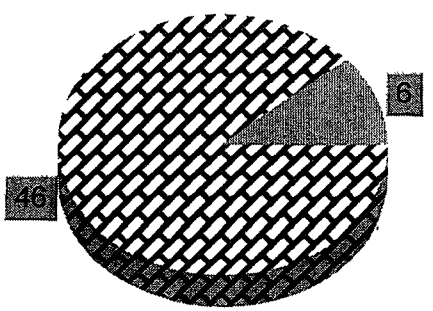

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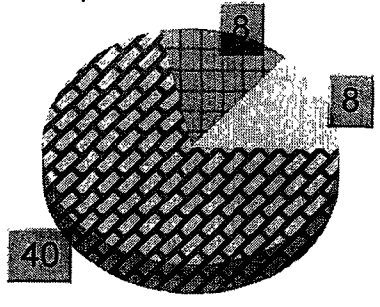
Michigan

Human Exposures



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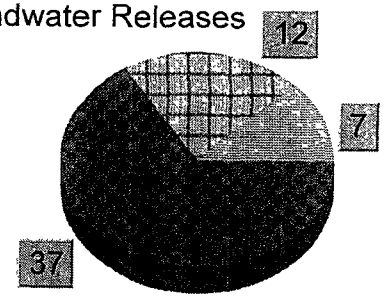
Groundwater Releases



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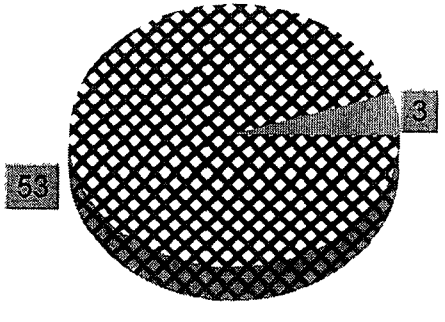
Termination of Corrective Action



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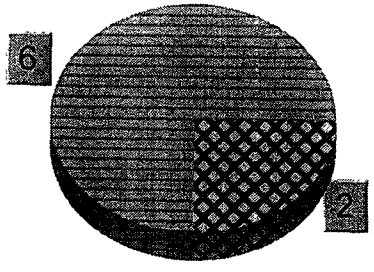
Minnesota

Human Exposures



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State Complete
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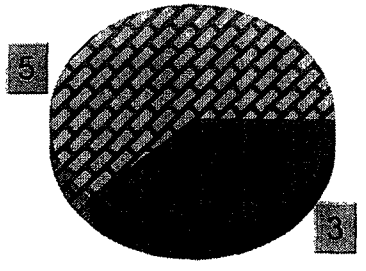
Groundwater Releases



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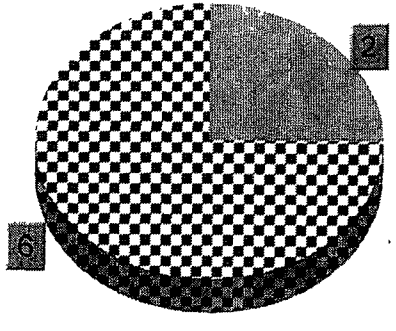
Termination of Corrective Action



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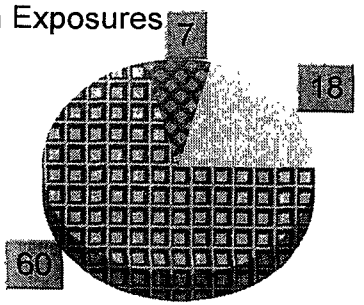
Ohio

Human Exposures



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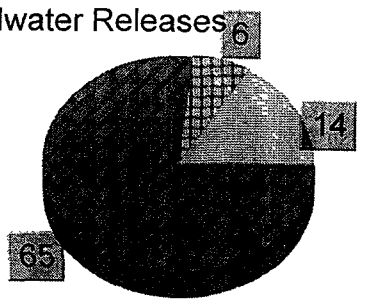
Groundwater Releases



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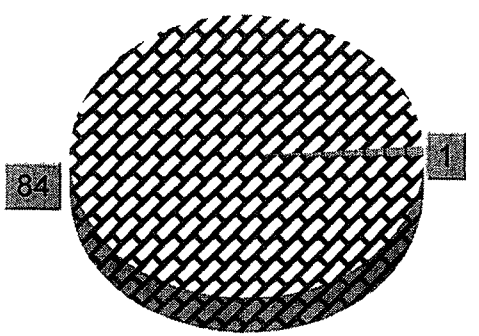
Termination of Corrective Action



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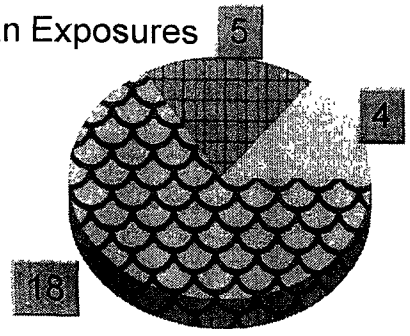
Wisconsin

Human Exposures



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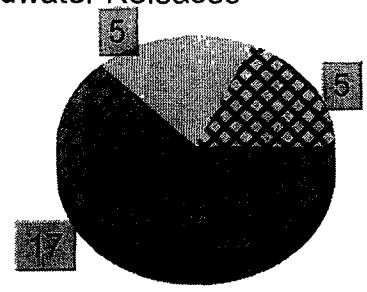
Groundwater Releases



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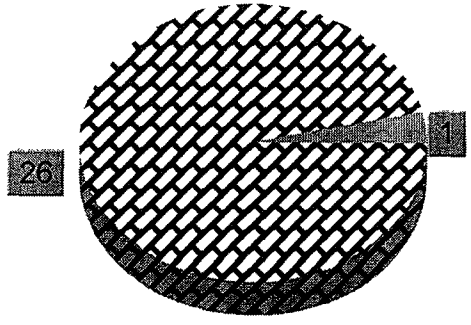
Termination of Corrective Action



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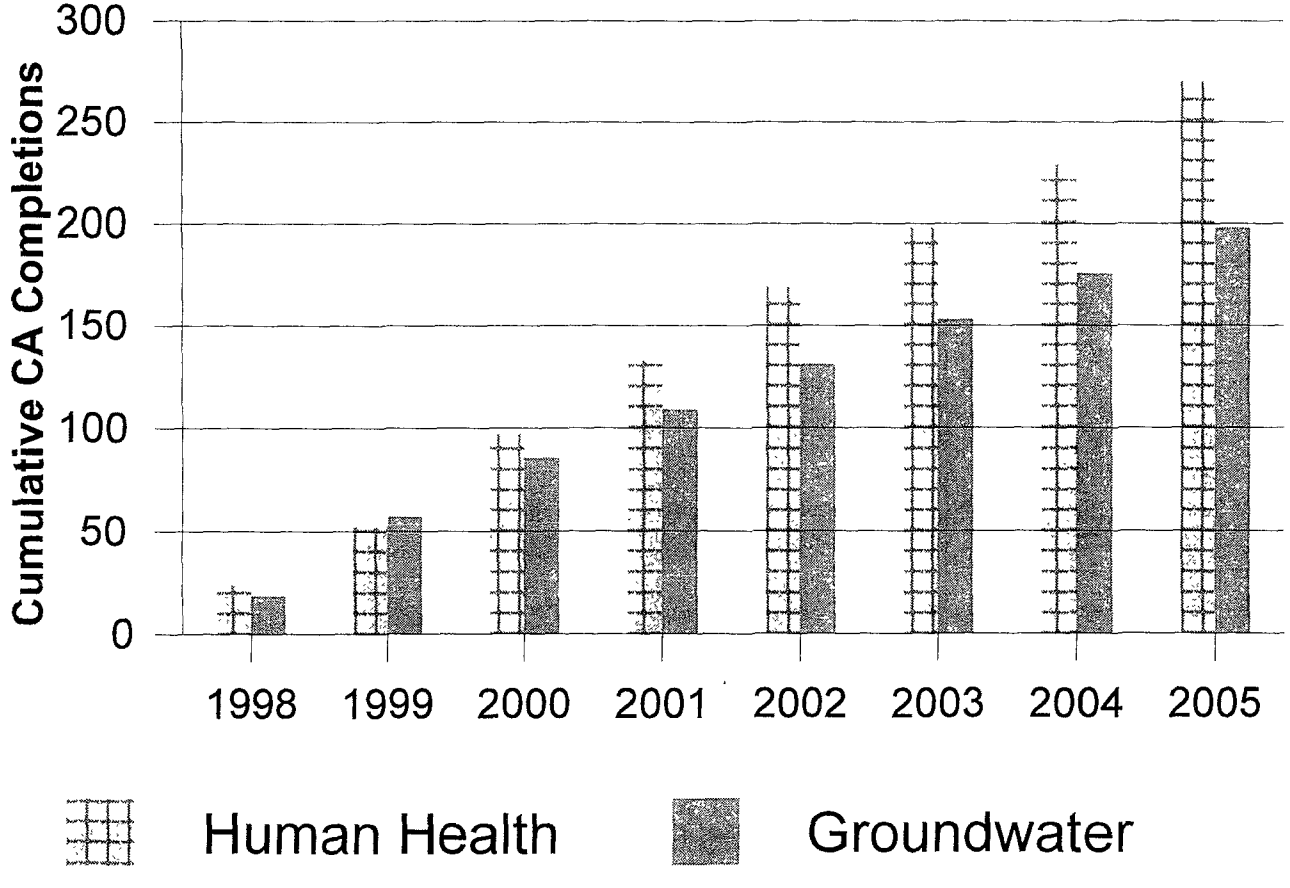
Projections

Corrective Action Indicators Completions



Deliverable Documents

Traditional Order:
Current Conditions Report
RCRA Facility Investigation (RFI) Phase 1 Work
RFI Phase 1 Quality Assurance Project Plan
RFI Phase 1 Final Report
RFI Phase 2 Work Plan
RFI Phase 2 Quality Assurance Project Plan
RFI Phase 2 Final Report
Interim Measures Work Plan
Interim Measures Construction Completion Report

Corrective Measures Study Work Plan
Corrective Measures Study Final Report

Corrective Measures Implementation Work Plan
Corrective Measures Construction Completion Report
Quarterly Progress Reports

14 years

Streamlined Order:
Current Conditions Report
RFI

Environmental Indicators Report
Final Corrective Measures Proposals
Final Remedy Construction Completion Report
Quarterly Progress Reports

4 - 5 years

Region 5 RCRA Corrective Action Strategy

Where we were:

- Meet with owners of 5+ facilities
- Developed Policies on Institutional Controls
- Streamlined Order
- Voluntary Agreements
- Recognized 2 State Voluntary Programs (IL & MI)

Where we are:

- Updating working Agency agreements with States
- Develop Site-specific strategies
- Reviewing IN Voluntary Program

Where we are going:

- Experts begin reviewing Voluntary Program in MN & WI
- Risk Based Decision Guide
- RCRA II Reform Pilots
- State/Industry Clean-up Council
- Exit Strategy (CA Complete)

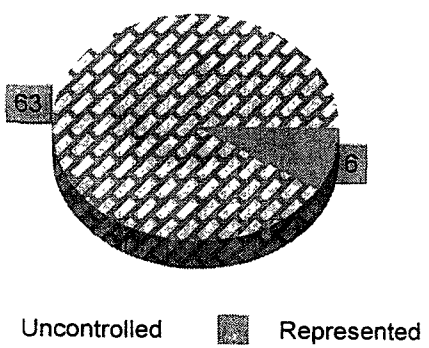
GPRA Post Closure Facilities Not Under Control

'otal Post Closure Universe

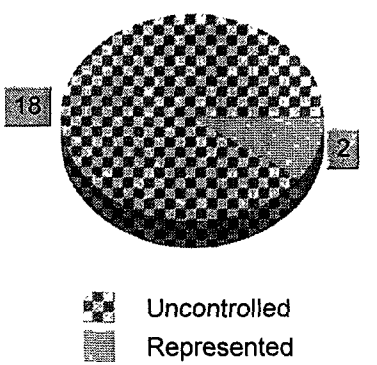
Not Under Control - 132

Number of Facilities Represented at CA Conference - 9

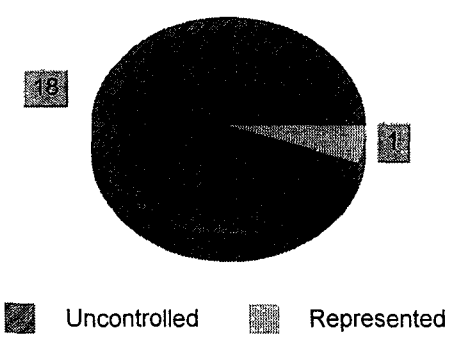
Ohio Post Closure Facilities Not Under Control



Michigan Post Closure Facilities Not Under Control



Illinois Post Closure Facilities Not Under Control



State Perspective

presentation by

William Child, Chief
Bureau of Land
Illinois Environmental Protection Agency

RCRA Corrective Action

A State's Perspective

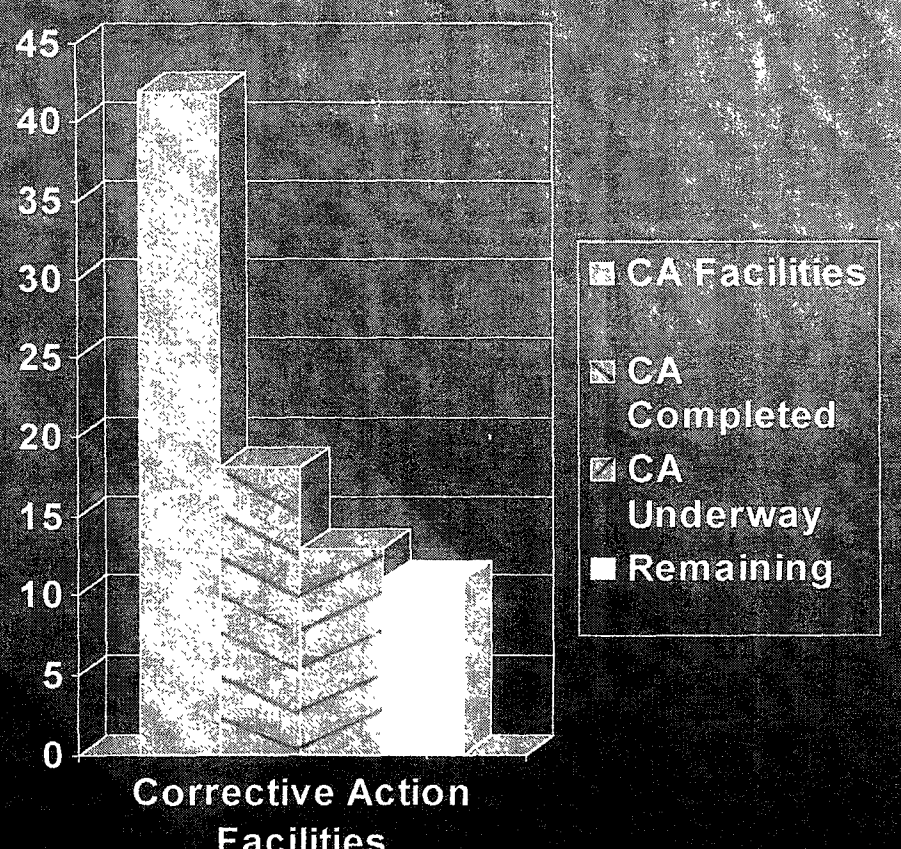
William C. Child, Chief
Bureau of Land
Illinois EPA

- Illinois EPA received authorization to implement the RCRA corrective action program at RCRA permitted facilities in April 1990
  - Thus, Illinois EPA is responsible for implementing corrective action at all facilities issued RCRA permits after 1990
  - USEPA still responsible for implementing corrective action at facilities issued permits before 1990, which have yet to be issued a renewed permit
- USEPA maintains authority for imposing corrective action at interim status facilities via Section 3008(h) of RCRA. This authority has not been delegated to any states.

- Overall Goal of Illinois EPA's RCRA Corrective Action Program:
  - Properly remediate releases from solid waste management units (SWMUs) at permitted facilities
- Accomplish this goal by developing and implementing a corrective action process established in a facility's RCRA permit
  - The initial baseline for this process is the standard RFI and Corrective Measures Program established in USEPA guidance
  - Have allowed several facilities to make substantial changes to this process, subject to our review and approval (via negotiations in developing the final permit)

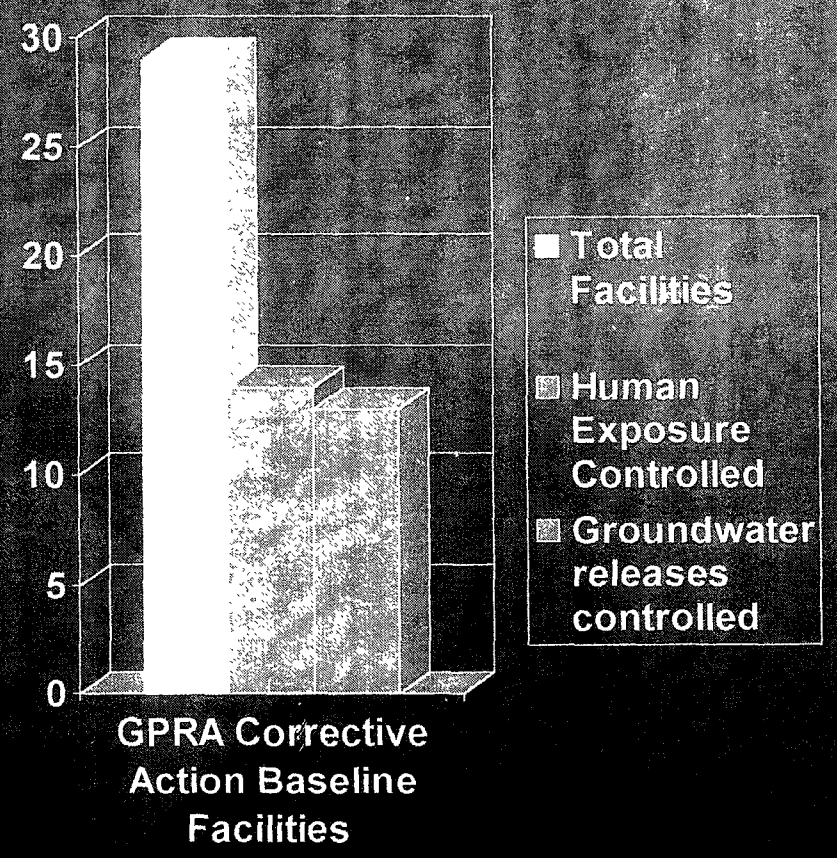
Corrective Action Program Data

- Implement corrective action at 42 permitted facilities
  - CA completed at 18 facilities
  - CA underway at 13 facilities
  - 76% CA measures are complete or underway



GPRA Corrective Action Baseline Facilities in Illinois

- Lead agency for 29 GPRA Corrective Action Baseline Facilities
  - Human exposure has been adequately controlled at 14 facilities
  - Groundwater releases have been adequately controlled at 13 facilities



- Some of key regulations which support and aid in our implementation of the RCRA corrective action program include

  - TACO - Tiered Approach to Corrective Action Objectives
  - GMZs - Groundwater Management Zones
  - CAMUs - Corrective Action Management Units
  - RAPPs - Remedial Action Plan Permits

Reflections/Lessons Learned

- Found that total command and control is not the best way to implement the corrective action program. Must work with facilities, listen to their needs and goals, try to come up with solutions that are acceptable to both parties.
  - Able to get much more accomplished
  - Catch more flies with sugar than with vinegar
  - In general, facilities desire to protect human health and the environment. Must work with them to accomplish this goal to their satisfaction and to our satisfaction

- Wonder if the RCRA program was the best way to get sites remediated.
  - RCRA program developed to ensure the proper management of waste generated by the public and industry
  - Perhaps should have used other programs to achieve clean-up of industrial sites

Things on the Horizon to Improve Program

- Eco-TACO—developing procedures and eventually regulations for the development of remediation objectives based on the protection of ecological receptors

- Continue to stress the need for teamwork, cooperation, respect and open communication

- Must continue to remember that the people sitting on the other side typically have same general goal as we do and that they are indeed people just like us—they are not an enemy

- Work with facilities on an individual basis to see what works best at that facility
  - Each facility is unique, need to be to adapt to those unique characteristics
  - Don't want to be tied to the old way of doing things. Do however, want to use the old way as a foundation
  - Where it benefits the facility and Illinois EPA, want to be able to try innovative approaches

Voluntary Efforts in the Private Sector

presentation by

Robert Johnson
Executive Vice President
Wildlife Habitat Council

Wildlife Habitat Council

WILDLIFE HABITAT COUNCIL℠

© 1988 WHC

Ecological Enhancement of Corporate Sites

Wildlife Habitat Council

- 501 (c) (3), non-profit, conservation organization
- Founded in 1988
- Headquartered in Silver Spring, MD
- Four field offices
- Sites in 45 states, 10 countries

WILDLIFE HABITAT COUNCIL℠

WHC's mission...

To increase the amount of quality wildlife habitat on corporate and other private lands.

WHC Membership

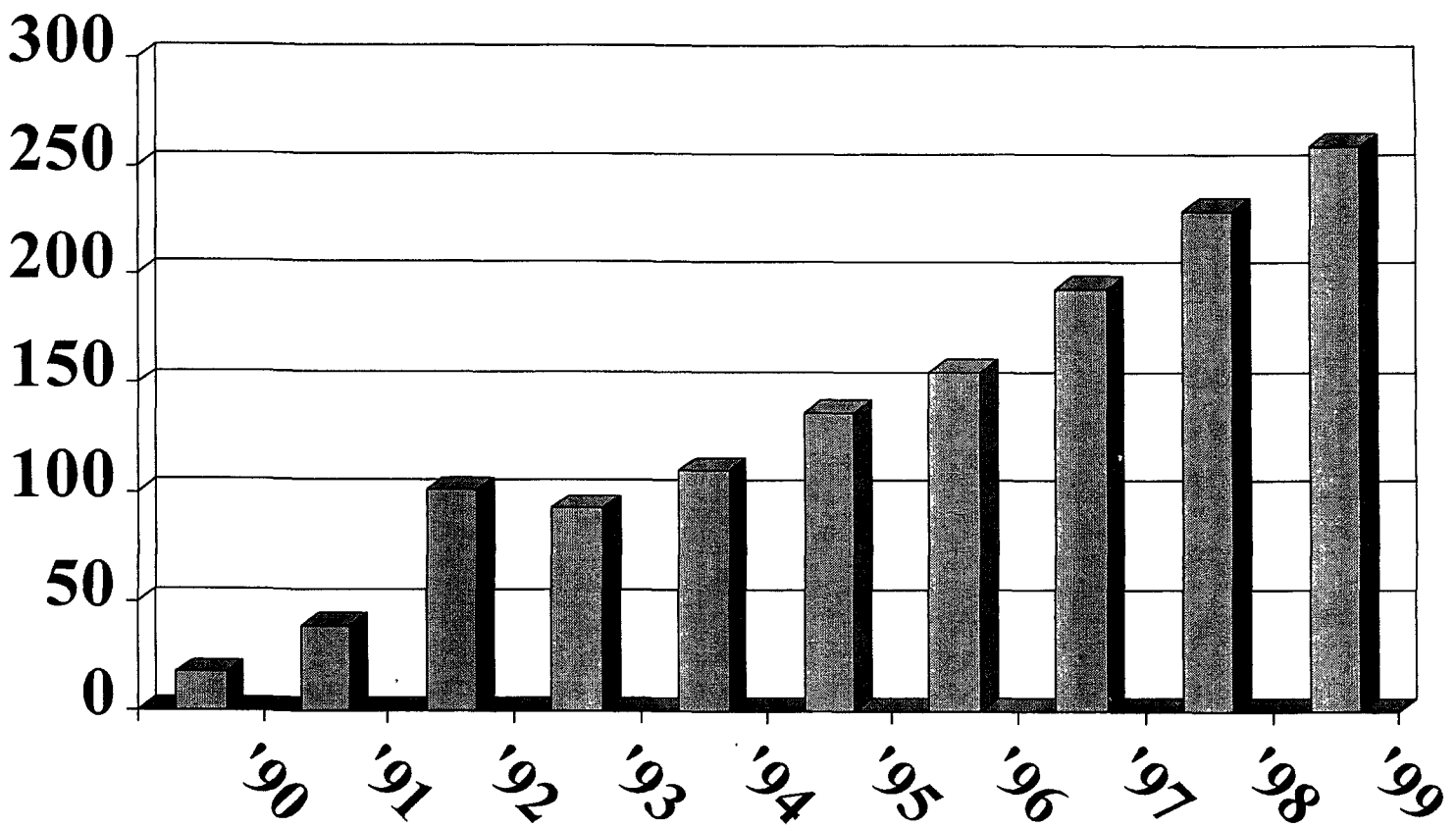
- **116 Companies**

  (e.g. Ford, U.S. Steel, PPG, BP, Bridgestone/Firestone)

- **32 Conservation Organizations**

  (e.g. Conservation Fund, Rocky Mountain Elk Foundation, Ducks Unlimited)

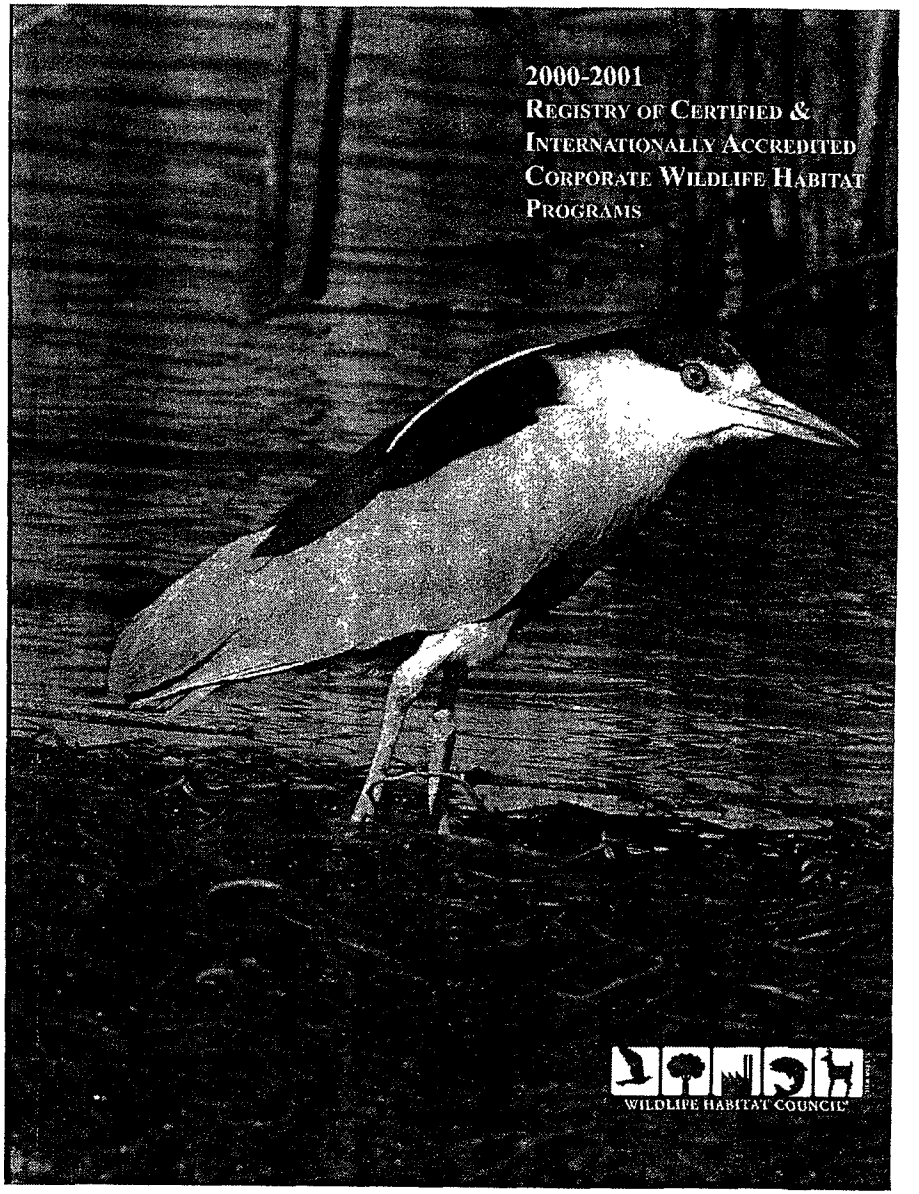
Numbers of Sites with WHC Certified Programs



Registry
of Certified and Internationally Accredited Wildlife Programs

WILDLIFE HABITAT COUNCIL℠

© 1988 WHC



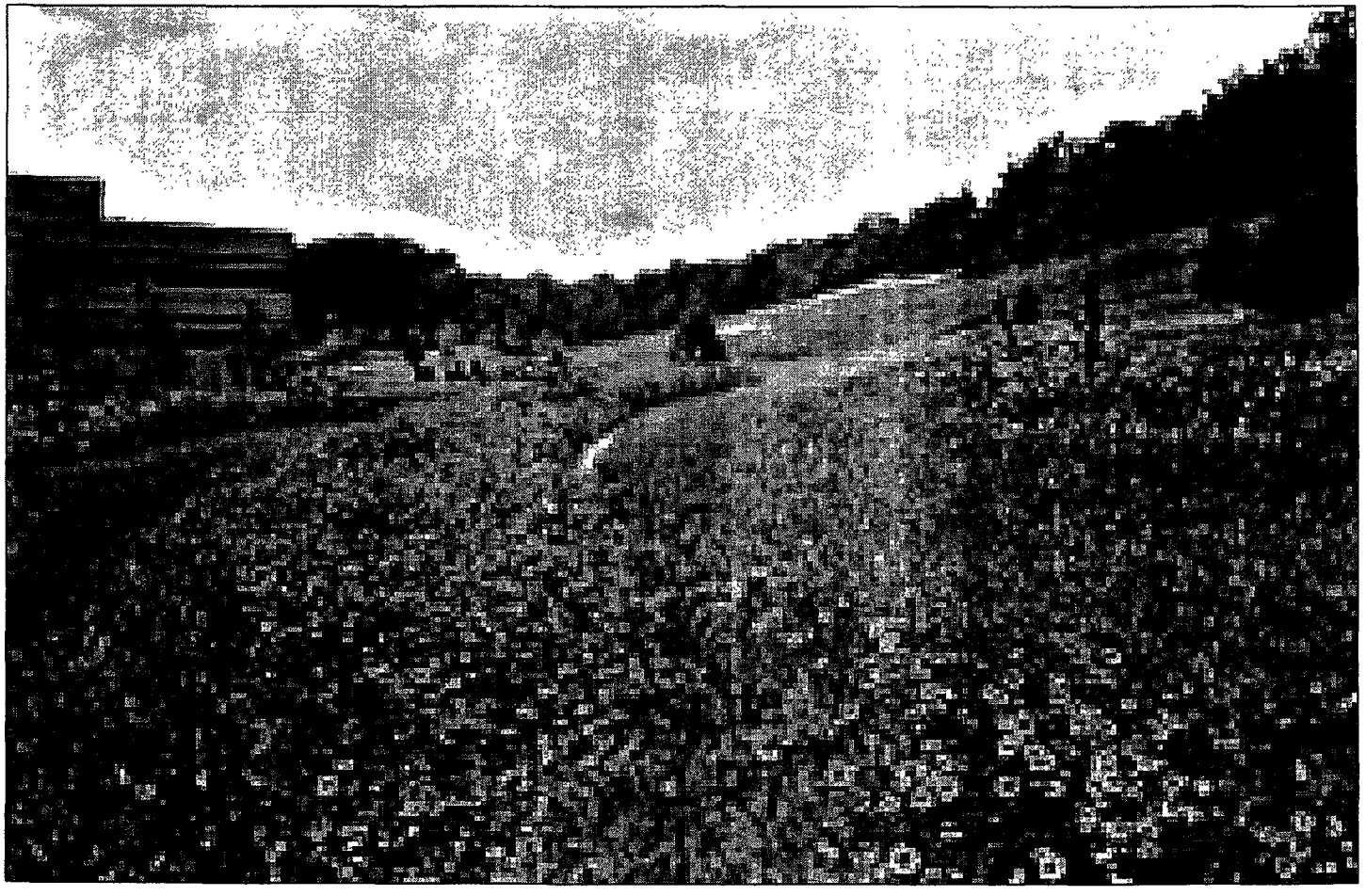
WHC Certification

In order to become certified, a site must:

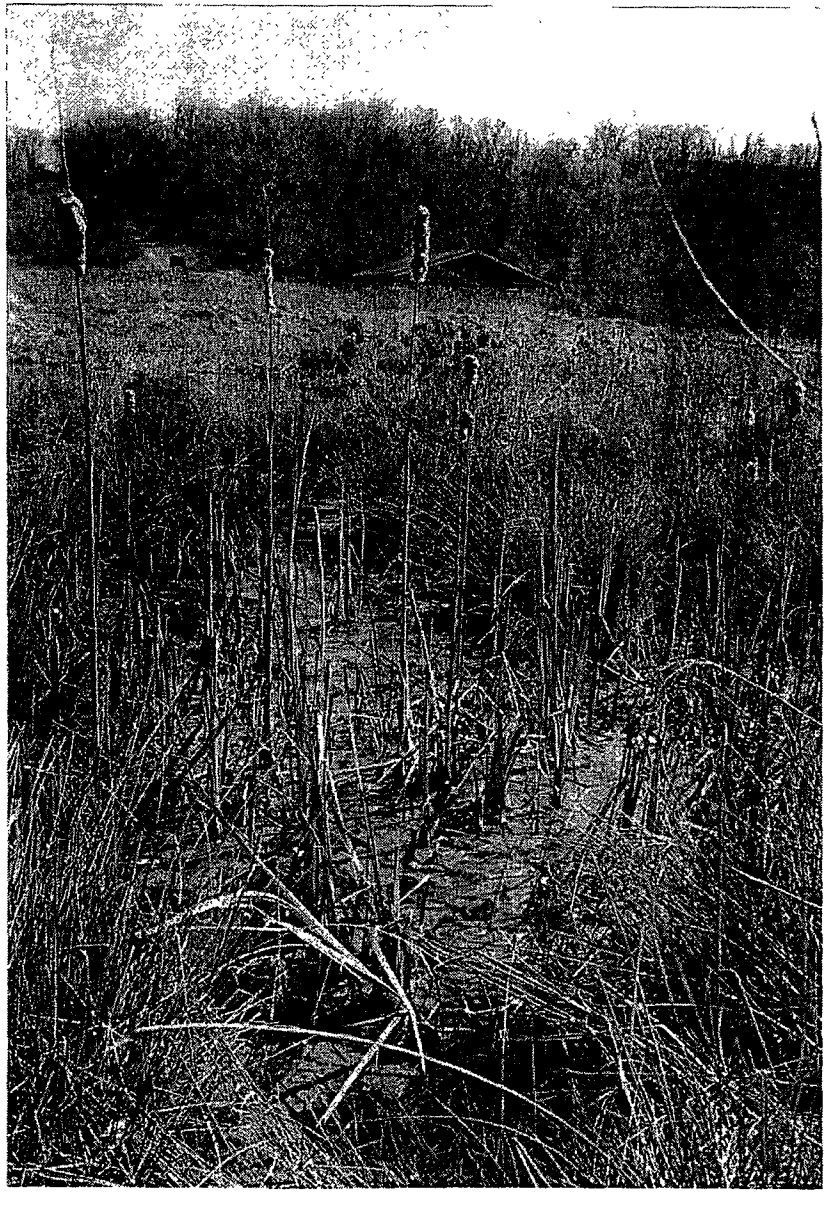
- maintain an active, committed wildlife program with a management plan,
- implement and monitor at least one habitat project for at least one year,
- maintain adequate documentation of the site's efforts to manage wildlife habitat
- Meet and exceed appropriate regulatory requirements relating to habitat.

Hutchins Landfill - Dallas

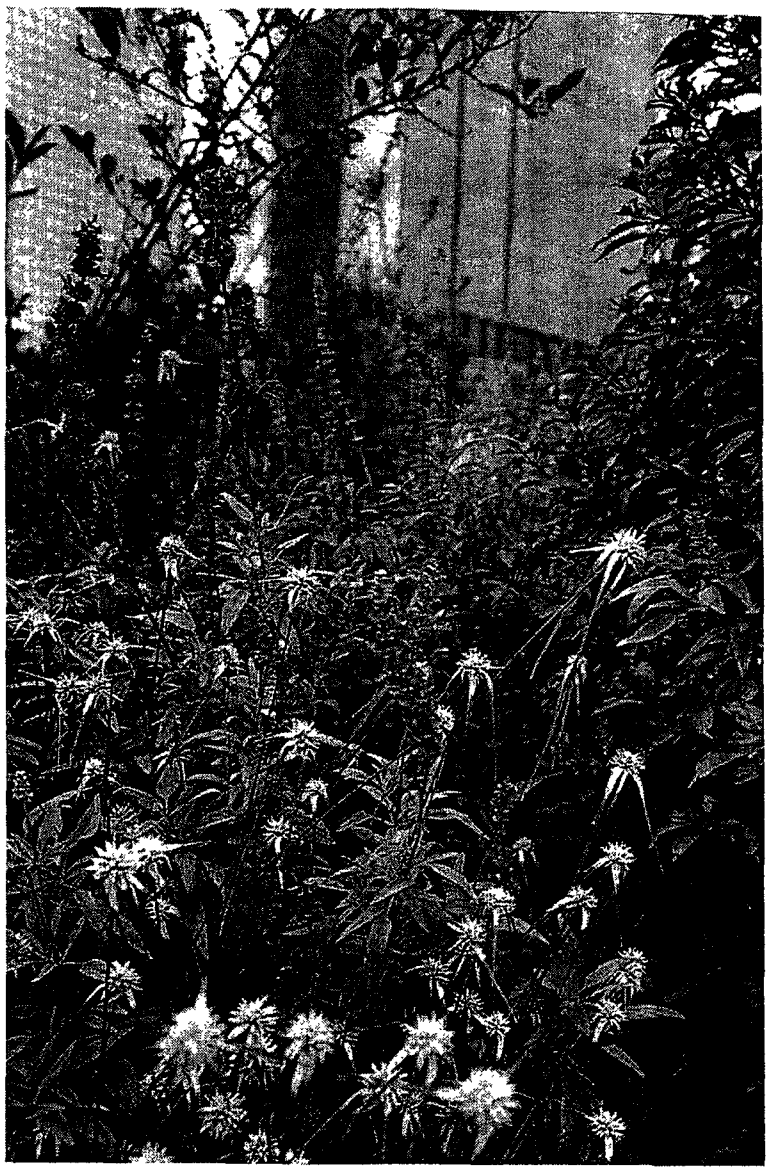
Bayer Corporation - Wildflowers at North American Headquarters



U.S. Steel - South Taylor Closed Landfill



Sam Houston Park



DuPont - Victoria, Texas

Benefits of Wildlife Programs

- Greater Employee Morale
- Improved Community Relations
- Reduced Ground Maintenance Costs
- Better Rapport with Regulatory Agencies
- Closer Compliance with ISO 14000 Standards
- Protection and Restoration of Biodiversity
- Increased Public Recognition

WILDLIFE HABITAT COUNCIL℠

Work Team at Vulcan Hendersonville, NC

BFI-Sunshine Canyon - Larry Cubit and kids

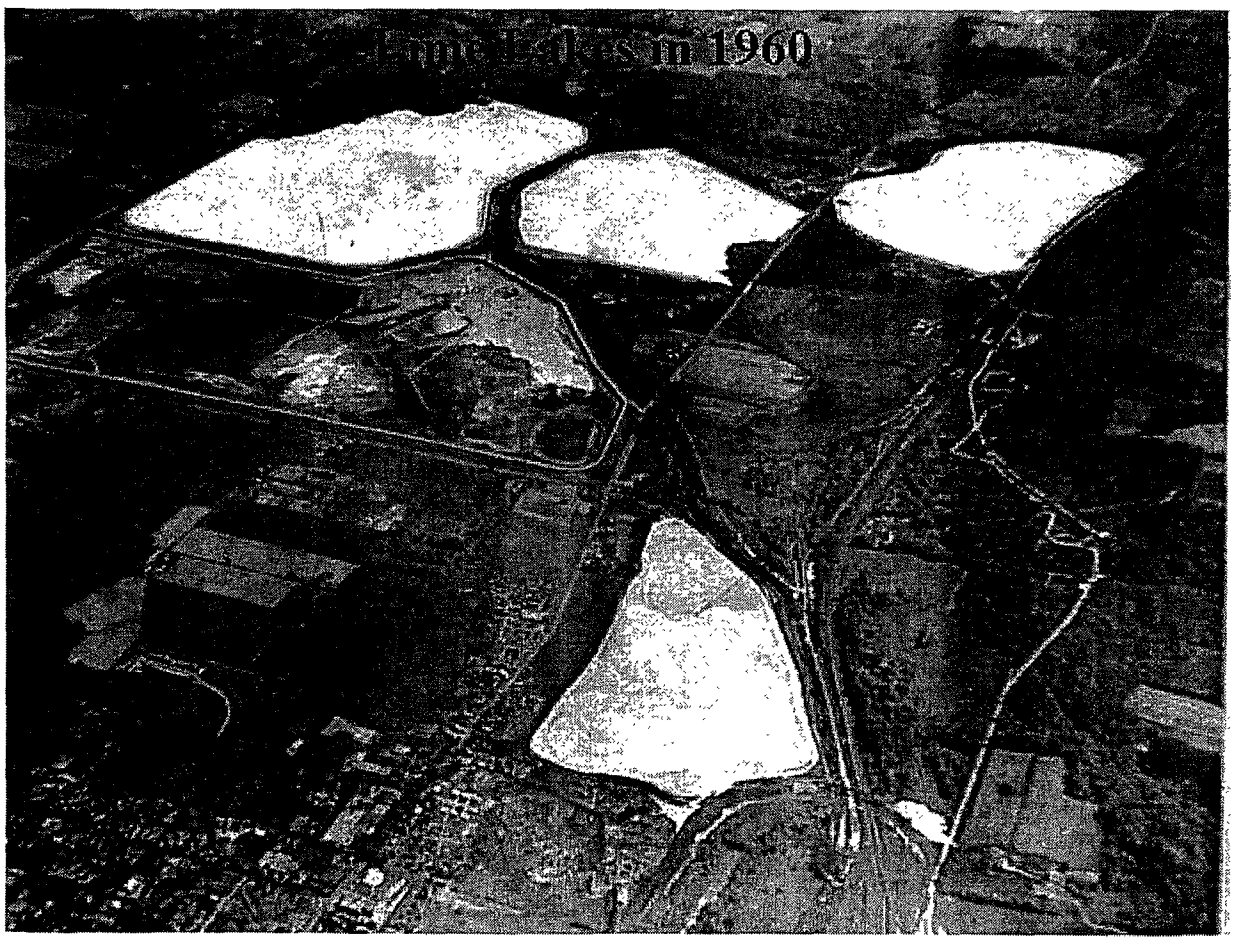
Examples of WHC Assisted Remediation Projects

- PPG Industries - Barberton, OH
- Bridgestone/Firestone - Cecil County, MD

The New Frontier: Brownfield Development & Superfund/RCRA Remediation Projects- Adding Value to Your Projects by Including Ecological Enhancements - June 13-14, 2000

- More than 40 industries attended.
- Case studies demonstrated corporations are seeking opportunities to include ecological enhancement in corrective action programs.
- Barriers were identified.

PPG-Lime Lakes Project
Barberton, OH



Barriers

- Public Concern about using biosolids
- EPA Regulations controlling the use of biosolids

Strategies

- Increased Public Education
- Demonstration Permit
- Involvement of WHC

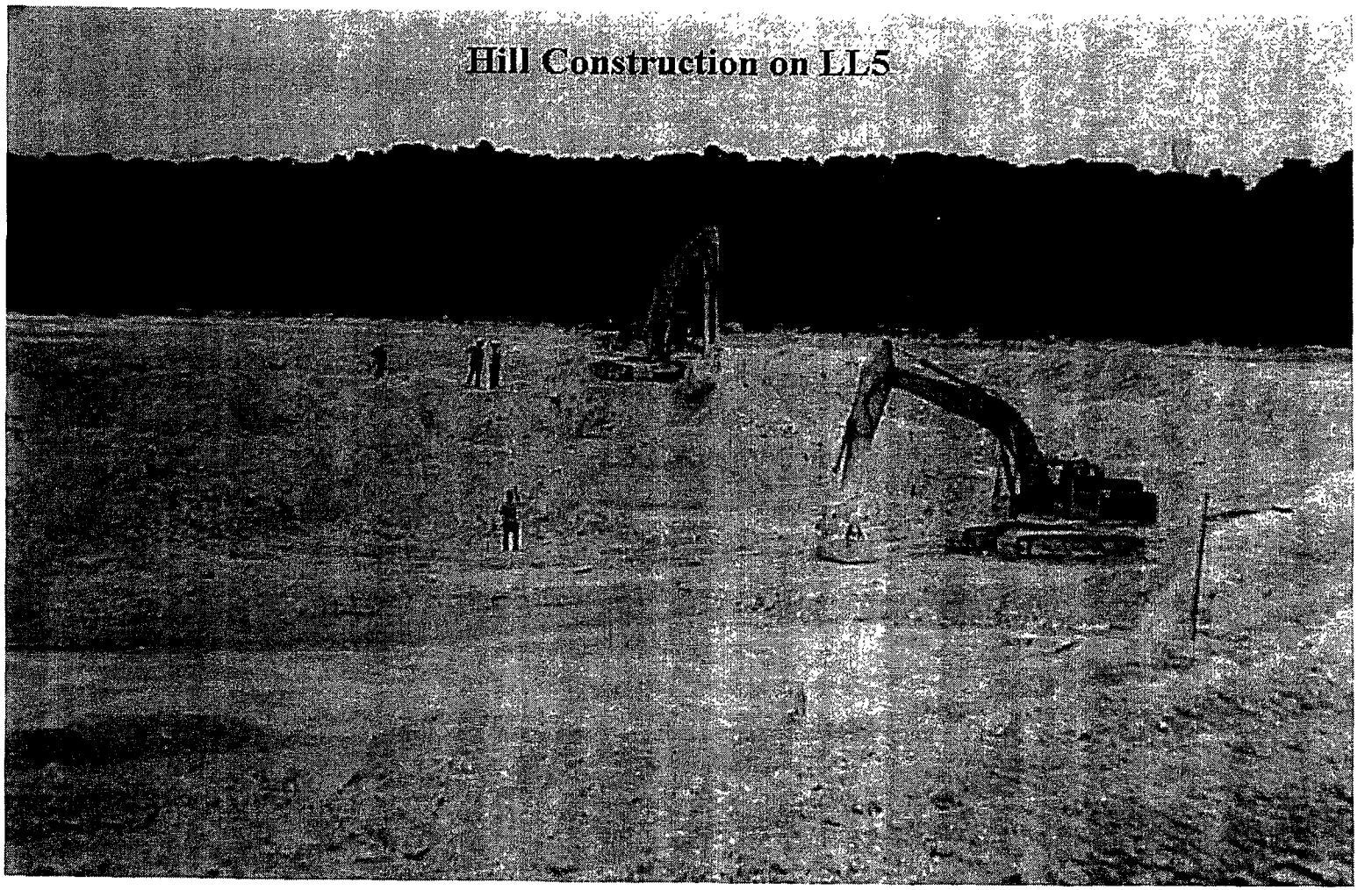
Outcomes

- Restoration Successful
- Chloride leakage to groundwater reduced 95 percent
- Wildlife returned to the site

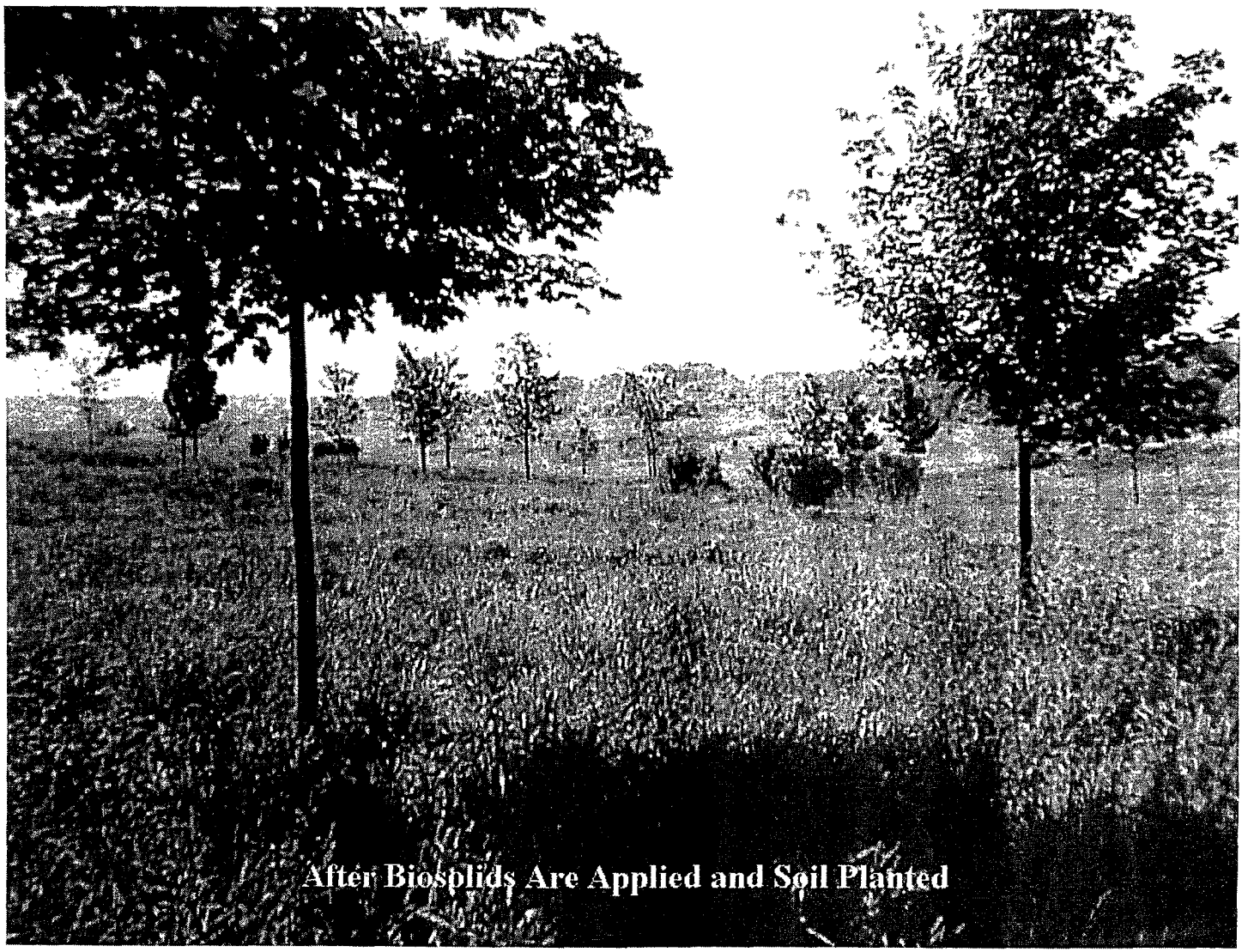
Benefits from using ecological enhancements

- Community considers PPG a good neighbor
- Regulators consider PPG a corporate partner rather than an adversary
- PPG's employees take pride in PPG accomplishments
- Customers view PPG as environmental leader
- Site used as a demonstration for other sites
- Bonus: State considering site as State Park

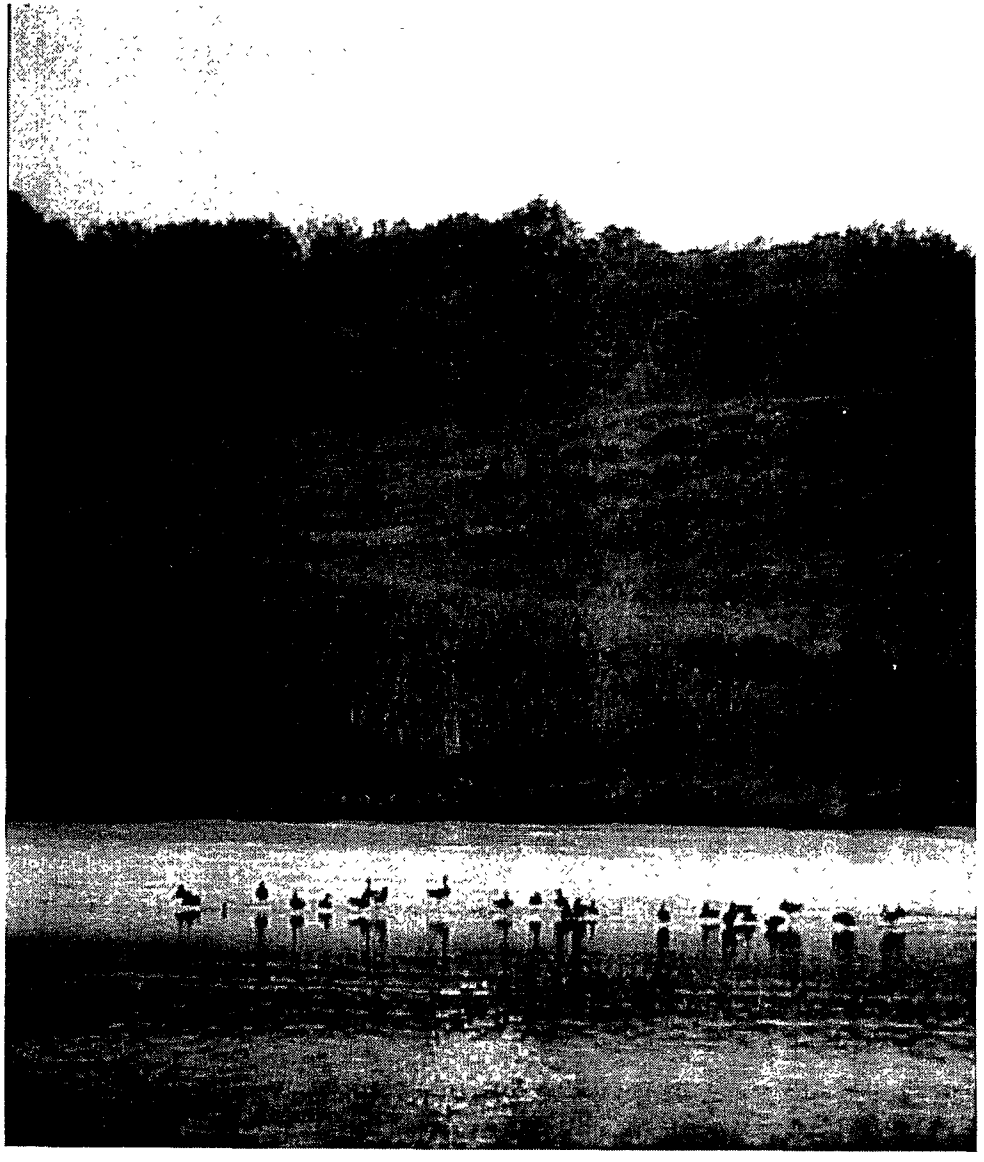
Lime Lakes Restoration During Construction



Lime Lakes Completed



Lime Lakes - Wildlife



Woodlawn Landfill, Maryland

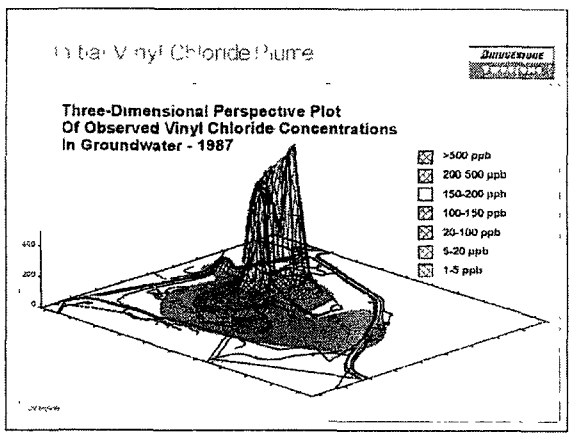
Barriers

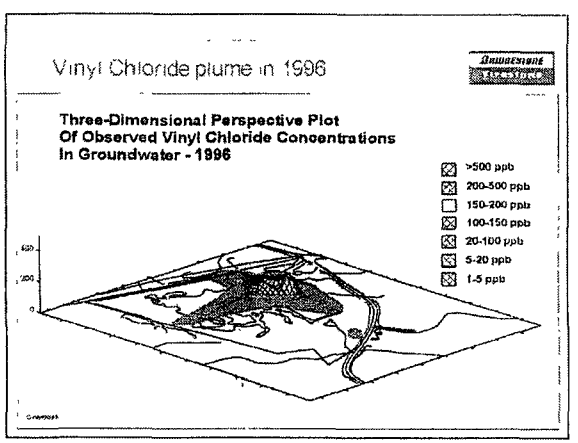
- Institutional - resistance to innovation
- Financial - how could something costing less be better
- Regulatory-regulators uncomfortable with precedent-setting example, and state had concerns about compliance
- Technical-difficulty in communicating risks/benefits, particularly to professionals

Strategies

- Develop the science to demonstrate the theory of ecological enhancement and natural attenuation
- Demonstrate favorable risk through ground water monitoring and modeling
- Demonstrate technical viability
- Engage a credible third party to promote ecological enhancement

Natural Attenuation





WHC Proposal for Woodlawn

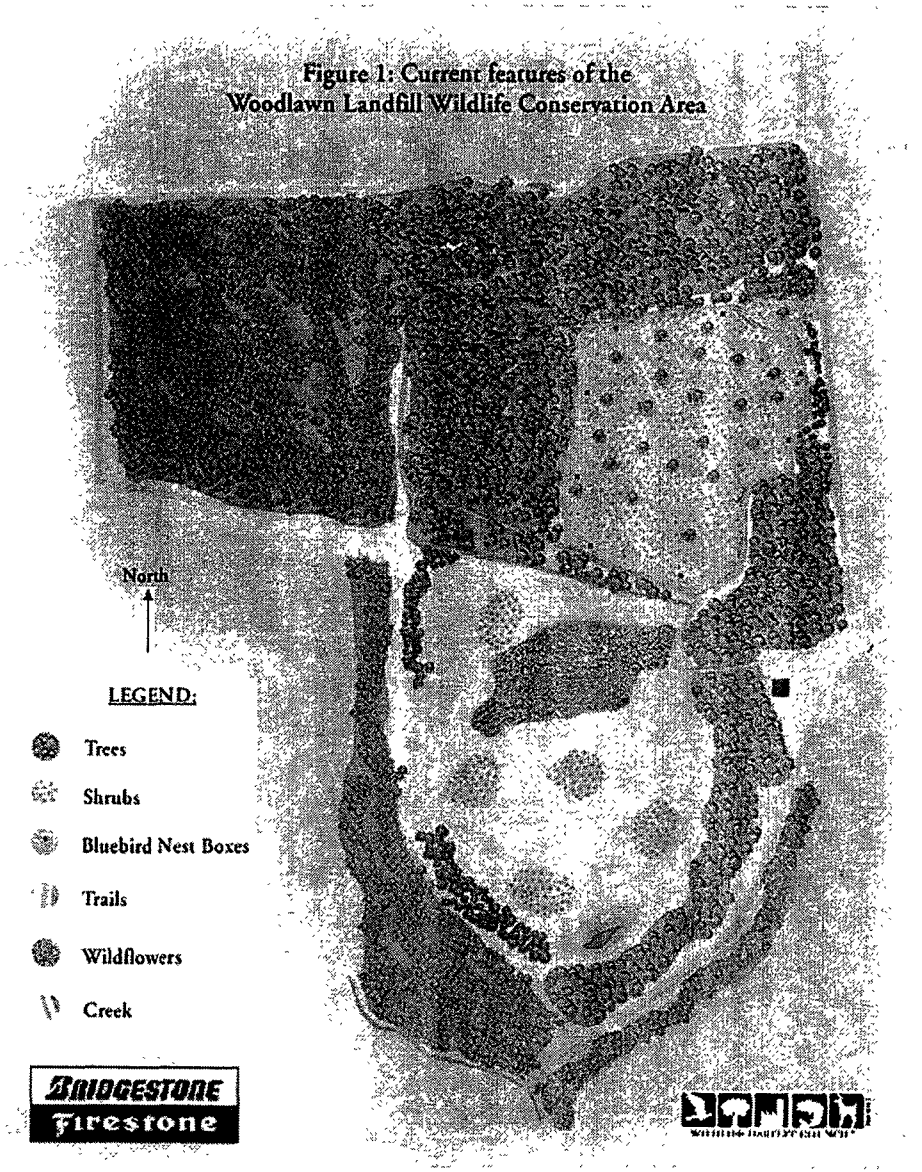


Figure 1: Current features of the Woodlawn Landfill Wildlife Conservation Area

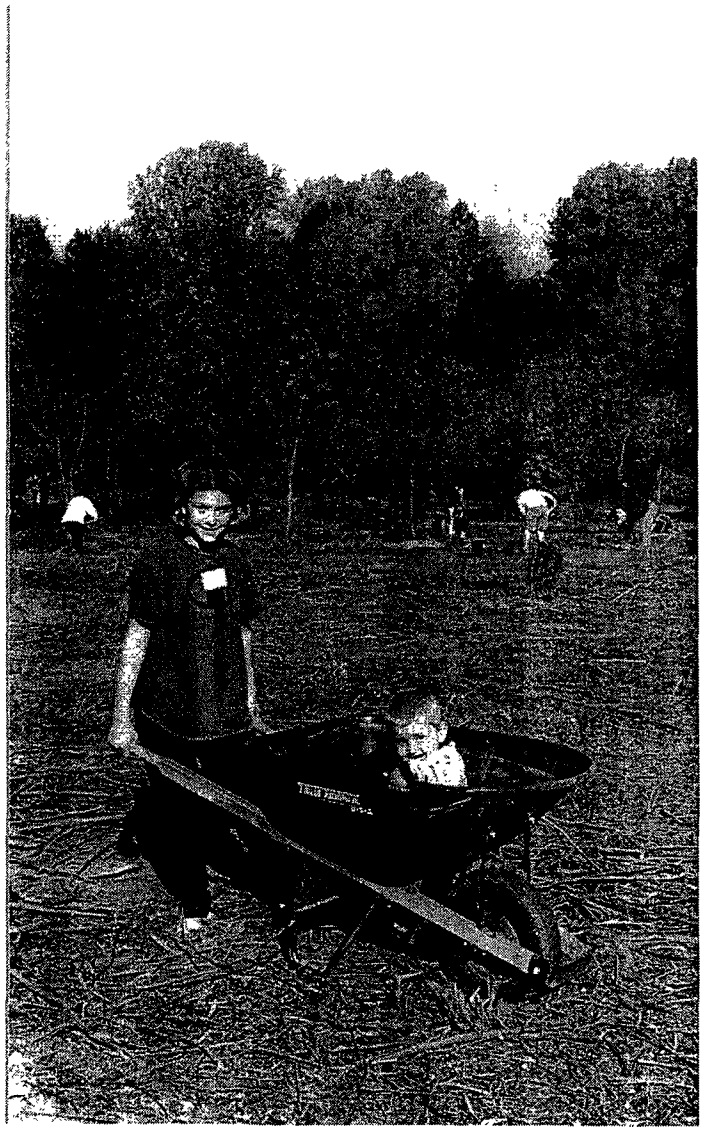
Outcomes

- WHC Recommendations for ecological enhancement were incorporated into the amendment request for the 1993 ROD
- The ROD was amended in 1999 to include a loose soil cover instead of an engineered plastic cap

Benefits

- Public gains a community asset - open space and environmental education
- Bridgestone is viewed as a positive contributor to the community
- Wildlife habitat is enhanced
- Innovation allows reduced costs of nearly $20 million some of which can be used to construct environmental education center
- Demonstration site for others to emulate

Community Field Day



Community Field Day

Community Field Day

Planting a Tree of Hope

Themes from the June 2000 Conference

- Involve the community- use multiple avenues
- Build trusting relationships - don't over promise
- Demonstrate the Benefits and Value of Ecological Enhancement and the added values of open space and education
- There is a strong need to address the inflexibility of government controls that dampen enthusiasm for innovation and use of ecological enhancement

July 10-11, 2001

- Second conference in a series sponsored by industry to promote ecological enhancements for corrective action. Current sponsors are AIG Environmental, PPG, BP and Bridgestone/Firestone
- Announcements will be mailed in late February
- Looking for good case studies
- Space for posters/exhibits is available

Robert J. Johnson
Executive Vice President
Wildlife Habitat Council
1010 Wayne Ave, Suite 920
Silver Spring, MD 20910
301-588-8994 - fax 4629
email: rjohnson@wildlifehc.org
website: www.wildlifehc.org

Streamlined RCRA Corrective Action Order

presentation by

Jean Caufield
Remediation Group
General Motors Corporation

Streamlined RCRA Corrective Action Order

Jean Caufield
General Motors Corporation

January 17, 2001

OUTLINE

I. WHY DEVELOP A STREAMLINED ORDER?

II. OBJECTIVES FOR A STREAMLINED ORDER

III. THE NEW ORDER

IV. RESULTS

I. WHY DEVELOP A STREAMLINED ORDER?

A. WILLING OWNER/OPERATORS RESISTED EPA'S MODEL ORDER

- Unlimited scope of work
- No legal protections (administrative or judicial)
- Stipulated penalties

I. WHY DEVELOP A STREAMLINED ORDER?

B. ORDER NEGOTIATION TOOK YEARS

- Delayed cleanups
- Consumed valuable resources
- Generated much ill will

I. WHY DEVELOP A STREAMLINED ORDER?

C. RESULT WAS A DETAILED PROCESS

- Constrained by rigid steps
- Focused on paper
- Delayed by review time
- Consumed by minutia

II. OBJECTIVES FOR A STREAMLINED ORDER

- Be based on performance, not process
- Have enforceable deadlines
- Provide some recourse for a major dispute
- Allow 0/0 greater decision - making responsibility
- Provide less EPA oversight (fewer submittals and approvals)
- Provide milestones to ensure communication
- Retain EPA decision - making authority at critical points
- Focus on Environmental Indicators and final remedy
- Provide 0/0 the opportunity to demonstrate innovative remedial measures

II. OBJECTIVES FOR A STREAMLINED ORDER

- Establish risk as the basis for remediation
- Eliminate the elapsed time in the process (not the time required to do the work)
- Keep the order short

III. THE NEW ORDER

A. IS STREAMLINED

- 16 pages
- 4 months to negotiate first order in 1999
- 2 additional orders signed in 2000

B. INCORPORATES KEY LEGAL PROVISIONS

- Gives EPA decision making authority at critical points
- Contains stipulated penalties for non-performance
- Provides O/O some protection in disputes:
  - EIs penalties pause after 30 days-until O/O notified
  - "Major" remedy penalties delayed 1 year
- Reserves all rights of both parties
- Requires public participation

III. THE NEW ORDER

C. IS PERFORMANCE BASED

- Work to be performed is:
  - Review current and historical conditions
  - Delineate the nature and extent of releases
  - Demonstrate EIs met
  - Propose final corrective measures
  - Implement remedy(ies)
  - Conduct O & M
- Detailed EPA review of work planning and implementation eliminated
- Dates are actual rather than contingent upon EPA review

III. THE NEW ORDER

D. IS RISK-BASED

- Delineate releases which pose an unacceptable risk
- Protect human health and the environment from all current and future unacceptable risks due to releases....
- Use conservate screening criteria
- Base on current and reasonably expected future land use scenarios

IV. RESULTS

- GM is preparing essentially the same work products.
- The process is different.
  - –Team approach
  - –Many steps eliminated
  - –Elapsed time for EPA review virtually eliminated.
- The team meets for reviews at critical steps
  - –Historical review
  - –Scoping of investigation work plan
  - –Review of detailed workplan
  - –Review of investigation results
  - –Planning IMs

IV. RESULTS

- EPA's verbal comments are incorporated the same as those of other team members.
- GM is highly motivated to seek EPA input early on.
  - –Not required to wait for EPA comments.
- EPA has been very responsive to requests for meetings and informal reviews.
  - –TSCA office is being pulled in.
- Frequent informal communications have increased significantly.
- The speed of cleanups has increased dramatically:
  - –For Defiance, OH, facility: 22 months from starting line to EI Determinations, including IMs
- All 3 facilities under the new order are on schedule to meet aggressive deadlines.

Voluntary Agreements

presentation by

Hak Cho, Chief
Corrective Action Section
Waste Management Branch
U.S. EPA, Region 5

Voluntary Corrective Action Agreement

What is It?

- Performance Based Agreement
  - Reduced Oversight
  - Conduct Work w/o Prior Approval
- Not Enforceable
  - No Citation of Legal Provisions
  - No Dispute Resolution, Stipulated Penalties and Force Majure
- May Be Terminated By Either Parties

Voluntary Corrective Action Agreement

Goals and Objectives

- Provide Flexibility to Qualified Facilities
- Achieve EI Determination
- Obtain Final Corrective Measure Plan
- Expedite Site Clean-ups

Voluntary Corrective Action Agreement

Other Key Requirements

- Enhanced Public Participation
- Submit and Maintain All Documents
- Implement Final Corrective Measure Timely

Voluntary Corrective Action Agreement

CURRRENT STATUS

- 6 Agreements signed
- 4 Under Negotiation

Voluntary Agreements

presentation by

Monica Satrape
Environmental Action Manager
Hoover Company

The Future is Now:

Hoover's Voluntary Corrective Action is Reform in Action

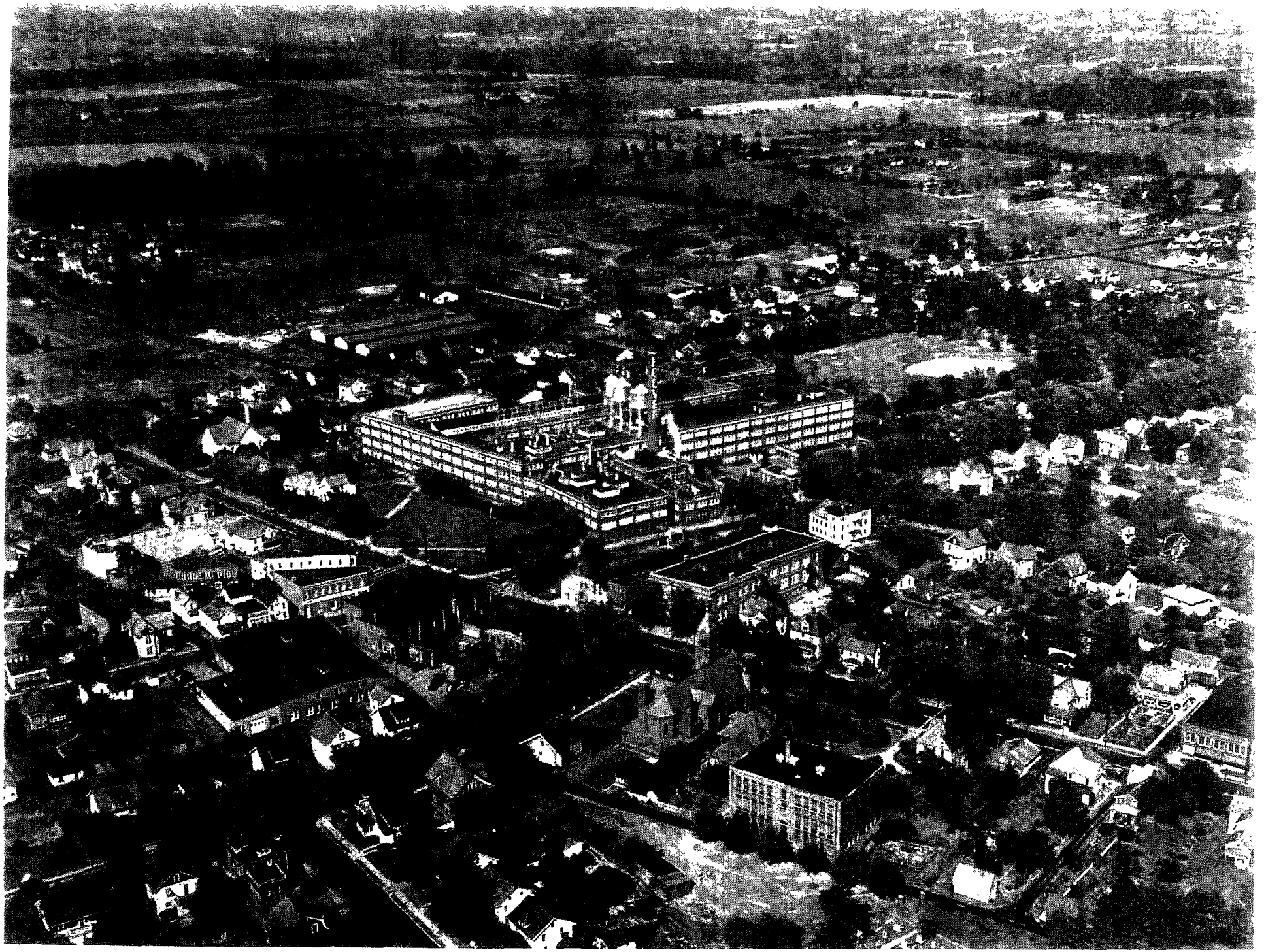
RCRA Corrective Action Conference
January 17-18, 2001

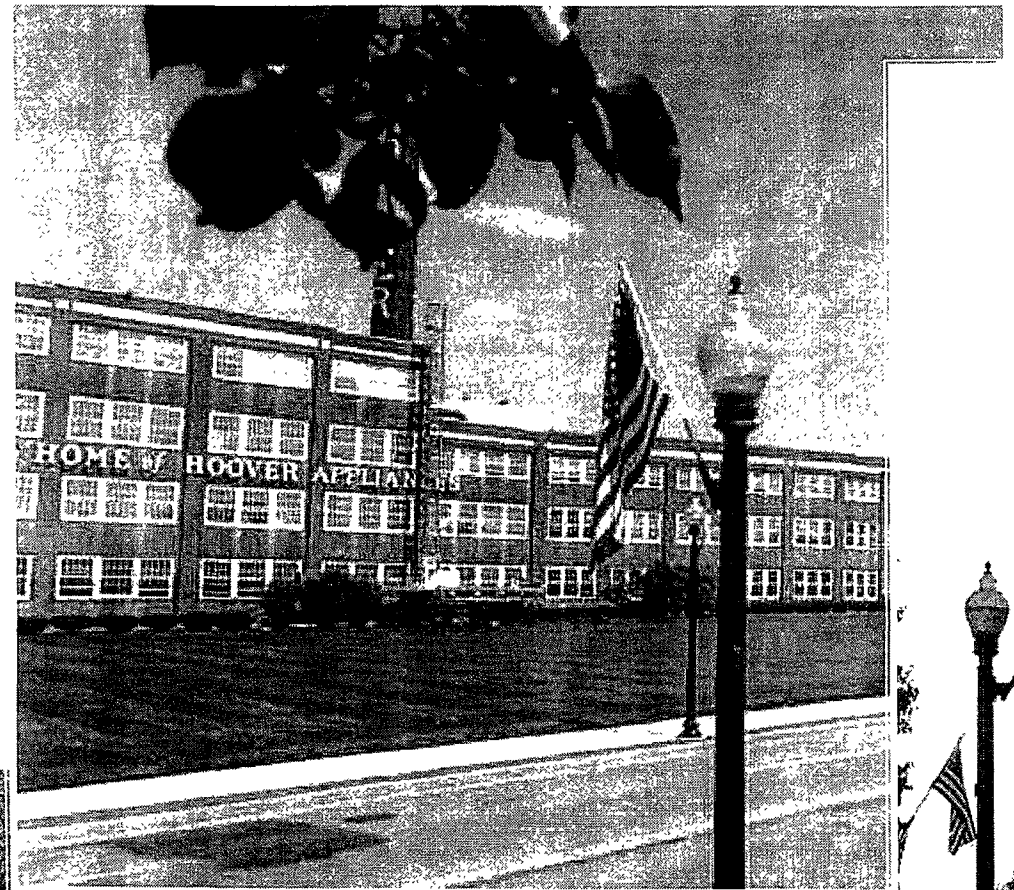
Monica A. Satrape, QEP
Manager Environmental Action
The Hoover Company

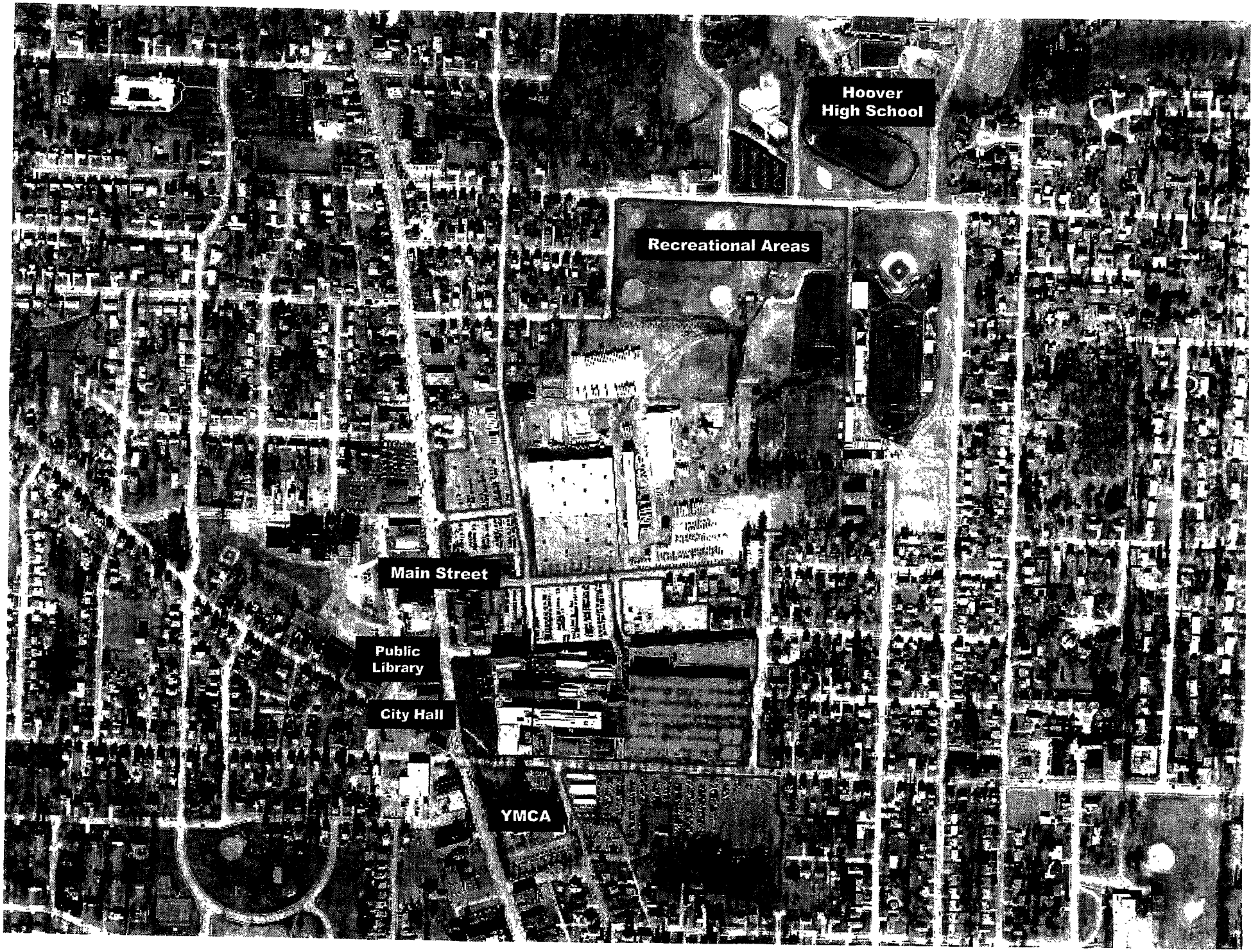
CH2MHILL

EPA

Why seek corrective action?

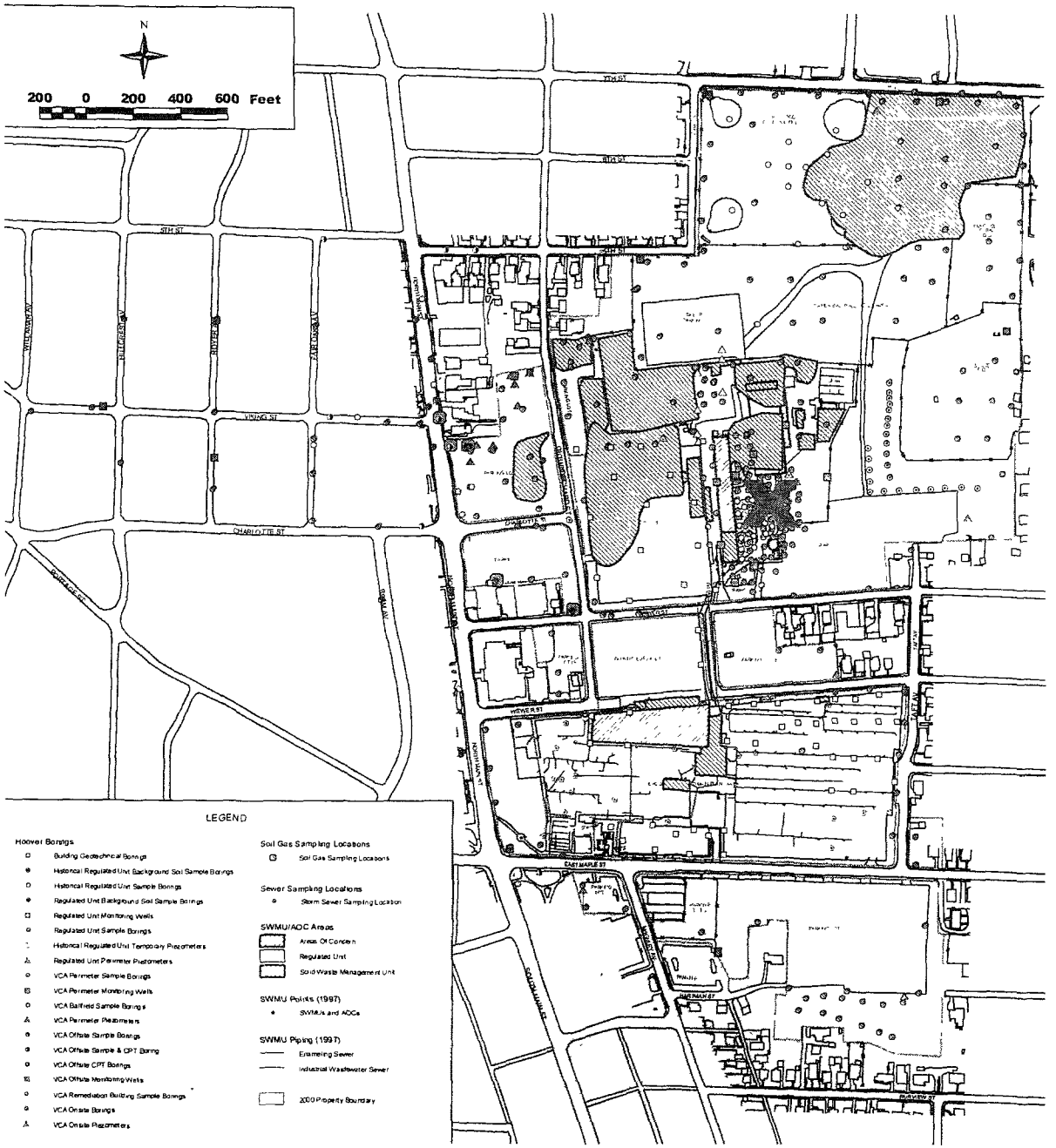



HOME OF HOOVER


Hoover
High School
Recreational Areas
Main Street
Public
Library
City Hall
YMCA

RCRA Facility Overview

- Interim Status Drum Storage 1980-1989,
- Closure, Ohio EPA (10 years)
- Evaluation of site-wide program, 1997
  - Performed facility-led RFA
  - Identified 32 SWMUs and 10 AOCs
  - Needed risk-based approach to site-wide issues
- Driver - RCRA closure in the middle of a 92-year-old Plant in the center of the community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Building Geotechnical Borings
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Historical Regulated Unit Sample Borings
Regulated Unit Background Soil Sample Borings
Regulated Unit Monitoring Wells
Regulated Unit Sample Borings
Historical Regulated Unit Temporary Piezometers
Regulated Unit Perimeter Piezometers
VCA Perimeter Sample Borings
VCA Perimeter Monitoring Wells
VCA Baffield Sample Borings
VCA Perimeter Piezometers
VCA Offsite Sample Borings
VCA Offsite Sample & CPT Boring
VCA Offsite CPT Borings
VCA Offsite Monitoring Wells
VCA Remediation Building Sample Borings
VCA Onsite Borings
VCA Onsite Piezometers
Soil Gas Sampling Locations
Soil Gas Sampling Locations
Sewer Sampling Locations
Storm Sewer Sampling Location
SWMU/AOC Areas
Areas Of Concern
Regulated Unit
Solid Waste Management Unit
SWMU Points (1997)
SWMUs and AOCs
SWMU Piping (1997)
Examining Sewer
Industrial Wastewater Sewer
2000 Property Boundary

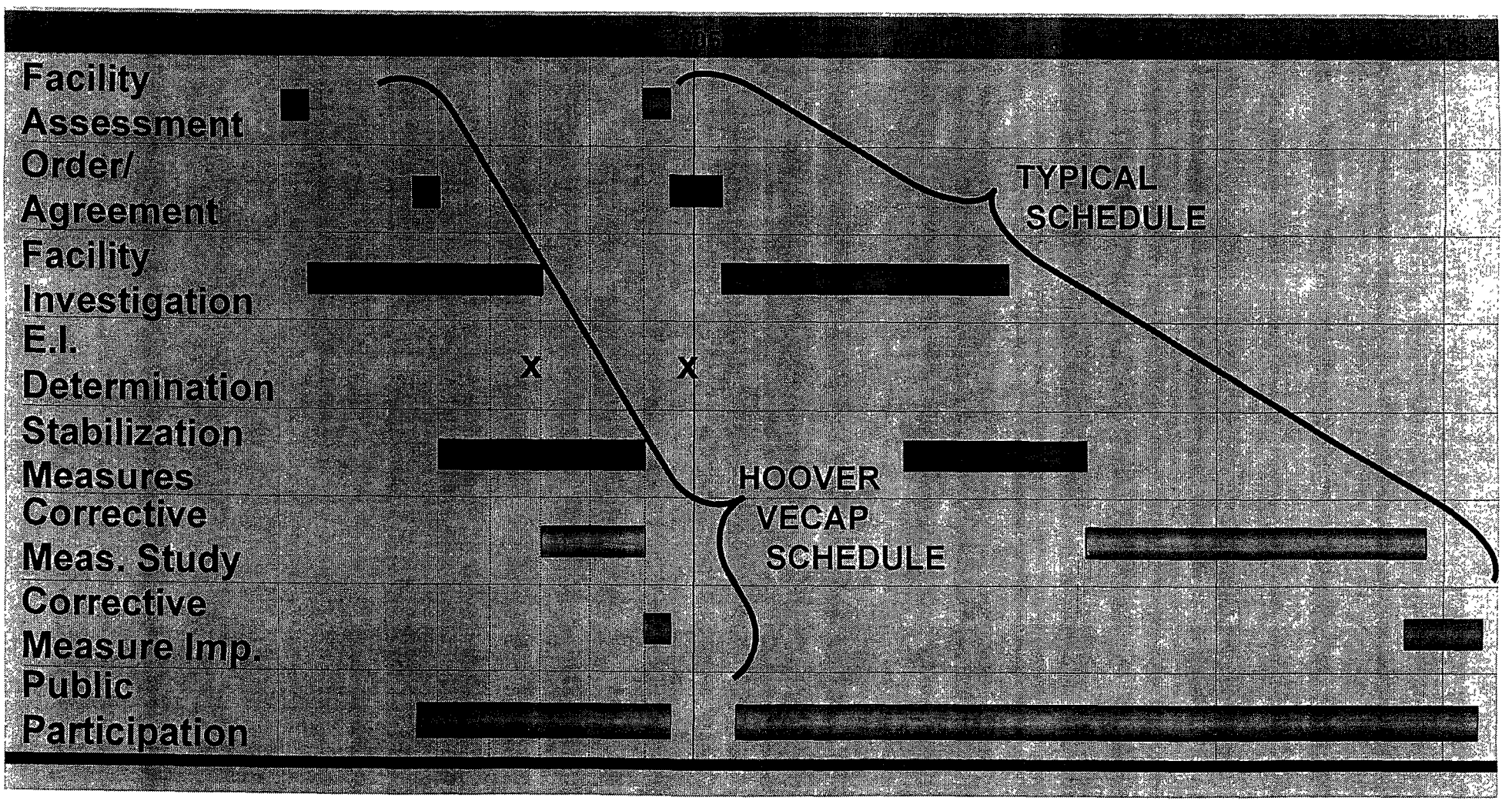
Why seek corrective action?

- Provides a mechanism for site-wide focus
- Interim Status Authority with Region - more experience and resources in risk-based approaches
- Hoover cares about its employees and the community
- Makes good business sense

Why the voluntary agreement?

- Why not? a lot to gain not much to loose
- Built on a foundation of trust and partnership
- Offers flexibility
- provides the opportunity to reduce potential liabilities and get the job done!

Comparison of Corrective Action Processes



Getting The Agreement

- First discussion with Region V March 1999
- Gained Ohio EPA support
- Agreement signed in 7 months (October 1999)
- Passing EPA Selection Criteria
- Modeled after the GM streamlined order
- 11 pages

Framework of the Voluntary Agreement

- Voluntary (based on mutual trust)
- Performance based
- Hoover's commitment
- US EPA's commitment
- Milestones
  - Environmental Indicators August 15, 2001
  - Final Remedy Proposal December 31, 2003

The streamlined process
How It Works

- Major milestones
- Quarterly reports
- Approval only at key decision points
- Focused deliverables
  - documentation of approach and results
  - enough information and communication to demonstrate performance

Implementation

Approach

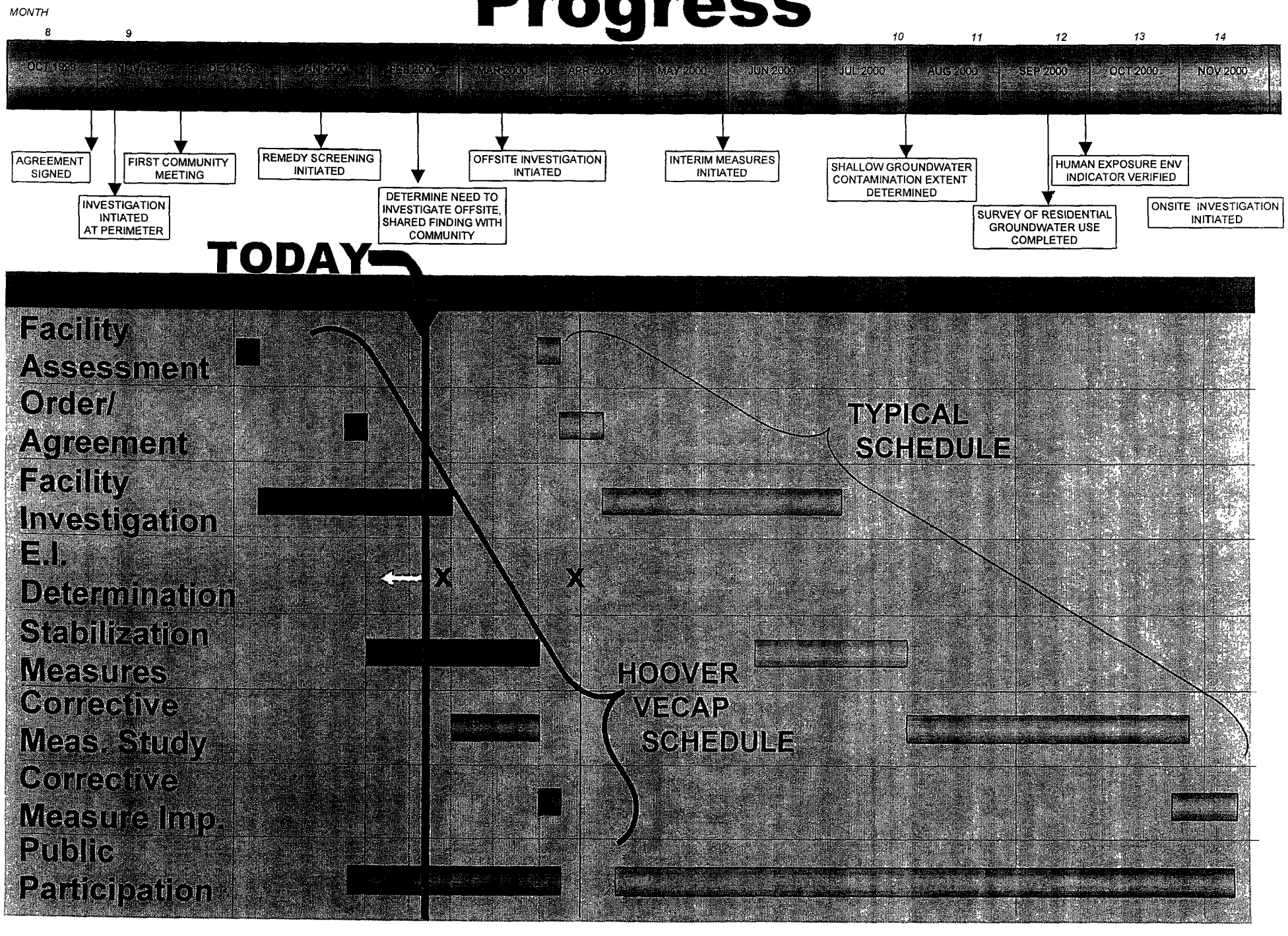
- Start at the perimeter
- Take care of the community
- Utilize interim measures
- Move onsite
- Develop site-wide final measures

Hoover
High School
Recreational Areas
Main Street
Public
Library
City Hall
YMCA

Environmental Indicator Challenge

- Demonstrations due August 2001
- 22 months (2 construction seasons) into program: A challenge we are determined to meet
- Requires constant strategy focus but has not impeded flexibility
- Has actually helped in keeping the real purpose in focus

Progress


MONTH
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FEB 2000
MAR 2000
APR 2000
MAY 2000
JUN 2000
JUL 2000
AUG 2000
SEP 2000
OCT 2000
NOV 2000
AGREEMENT SIGNED
INVESTIGATION INTIATED AT PERIMETER
FIRST COMMUNITY MEETING
REMEDY SCREENING INITIATED
DETERMINE NEED TO INVESTIGATE OFFSITE, SHARED FINDING WITH COMMUNITY
OFFSITE INVESTIGATION INTIATED
INTERIM MEASURES INITIATED
SHALLOW GROUNDWATER CONTAMINATION EXTENT DETERMINED
SURVEY OF RESIDENTIAL GROUNDWATER USE COMPLETED
HUMAN EXPOSURE ENV INDICATOR VERIFIED
ONSITE INVESTIGATION INITIATED
TODAY
Facility Assessment
Order/ Agreement
Facility Investigation
E.I. Determination
Stabilization Measures
Corrective Meas. Study
Corrective Measure Imp.
Public Participation
X
X
TYPICAL SCHEDULE
HOOVER VECAP SCHEDULE

Realizing the Efficiencies

- Vs. closure a less prescriptive and more practical approach
- Maximum 5 years of effort rather than 14
- Streamlined process
  - elimination of unnecessary submittals and approvals
  - development and advanced approval of Site Specific Target Levels

How It's Done: Maximize Flexibility

- Develop a long-term, comprehensive strategy
  - Use flexibility, perhaps non traditional approach
- Assemble a team with experience and the demonstrated ability to perform
- Give team ownership & utilize partnership
- Communicate effectively and openly
- Keep the objectives and strategy in focus

Conclusions

- Hoover's objectives are being met
- The Agencies' objectives are being met
- Technical requirements are being strictly adhered to.
- The accelerated process is saving significant costs
- Through partnering we have a Win Win!

Streamlining Under Existing Instruments

presentation by

Richard Menozzi
Director of Environmental Remediation
U.S. Steel

CORRECTIVE ACTION – U.S.STEEL GARY WORKS

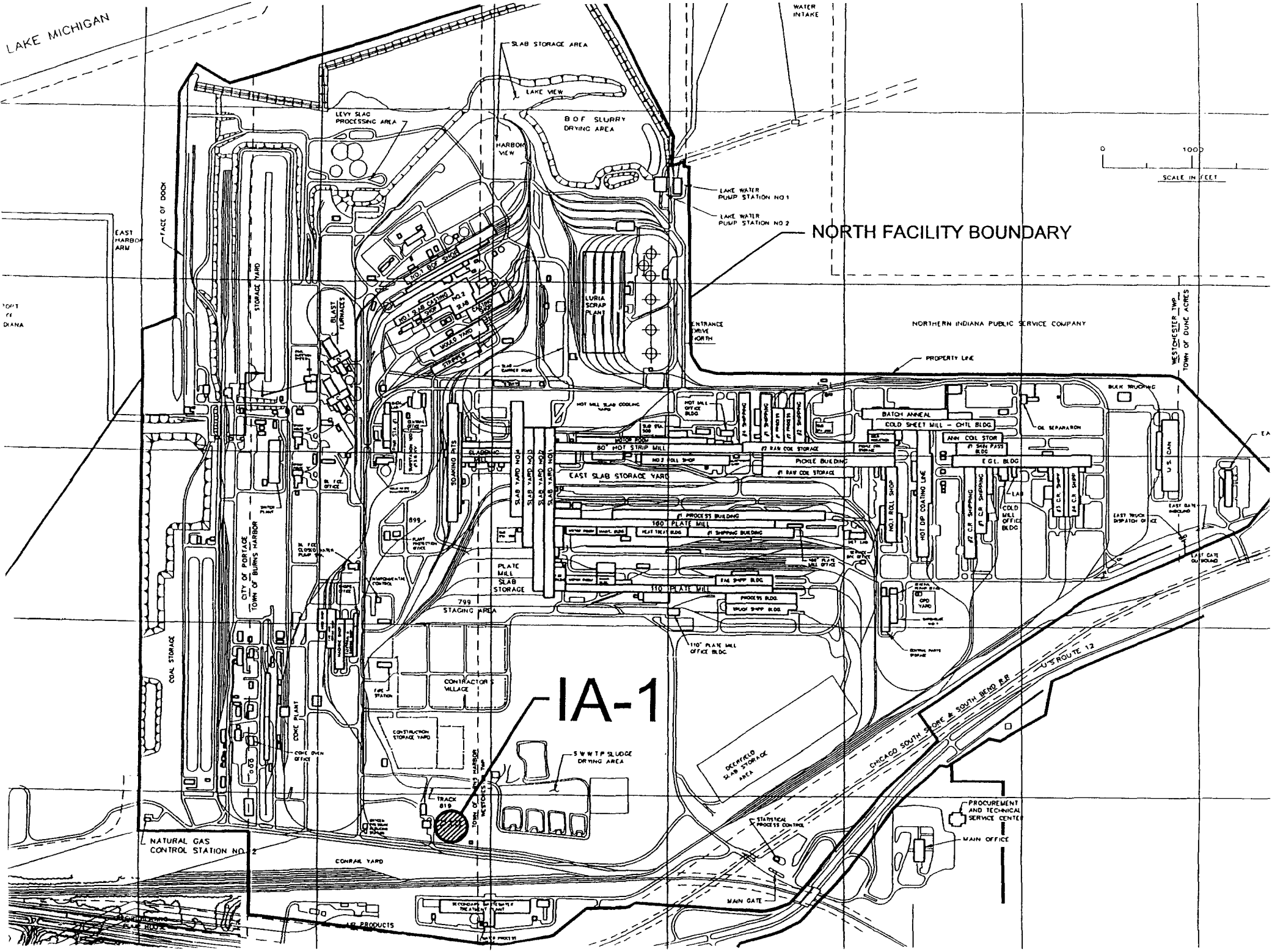
OVERVIEW

- **3008 (h) Order: signed** — **May 1998**
- **Current Conditions Report: Submitted** — **January 1997**
  Revised — ***February 1999***
- **Facility Wide RFI Workplan: Submitted** — **July 1999**
  Response to Comments — ***December 2000***
- **Environmental Setting:**
  - **4000 acre site**
  - **7 miles long x 1mile wide**
  - **Operational for nearly 100 years**
  - **RFA identified nearly 500 SWMU's**
  - **CCR identified 251 SWMU's and 42 AOC's**
  - **3 Interim Status Hazardous Waste Units**
  - **RFI identified 10 SWMA's & 3 Facility Wide Investigations**
- **Completed 2nd round of Groundwater sampling and analysis at 55 perimeter groundwater wells**

Streamlining at Bethlehem Steel

presentation by

Douglas Bley
Senior Projects Coordinator
Bethlehem Steel Corporation


LAKE MICHIGAN
WATER INTAKE
SLAB STORAGE AREA
LAKE VIEW
LEVY SLAG PROCESSING AREA
B O F SLURRY DRYING AREA
HARBOR VIEW
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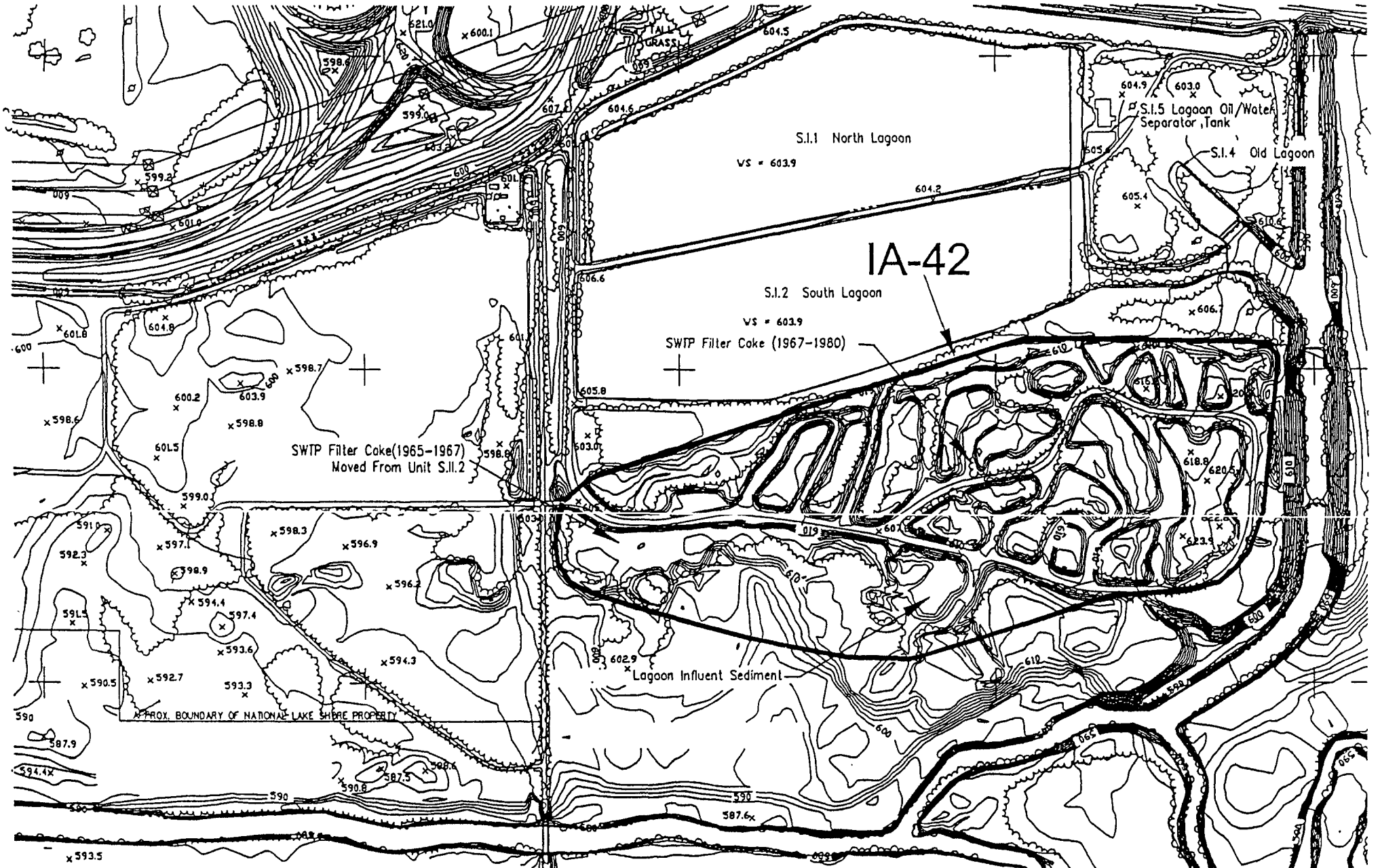
SCALE IN FEET
LAKE WATER PUMP STATION NO 1
LAKE WATER PUMP STATION NO 2
NORTH FACILITY BOUNDARY
EAST HARBOR ARM
FACE OF DOCK
STORAGE YARD
BLAST FURNACES
NO 1 BOF SHOP
NO 2 BOF SHOP
NO 1 SLAB CASTING SHOP
NO 2 SLAB CASTING SHOP
MOLD YARD
STRIPPER
LURIA SCRAP PLANT
ENTRANCE DRIVE NORTH
NORTHERN INDIANA PUBLIC SERVICE COMPANY
PROPERTY LINE
WESTCHESTER TWP
TOWN OF DUNE ACRES
BULK TRUCKING
HOT MILL SLAB COOLING YARD
HOT MILL OFFICE BLDG
BATCH ANNEAL
COLD SHEET MILL - CHTL BLDG
OIL SEPARATOR
ANN COIL STOR
#1 SKIN PASS BLDG
E.G.L. BLDG
80" HOT STRIP MILL
NO 3 COIL SHOP
#2 RAW COIL STORAGE
PICKLE BUILDING
#1 RAW COIL STORAGE
EAST SLAB STORAGE YARD
SLAGMAC MILL
SOAKING PITS
SLAB YARD NO 4
SLAB YARD NO 3
SLAB YARD NO 2
SLAB YARD NO 1
#1 PROCESS BUILDING
160" PLATE MILL
HEAT TREAT BLDG
#1 SHIPPING BUILDING
HOT ROLL SHOP
HOT DIP COATING LINE
#2 C.R. SHIPPING
#1 C.R. SHIPPING
COLD MILL OFFICE BLDG
#3 C.R. SHIPP
#4 C.R. SHIPP
LAB
U.S. CAN
EAST TRUCK DISPATCH OFFICE
EAST GATE INBOUND
EAST GATE OUTBOUND
CITY OF PORTAGE
TOWN OF BURNS HARBOR
PLANT PROTECTION OFFICE
PLATE MILL SLAB STORAGE
110" PLATE MILL
FAB SHIP BLDG
PICKLES BLDG
TRUCK SHIP BLDG
110" PLATE MILL OFFICE BLDG
CPD YARD
CENTRAL PARTS STORE
799
STAGING AREA
COAL STORAGE
CONTRACTOR'S VILLAGE
FIRE STATION
CONSTRUCTION STORAGE YARD
COKE PLANT
COKE OVEN OFFICE
IA-1
S W W T P SLUDGE DRYING AREA
DEERFIELD SLAB STORAGE AREA
CHICAGO SOUTH SHORE & SOUTH BEND R.R.
U.S. ROUTE 12
TRACK 819
TOWN OF WESTCHESTER
PROCUREMENT AND TECHNICAL SERVICE CENTER
STATISTICAL PROCESS CONTROL
MAIN OFFICE
NATURAL GAS CONTROL STATION NO 2
CONRAIL YARD
MAIN GATE
PRODUCTS



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REVIEWED: CDB
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BETHLEHEM STEEL CORPORATION
BURNS HARBOR DIVISION
PHASE I RFI INVESTIGATION AREA 42
SITE PLAN VIEW MAP

DRAWING REFERENCE:
GEONEX-AERIAL SURVEY MAP, PLATE K, SURVEY DATED 12/8/90
IDUSTRIAL ENVIRONMENTAL MANAGEMENT CONSULTANTS, INC. DRAWING NO. 497, 3/26/97.

Baker
BAKER ENVIRONMENTAL, MERRILLVILLE, IN

SCALE: AS SHOWN
DATED AUGUST 1, 1998

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF:

UNDERGROUND INJECTION CONTROL PERMIT
CLASS I HAZARDOUS PERMIT MODIFICATION

Permit Number: IN-127-1W-0003 EPA ID Number: IND0039113423

Pursuant to the Underground Injection Control regulations of the United States Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, 147, and 148, Bethlehem Steel Corporation, Burns Harbor Plant, of Chesterton, Indiana is hereby authorized to operate a Class I injection well located at Indiana, Porter County, T37N, R6W, Section 30, SE Quarter Section.

The injection zone, or zone which will contain the hazardous constituents, for this well is the lower Eau Claire Formation and the Mt. Simon Sandstone. Injection is permitted only into the lower Mt. Simon Sandstone between the depths of 2730 and 4298 feet, upon the express condition that the permittee meet the restrictions set forth herein. The designated confining zone for this injection well is the upper Eau Claire Formation.

All references to Title 40 of the Code for Federal Regulations are to all regulations that are in effect on the date that this permit is effective. The following attachments are incorporated into this permit: A, B, C, D, E, and F.

This permit is a modification of an existing permit which has an expiration date of midnight, October 30, 1990. This modified permit shall become effective on OCT - 5 1990 and shall supersede the existing permit upon issuance. This permit shall remain in full force and effect during the life of the permit, unless: 1) the statutory provisions of Section 3004(f), (g) or (m) of the Resource Conservation and Recovery Act ban or otherwise condition the authorizations in this permit; 2) the Agency promulgates rules pursuant to these Sections which withdraw or otherwise condition the authorization in this permit; or 3) this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39 or 144.40.

This permit and the authorization to inject shall expire at midnight, October 30, 1990, unless terminated.

Signed this 13th day of September, 1990.

Dale S. Bryson
Director, Water Division

Printed on Recycled Paper

SWMU - resource recovery or conservation of any solid waste (as defined in 40 CFR §261.2). It includes any unit at the facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes.

B. Implementation of Corrective Action

The process of implementing Section 3004(u) will take place in three stages, with each stage consisting of several specific steps, as follows:

1. Preliminary Assessment. Assessment of continuing releases is required for all permits issued after November 8, 1984. If any of the requested information has been previously submitted to the Director, include the original source as a reference on the copy provided in the required report. The permittee is required to submit the following information 45 (forty-five) days from the effective date of the permit. Failure to submit the required information or falsification of any submitted information is grounds for the termination of this permit (40 CFR §144.40). All information submitted must be certified as required by 40 CFR §144.32.

   a. Topographic Maps - Provide map(s) showing the facility and a distance of 1,000 feet around the property line at a scale of one inch equal to not more than 200 feet. In addition to showing the location of the permitted hazardous waste facility and management units, the permittee must locate on the map each existing and former solid waste management unit (SWMU), regardless of its permitting status.

   b. Description of Units - For each SWMU, provide a history of construction, including engineering drawings, foundations, materials of construction, dimensions, capacity and ancillary systems. Include location, design, construction, and description of all monitoring systems (air, surface water, ground water, etc.). If the SWMU is not in use, describe the methods utilized to close the facility and all construction related to closure.

   c. Description of Operation - For each SWMU, provide a history of the unit's function and all of the wastes processed or

disposed of at the unit. Include the hazardous waste constituents processed or disposed of, the time frames of operation, and quantities handled during those time frames.

d. Description of Releases - For each SWMU, describe any release or potential release originating at each SWMU. Include the suspected date of release, the type of hazardous waste or hazardous waste constituent, the quantity released, the environmental media affected, the nature of the release and present migration, and the circumstances and cause of the release. Provide any available data which would quantify the nature and extent of any environmental contamination including the results of air, soil, surface and ground water sampling and analysis. Provide any available data which would indicate that no releases are present, if applicable.

2. Remedial Investigations and Corrective Action Plan Development. If hazardous wastes or constituents have been released, no later than six (6) months after the effective date of this permit, the permittee shall conduct remedial investigations, develop a proposed corrective action plan, and submit a report on the investigations to the Director as follows:

(a) Site investigation, including but not limited to, hydrological data, both surface and subsurface sampling, and identification of background prior to contamination;

(b) Remedial investigations by owner/operator to identify/characterize releases;

(c) Develop an appropriate proposed corrective action plan and cost estimate; and

(d) Provide a financial assurance mechanism to cover the cost of implementing the corrective action plan.

3. Corrective Action Plan Implementation. Within thirty-six (36) months after the Director's approval, the permittee shall implement the corrective action plan as follows:

(a) 6 months after approval - Complete engineering design;

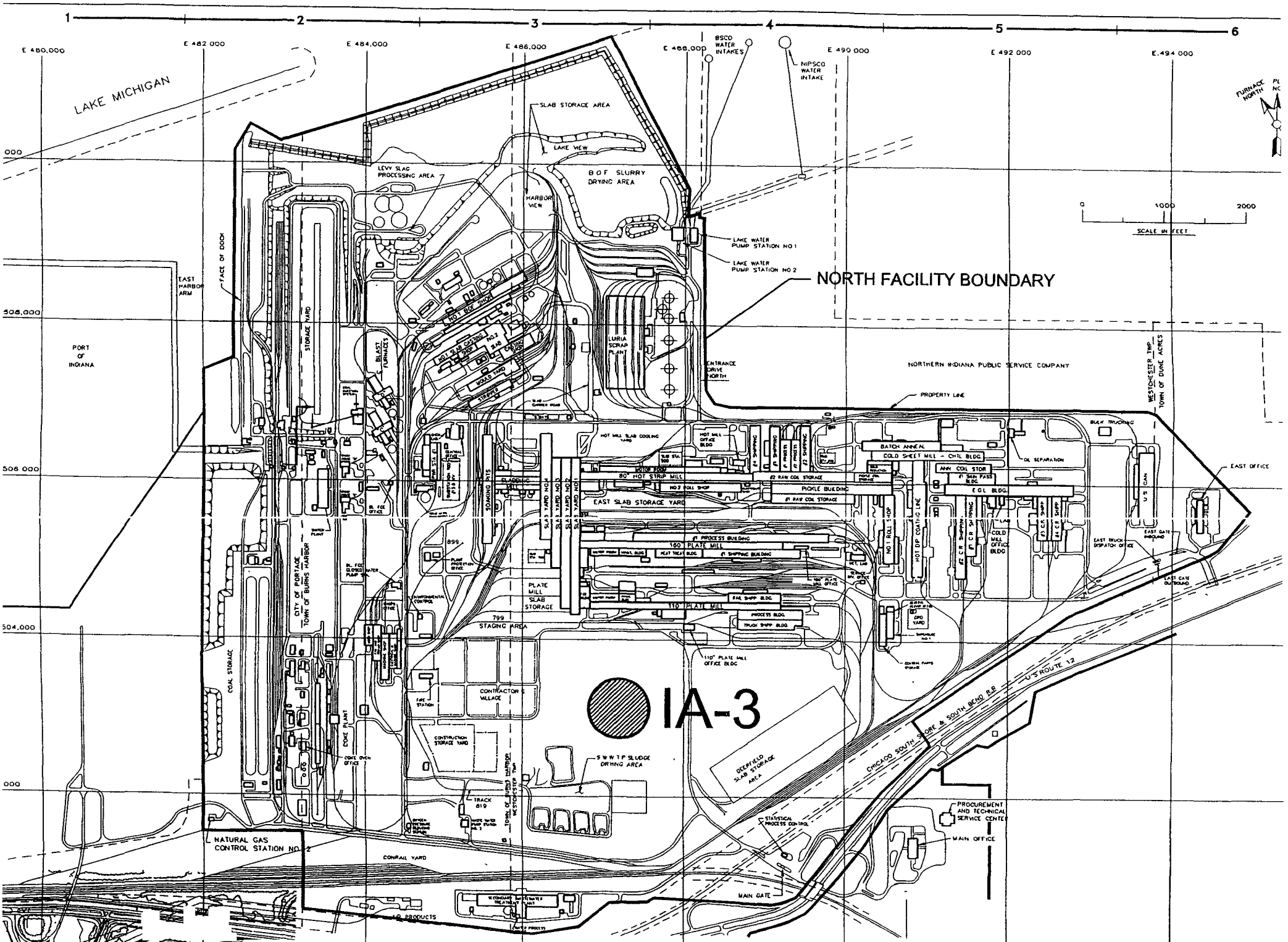
(b) 6 months after approval - Prepare contract documents and award construction bids or equivalent in-house action.

(c) 18 months after approval- Complete corrective action plan

C. Permit Modification

The Director may modify this permit to include additonal requirements or modify the Schedule of Compliance as appropriate in accordance with 40 CFR §270.41 and Section 212 of HSWA. If major permit modification is needed, USEPA will publish a public notice and allow for public review and comment.

Table 2 Summary of Phase 2 Bethlehem Steel Corporation, Burns Harbor Division	
Investigation Area	Phase 2 Activities
IA 1 Wastewater pump station No. 2 surface impoundment	(1) Collect 2 upgradient hydropunch samples to confirm that there are no upgradient sources of benzene (2) Install downgradient monitoring well and sample for benzene quarterly for one year (3) Sample storm ditch and Outfall quarterly for benzene to verify no off-site discharge. (4) Perform a risk analysis using data obtained in Phases 1 and 2 to document no risk to human health or the environment based on site-specific industrial exposures and potential for off-site migration.
IA 3 Rectangular and circular tar impoundments	(1) Perform voluntary corrective measure (2) Install 3 new groundwater monitoring wells (3) Perform quarterly groundwater monitoring for one year to show effectiveness of corrective measure. (4) Perform a risk analysis as described for IA 1, above.
IA 5/7 Cokemaking by-products recovery area	(1) Re-sample existing wells 5-OW-3 and 5-P-2 quarterly for one year for benzene (2) Perform a risk analysis as described for IA 1, above.
IA 12 COG collection container	(1) Install one monitoring well immediately downgradient (2) Perform quarterly groundwater monitoring for benzene for one year. (3) Perform a risk analysis as described for IA 1, above.
IA 15 COG collection container	(1) Install one monitoring well immediately downgradient (2) Perform quarterly groundwater monitoring for benzene for one year. (3) Perform a risk analysis as described for IA 1, above.
IA 27 COG collection container	(1) Install one monitoring well immediately downgradient (2) Perform quarterly groundwater monitoring for benzene and benzo(a)pyrene for one year. (3) Perform a risk analysis as described for IA 1, above.
IA 30 COG collection container	(1) Install one monitoring well immediately downgradient (2) Perform quarterly groundwater monitoring for benzene and toluene for one year. (3) Perform a risk analysis as described for IA 1, above.
Dibenz[a,h]anthracene Study	(1) Perform quarterly sampling for one year in each area of potential off-site migration (discharge channel, 001 outfall, and harbor) (2) Perform a risk analysis as described for IA 1, above.


IA-3
NORTH FACILITY BOUNDARY
LAKE MICHIGAN
PORT OF INDIANA
EAST HARBOR ARM
FACE OF DOCK
STORAGE YARD
BLAST FURNACES
LEVY SLAG PROCESSING AREA
SLAG STORAGE AREA
LAKE VIEW
HARBOR VIEW
B O F SLURRY DRYING AREA
BSCO WATER INTAKES
NIPSCO WATER INTAKE
LAKE WATER PUMP STATION NO 1
LAKE WATER PUMP STATION NO 2
LURIA SCRAP PLANT
ENTRANCE DRIVE NORTH
NORTHERN INDIANA PUBLIC SERVICE COMPANY
PROPERTY LINE
WESTCHESTER TWP
TOWN OF DUNE ACRES
EAST OFFICE
BULK TRUCKING
OIL SEPARATION
BATCH ANNEAL
COLD SHEET MILL - CNTL BLDG.
ANN COIL STOR
80" HOT STRIP MILL
EAST SLAB STORAGE YARD
PICKLE BUILDING
E G L BLDG.
COLD MILL OFFICE BLDG
HOT DIP COATING LINE
EAST TRUCK DISPATCH OFFICE
EAST GATE INBOUND
EAST GATE OUTBOUND
160 PLATE MILL
110 PLATE MILL
PLATE MILL SLAB STORAGE
STAGING AREA
110" PLATE MILL OFFICE BLDG
CITY OF PORTAGE
TOWN OF BURNS HARBOR
COAL STORAGE
COKE PLANT
CONTRACTOR'S VILLAGE
CONSTRUCTION STORAGE YARD
S W W T P SLUDGE DRYING AREA
DEERFIELD SLAB STORAGE AREA
CHICAGO SOUTH SHORE & SOUTH BEND R.R.
U.S. ROUTE 12
PROCUREMENT AND TECHNICAL SERVICE CENTER
MAIN OFFICE
STATISTICAL PROCESS CONTROL
MAIN GATE
NATURAL GAS CONTROL STATION NO. 2
CONRAIL YARD
A.O. PRODUCTS
SCALE IN FEET
0
1000
2000
FURNACE NORTH
E 480,000
E 482 000
E 484,000
E 486,000
E 488,000
E 490 000
E 492 000
E.494 000
508,000
506 000
504,000

Property Reuse

presentation by

David Kalet
Environmental Business Manager
BP Amoco, Whiting Refinery

Property Reuse

Can Brownfield development compliment Corrective Action?

bp

Would you tell me, please, which way I ought to go from here?

- That depends a good deal on where you want to go
- I don't much care where
- Then it doesn't matter which way you go

Establishing a Vision

- Market driven (external forces)
  - Identify the stakeholders
  - Understand their wants, needs, tastes and preferences
- Site attributes (internal characteristics)
  - Site inventory
  - Options and alternatives

Who determines market needs?

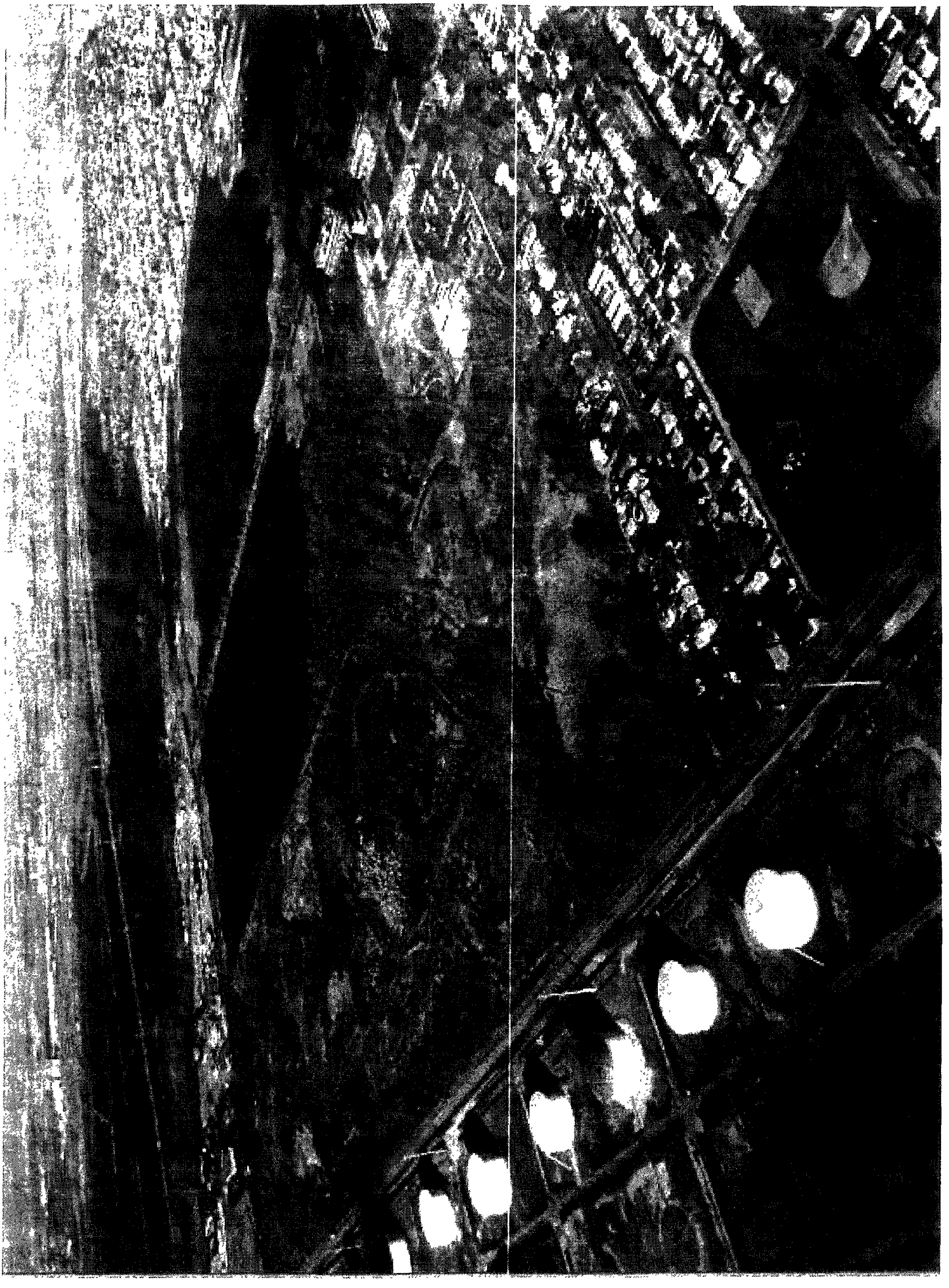
- Users
- Community
- Investors

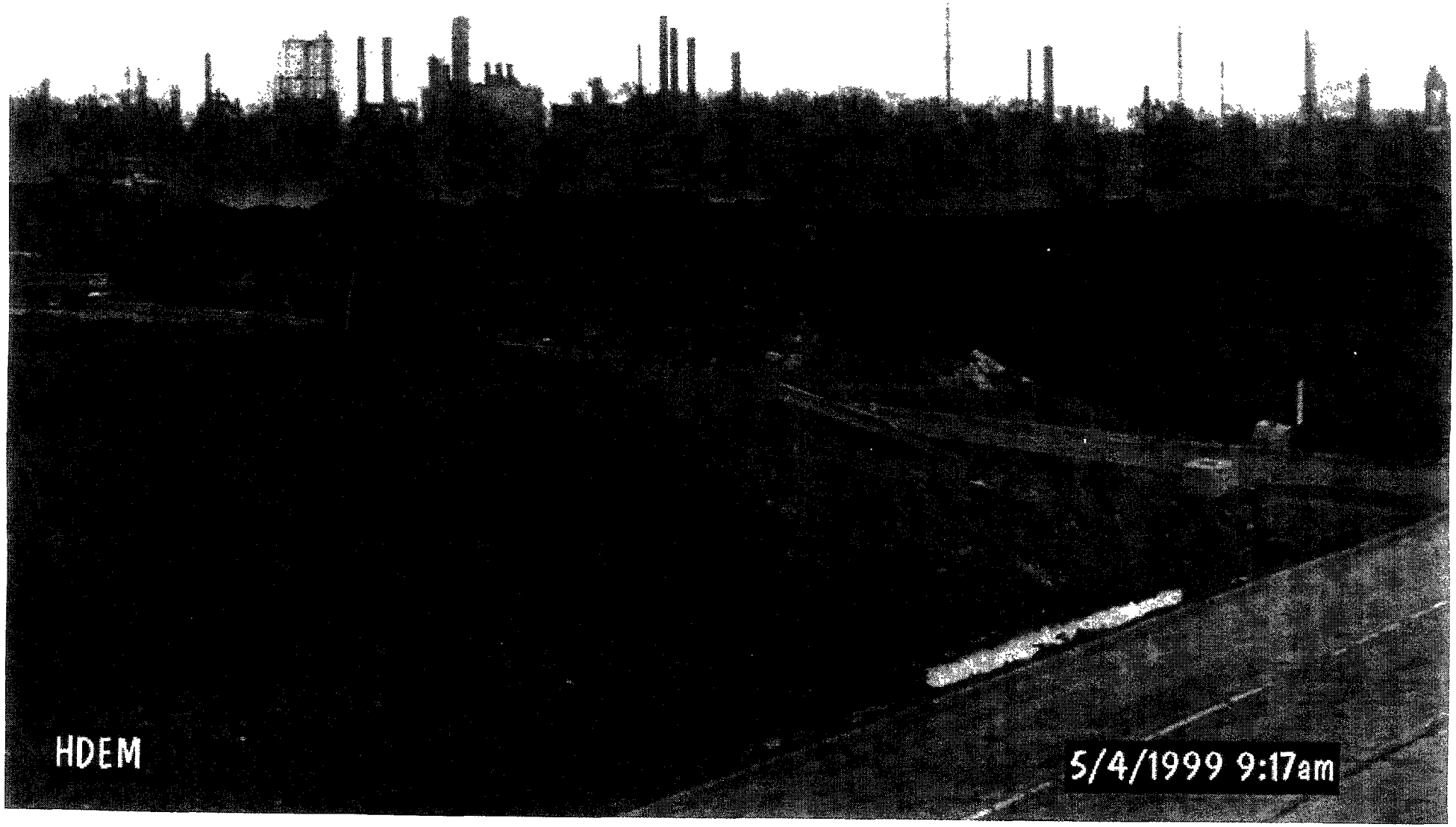
What needs are relevant?

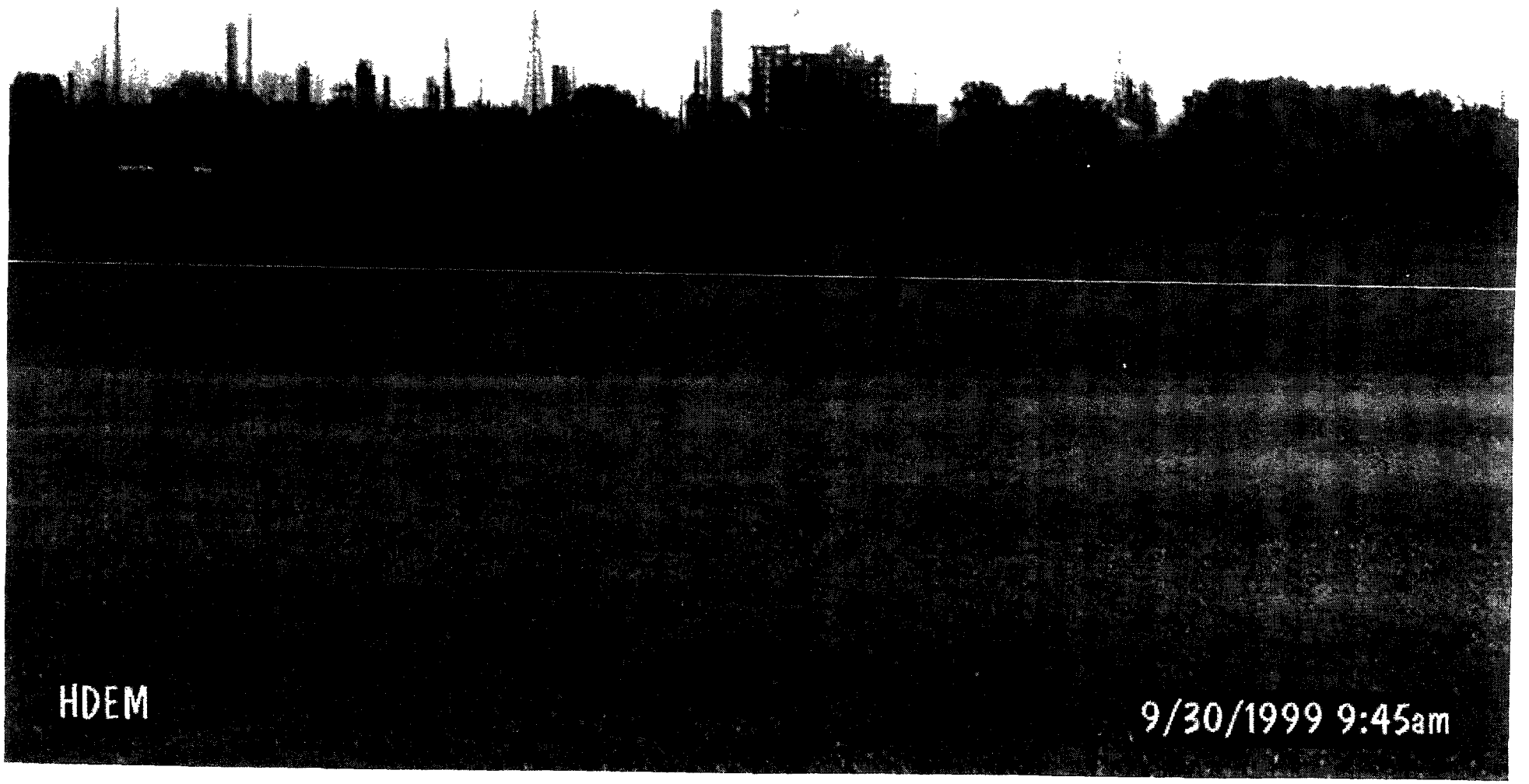
- User
  - Location
  - Transportation
  - Utilities
  - Labor

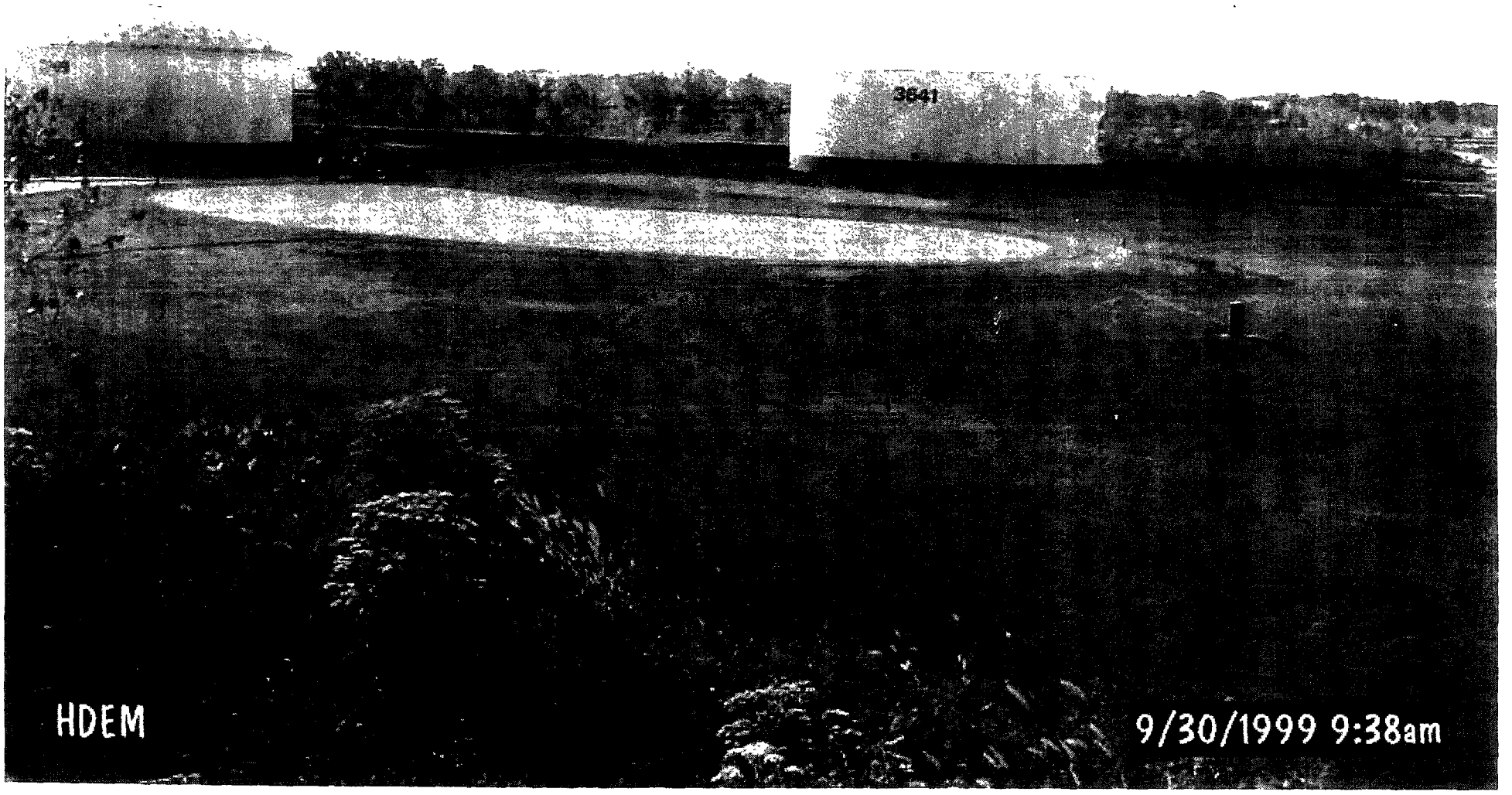
(What needs are relevant?)

- Community
  - Is it safe?
  - New jobs and wealth
  - New source of tax revenue
  - New image of neighborhood
  - Greenspace and recreational development




HDEM
5/4/1999 9:17am


HDEM
9/30/1999 9:45am


3841
HDEM
9/30/1999 9:38am

(What needs are relevant?)

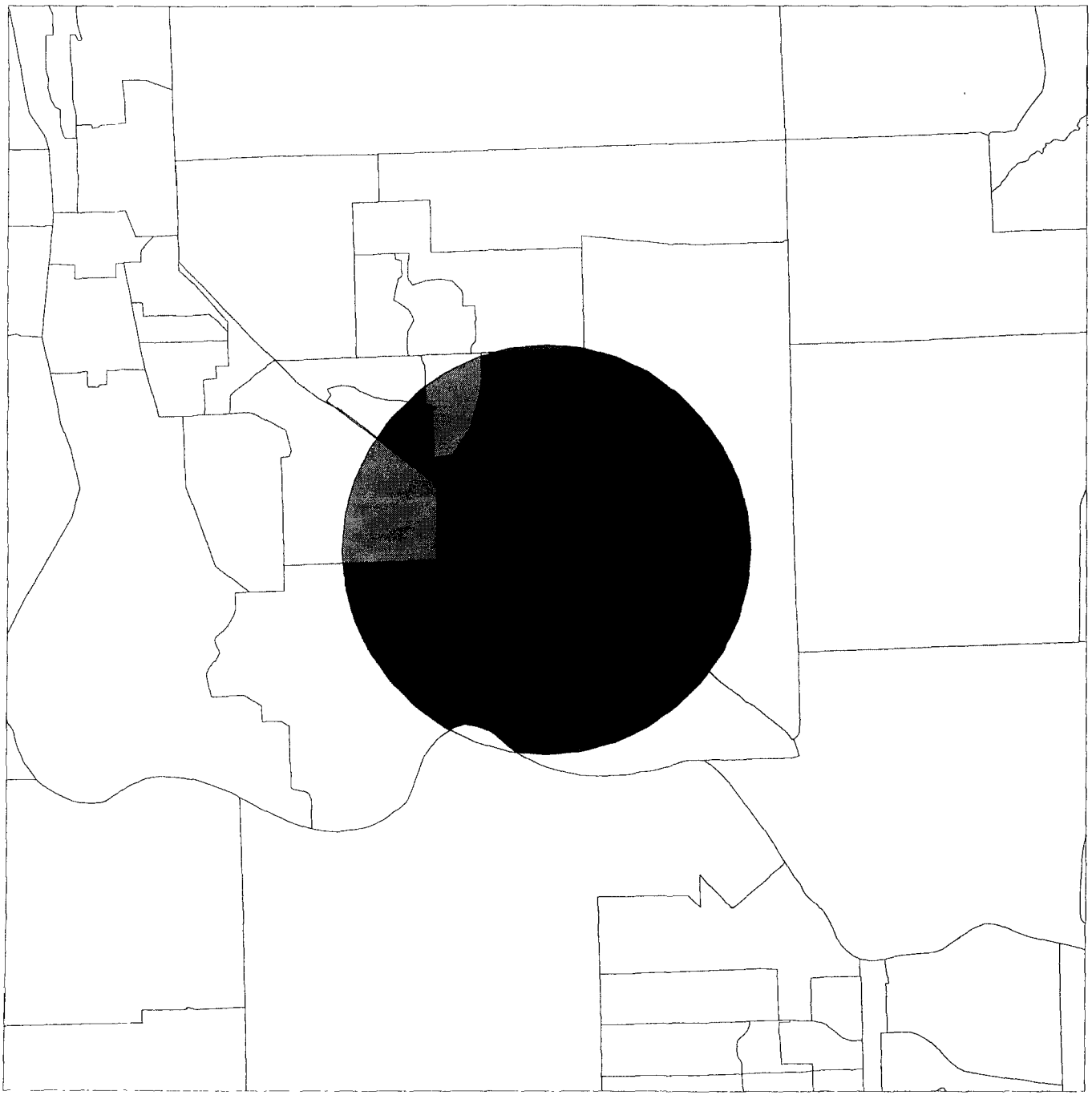
- Investors
  - Risk of disturbing operations?
  - Risk of future liability

"Are we there yet?"

What are the Site Attributes?

- Where are the SWMUs and AOCs?
  - Assessed?
  - Alternatives identified?

[redacted]



1 0 1 2 Miles

3 M Cottage Grove

Census Blockgroup Boundaries

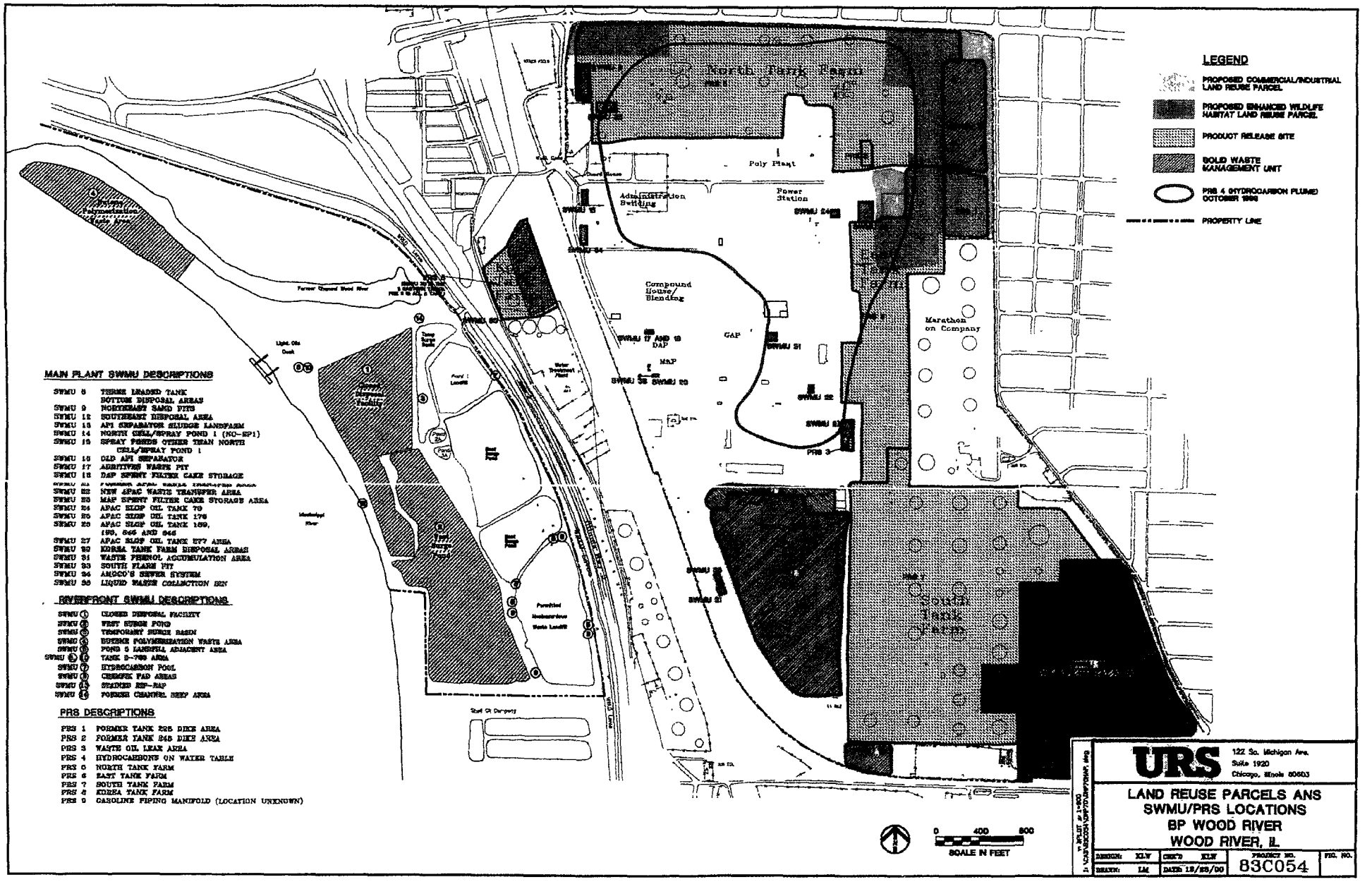
Percentage of Low Income Population

- 0
- 0 - 6 268
- 6 268 - 10 169
- 10 169 - 15 513
- 15 513 - 32 819

EPA United States Environmental Protection Agency

Total Population of 2 Mile Buffer Area 6397
Percentage of Population that is Minority 4.49%
Percentage of Population that is Low Income 10.16%

Source
1990 Bureau of Census


North Tank Farm
Poly Plant
Administration Building
Power Station
Compound House/ Blending
GAP
DAP
MAP
Marathon Oil Company
South Tank Farm
Former Ground Wood River
Mississippi River
Water Treatment Plant
Fond Landfill
Pond 2A
Pond 2B
Pond 3
Pond 4
Pond 5
Pond 6
Pond 7
Pond 8
Pond 9
Pond 10
Pond 11
Pond 12
Pond 13
Pond 14
Pond 15
Pond 16
Pond 17
Pond 18
Pond 19
Pond 20
Pond 21
Pond 22
Pond

Putting it All Together

- What do I have that potential users want?
- What do I have that can satisfy community needs?
- What can I do to assure investors of site stability?

Corrective Action

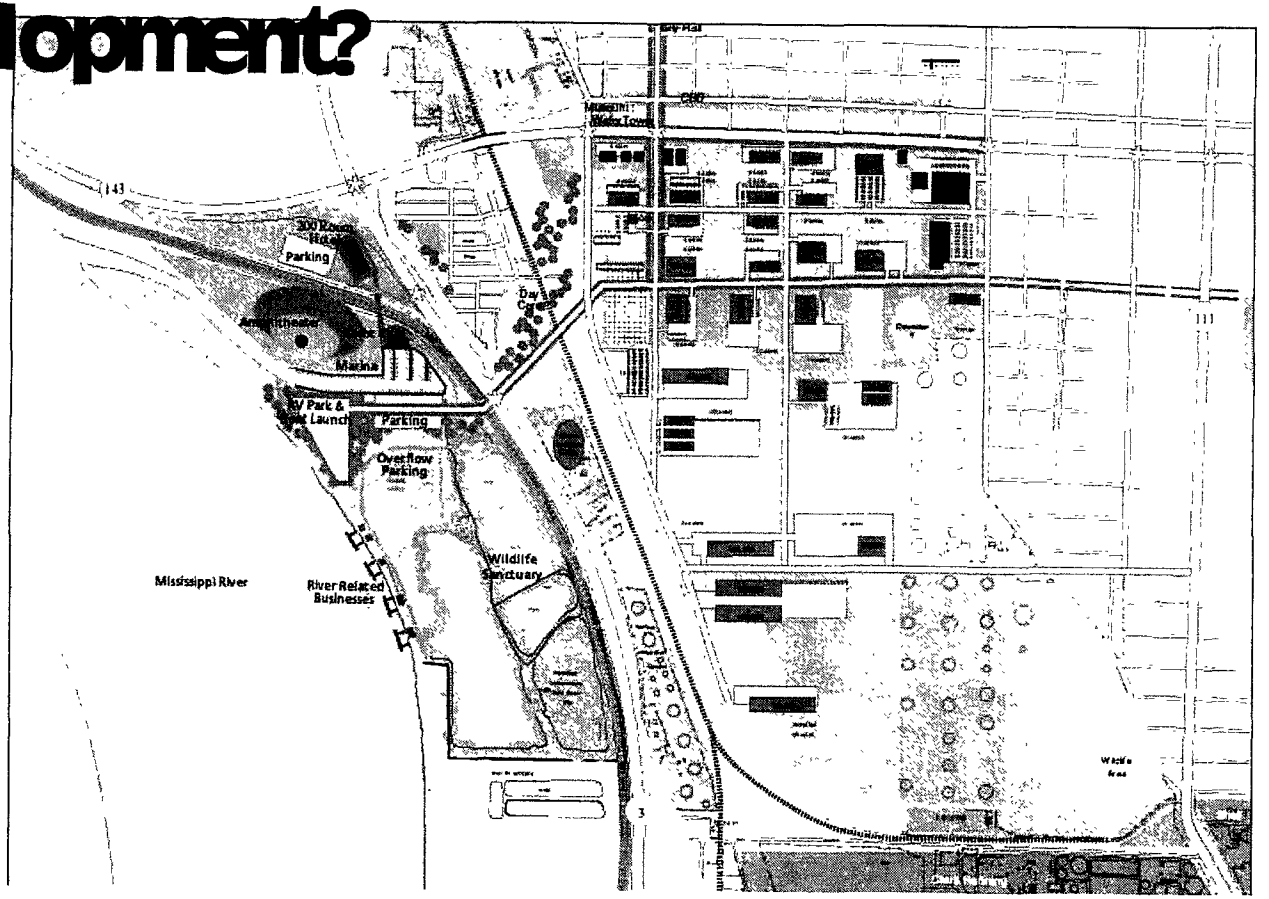
Site Conceptual Plan

Brownfield Development

Site Master Plan

Which is it?

Can a company complete Corrective Action while supporting Brownfield development?



We think so.

bp

Property Reuse

presentation by

Keith West
Remediation Group
General Motors Corporation

Property Reuse - Successful Brownfield Redevelopment Within RCRA Corrective Action

U.S. EPA RCRA Corrective Action Conference

January 17 and 18, 2001

Chicago, Illinois

Agenda

A. RCRA Corrective Action and Brownfield Redevelopment

B. GM's Revitalization Approach

C. Example 1: Centerpoint Business Campus

D. Example 2: Clark Street Technology Park

E. Lessons Learned

A. RCRA Corrective Action & Brownfield Redevelopment

- Cleanup and utilization of these properties offers many benefits for cities and communities
- RCRA Corrective Action program works with current property owners and operators
- U.S. EPA making changes with RCRA Corrective Action program to aid in:
  - providing more flexible cleanup requirements;
  - reducing procedural requirements when they don't add value; and
  - giving companies more flexibility to try innovative approaches to corrective measures.
- RCRA Corrective Action sites can now be considered good candidates for redevelopment

B. GM's Revitalization Approach

- GM has developed a corporate strategy for environmental decommissioning, remediation, and redevelopment of facilities which no longer suit GM's manufacturing requirements
- Proactive approach resulting in closure and redevelopment of over 60 manufacturing plants constructed in the 1920s to 1950s since 1991

B. GM's Revitalization Approach

- GM's systematic approach for property reuse/redevelopment:
  - Stage 1: Redevelopment Strategy
  - Stage 2: Building Decommissioning
  - Stage 3: Environmental Site Assessment/ Remediation

B. GM's Revitalization Approach

- Stage 1: Redevelopment Strategy
  - Complex assessment of social and economic factors coupled with the site's environmental condition and requirements for remediation
  - Initiated through discussions with local government at the time of the plant closing
  - More focused when prospective developers and investors are identified and appropriate environmental due diligence can be completed

B. GM's Revitalization Approach

- Stage 2: Building Decommissioning
  - Environmental decommissioning phase may include, but may not be limited to, the following:
    - removal/disposal of accumulated waste materials and obsolete products;
    - draining and close-out of all equipment containing fluids;
    - clean-out of all sumps and pits;
    - asbestos abatement;
    - floor cleaning; and
    - demolition, as necessary.

B. GM's Revitalization Approach

- Stage 3: Environmental Site Assessment/Remediation
  - The following phases are implemented utilizing a systematic approach based on land use projections and redevelopment opportunities:
    - Phase I: Environmental Site Assessment
    - Phase II: Environmental Site Investigation
    - Phase III: Expanded Environmental Site Investigation
    - Phase IV: Feasibility Study
    - Phase V: Remediation
    - Phase VI: Operation and Maintenance

B. GM's Revitalization Approach

- Elements for Successful Redevelopment within RCRA Corrective Action
  - Complete a proactive review of environmental conditions
  - Work early with U.S. EPA
  - Develop a detailed Description of Current Conditions (DOCC) Report to set the "tone" of the project
  - Address identified environmental issues early and efficiently through Interim Measures
  - Establish a good track record with community and other stakeholders

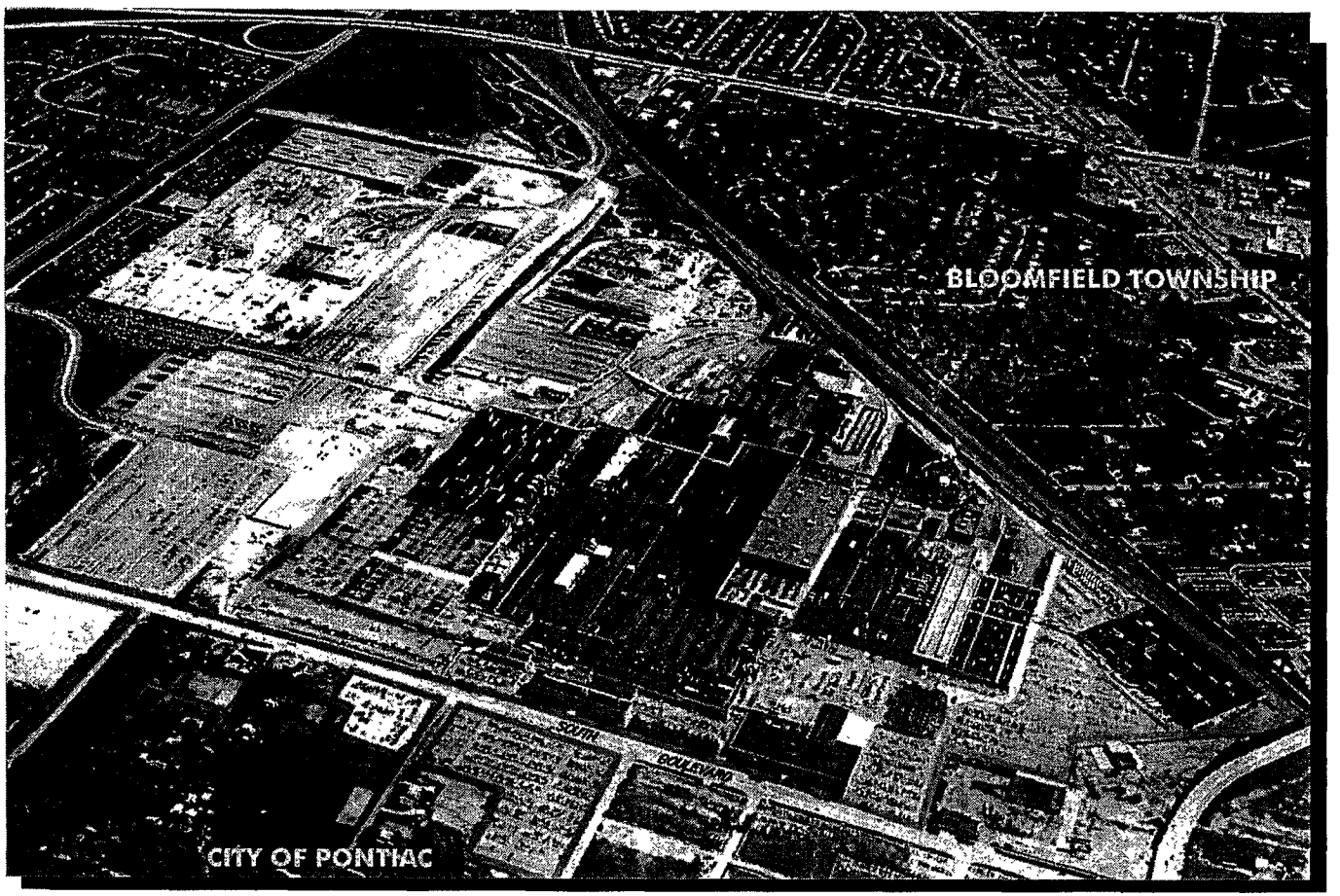
C. Example 1
Centerpoint Business Campus

Centerpoint Business Campus

Facility History

- Began producing medium and heavy duty trucks and buses at the Former Pontiac Central Manufacturing and Assembly Plant in 1927
- Major manufacturing activities included machining, stamping, plating, smelting, fiberglass laminating, heat treating, painting, and sealing
- Operations expanded to more than 60 buildings and >7,500,000 ft^2 on 350 acres

Facility Aerial Photo - 1985



Centerpoint Business Campus

Facility History

- Manufacturing operations ceased in August 1990 and the plant closed in the summer of 1991
- Decommissioning (1991 – 1995) was conducted in conjunction with the Centerpoint Business Campus Redevelopment
- 3,000,000 ft^2 of the Former Pontiac Central Manufacturing plant was decommissioned and/or demolished and rebuilt as an engineering center

Demolition Photo

Centerpoint Business Campus

Environmental Restoration/ RCRA CA

- Decommissioning of USTs/ Closure of LUSTs
- Completion of environmental due diligence
- Assessment of analytical data and evaluation of remedial action alternatives
- Implementation of decommissioning and remedial activities, including dismantling of equipment, demolition of structures, excavation of affected soils, and treatment or disposal of affected soils
- Inspections of all units which conveyed products or waste materials containing hazardous constituents
- Investigations, including installation of boreholes and monitoring wells, at AOIs

Centerpoint Business Campus

Environmental Restoration/ RCRA CA

- U.S. EPA identified 28 Solid Waste Management Units (SWMU)/Areas of Concern (AOCs) in 1987
- GM identified an additional 43 AOIs during Site redevelopment activities in 1994/1995
- GM prepared a QAPP and DOCC in 1994/1995
- Currently completing a RCRA 3008h RFI/CMS which began in 1998
- Interim Measures completed at the former J-Lot Fill Area and Coal Pile Storage Area (approved)
- Six other AOIs currently undergoing RFI/CMS activities
- Met EIs in December 2000

Remediation Photos

Remediation Photos

Remediation Photos

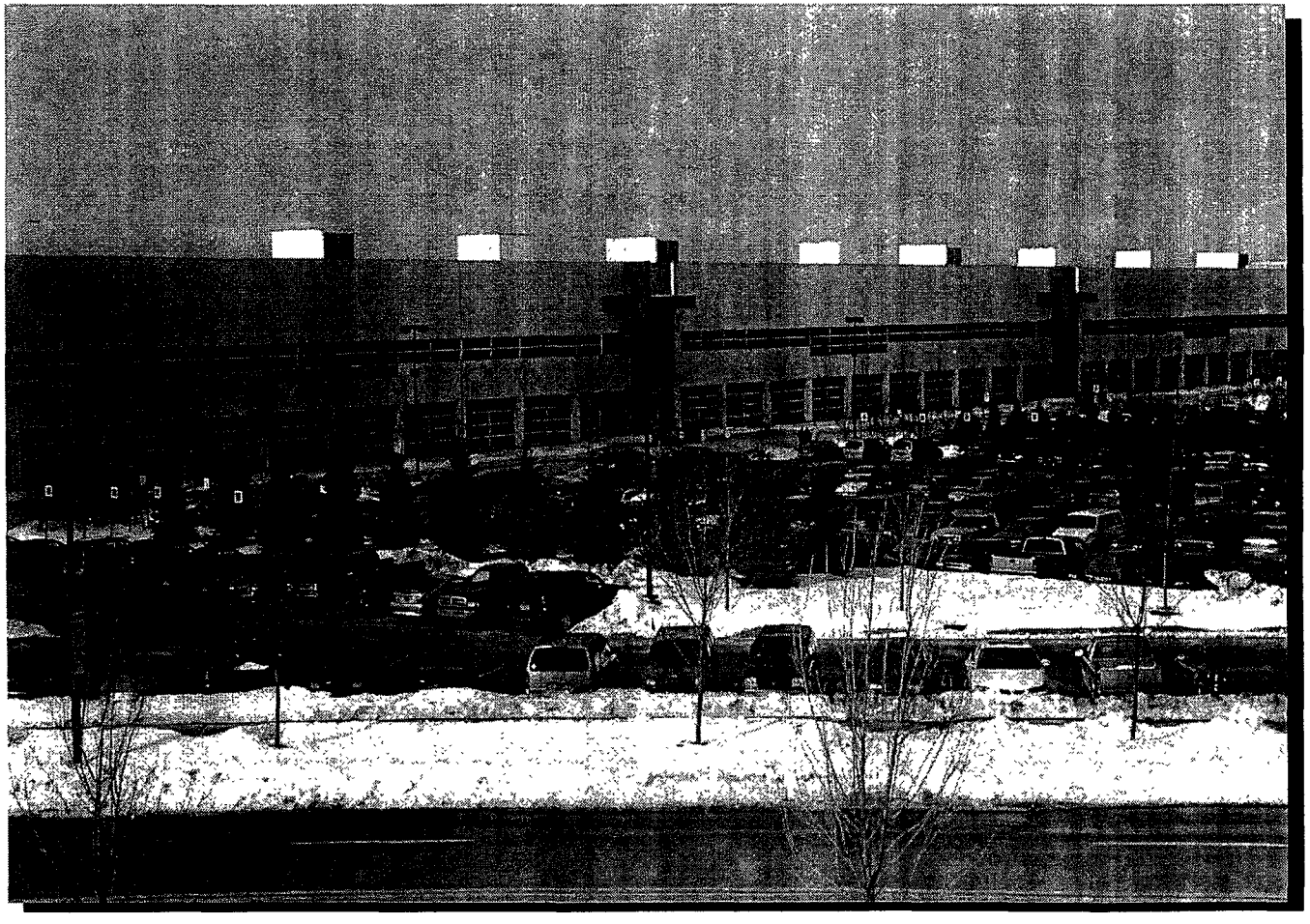
Centerpoint Business Campus

Current Status

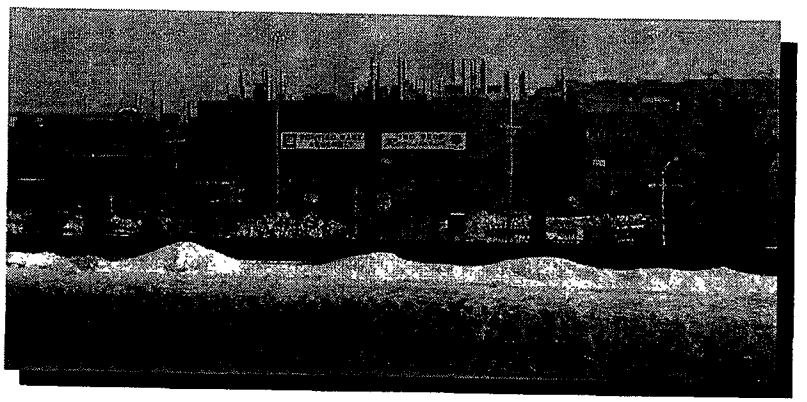
- Centerpoint Business Campus
- Redevelopment includes:
  - Truck Product Center-Central;
  - Pontiac East Assembly;
  - Truck Product Center-West;
  - Hotels;
  - Restaurants; and
  - Commercial.

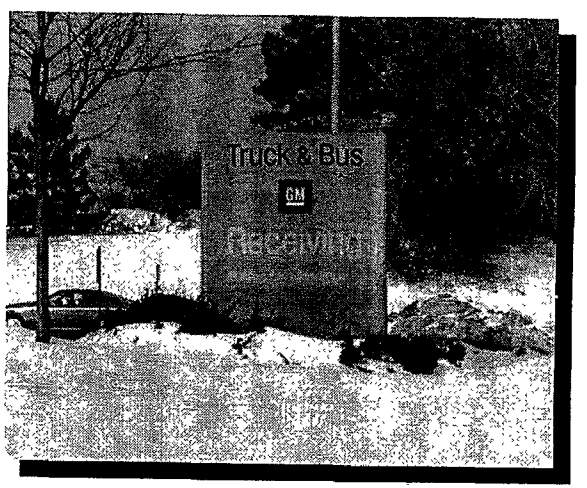
Aerial Photo - 2000

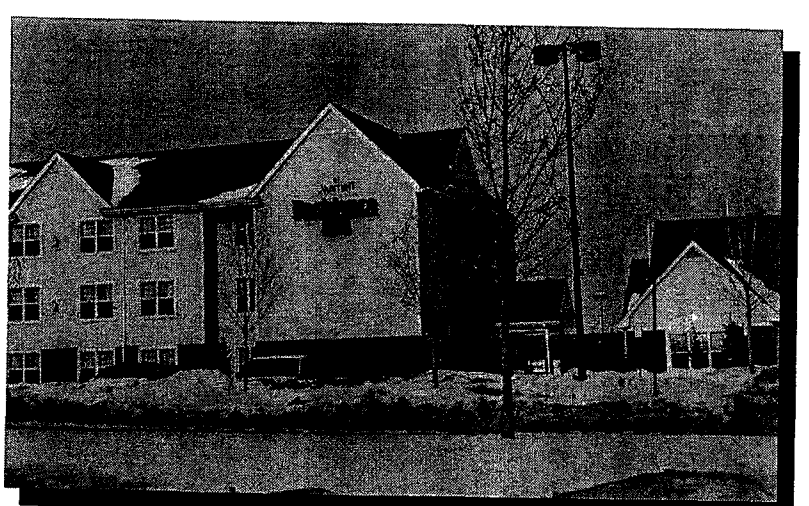
Current Building Photos



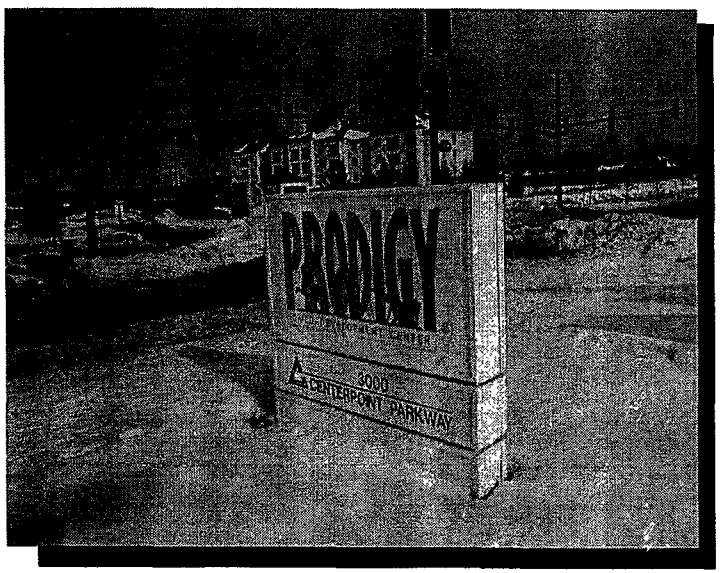
Current Building Photos



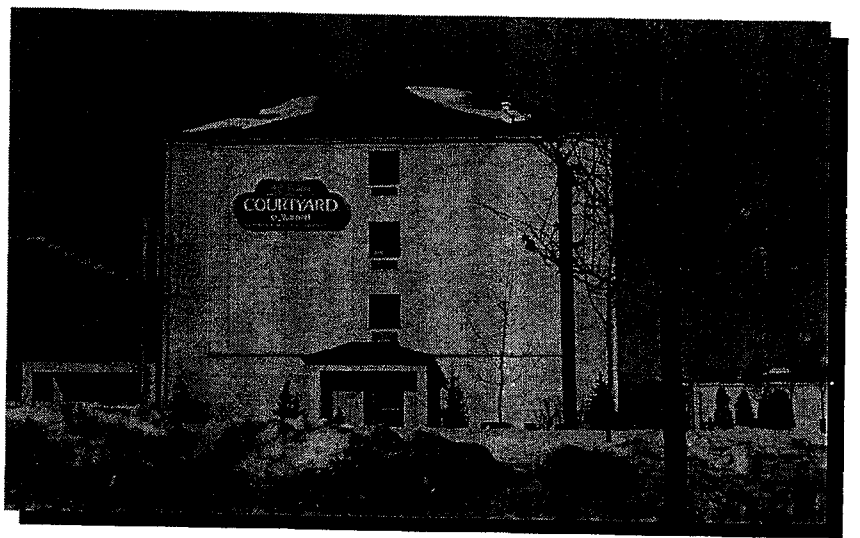


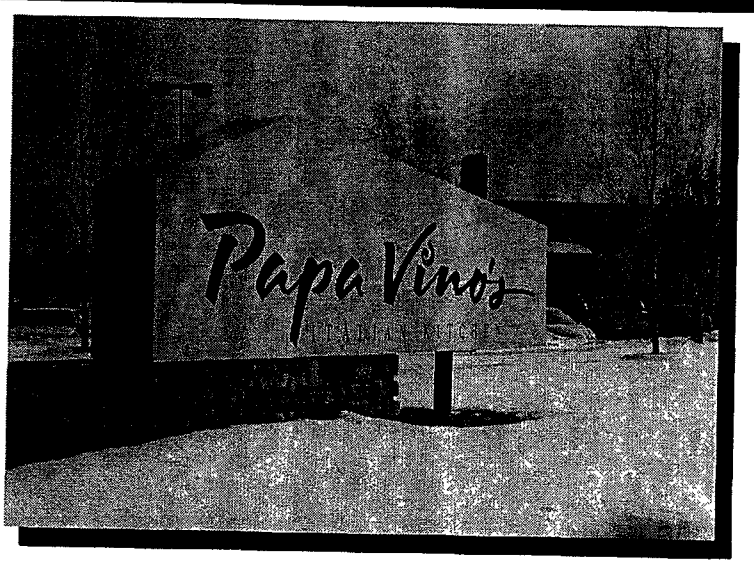


Current Building Photos

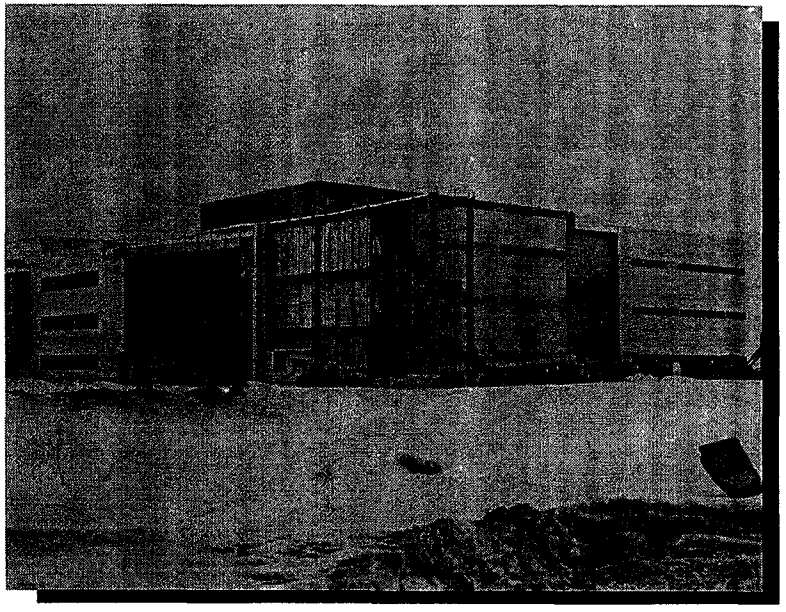


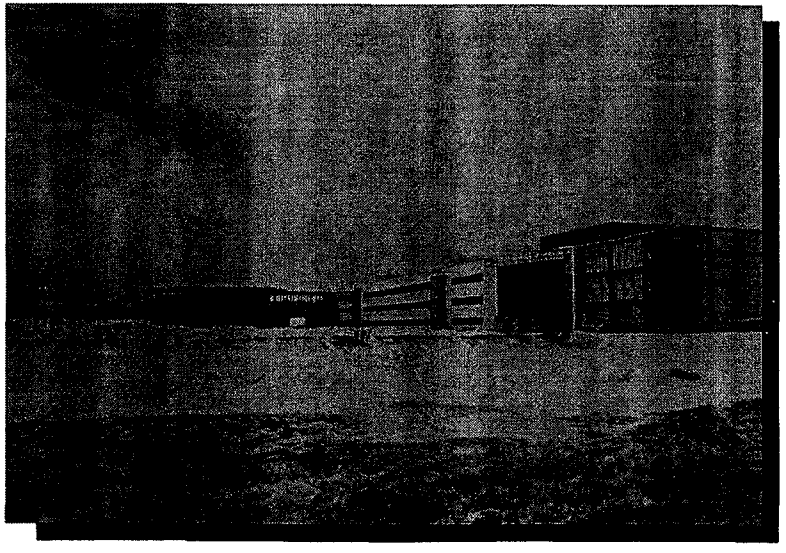
Current Building Photos



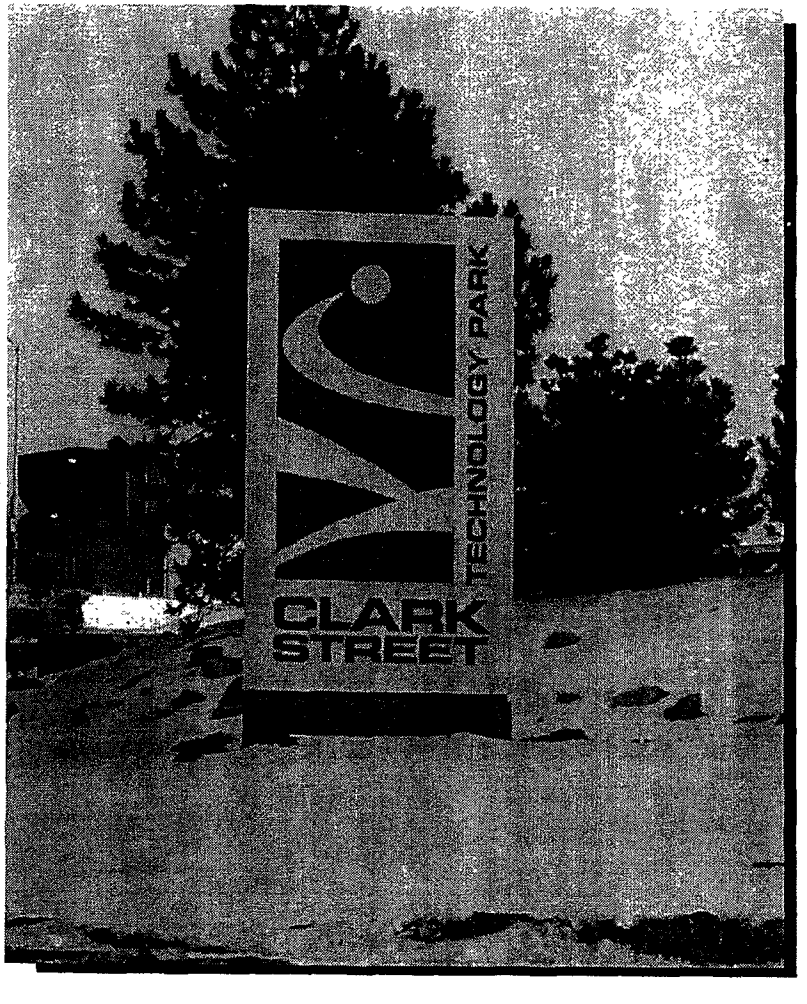


Current Building Photos





D. Example 2
Clark Street Technology Park

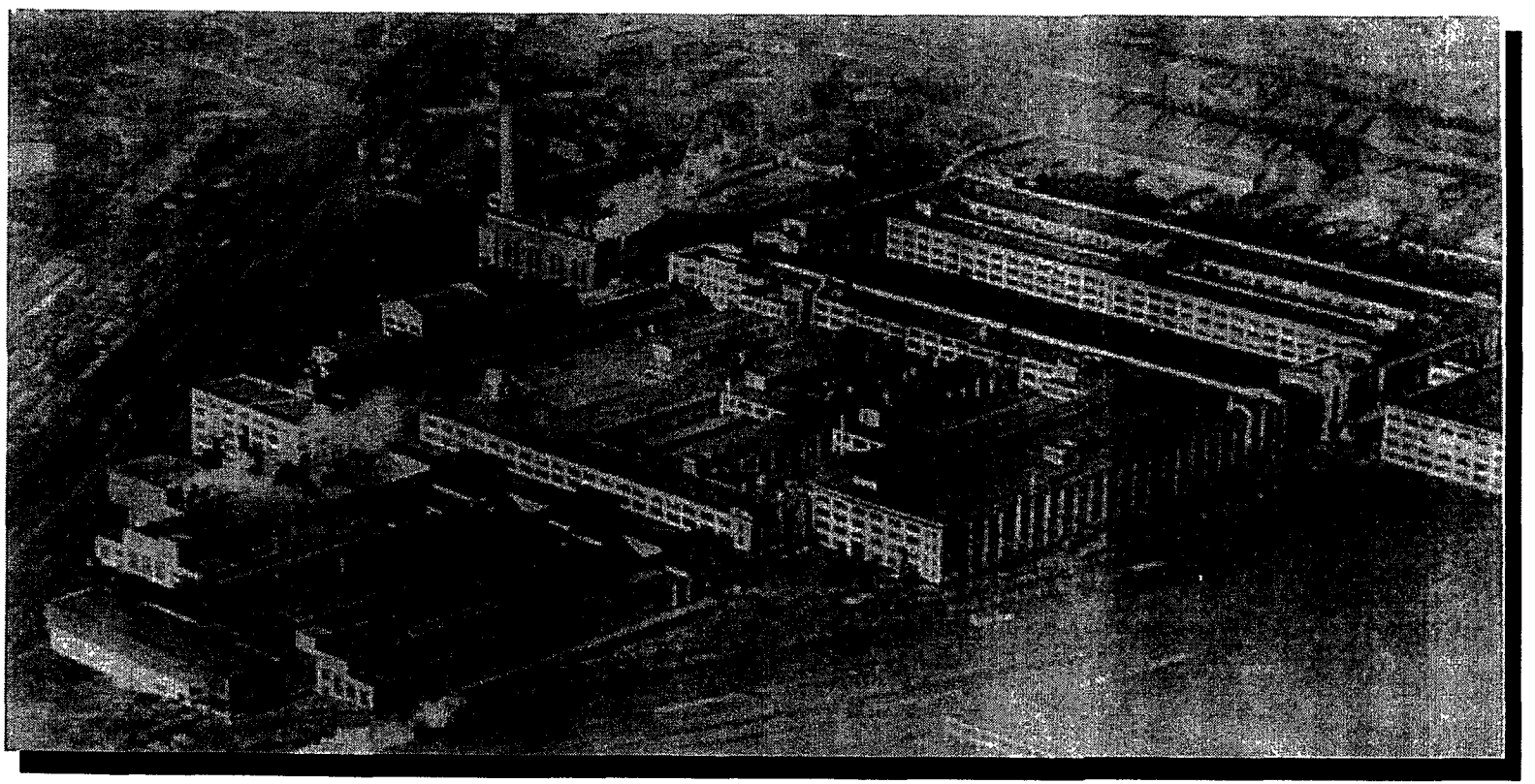


Clark Street Technology Park

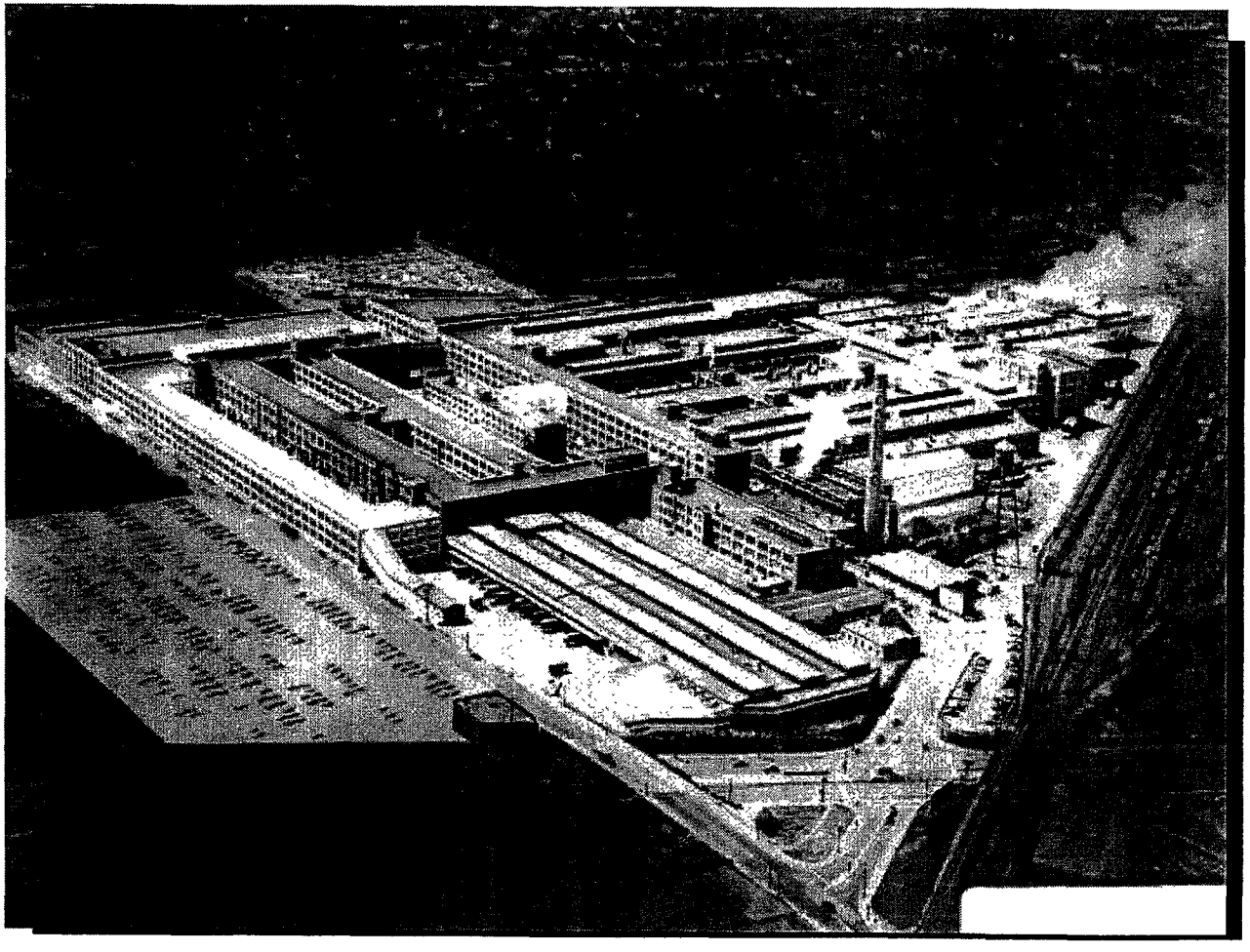
Site History

- Former World Headquarters for GM Cadillac Motor Car Division until relocated in 1993
- Demolition of main facility began in 1995 and was completed in early 1997
- Property located in Federal Empowerment Zone

Aerial Photo - 1925

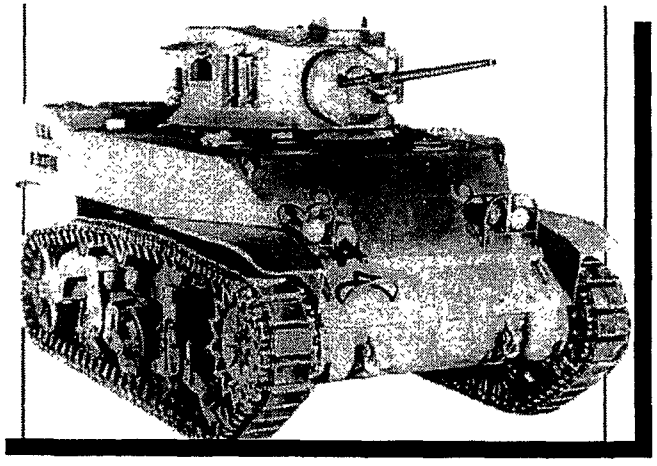


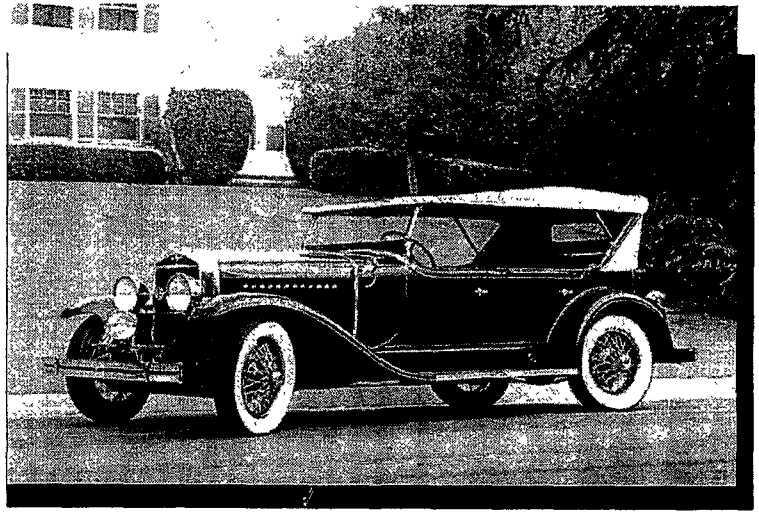
Aerial Photo - 1955



Aerial Photo - 1980

Products





Clark Street Technology Park

Environmental Restoration

- Environmental restoration activities have been ongoing voluntarily by GM since plant closure, and included:
  - identification of potential areas of concern (PAOCs);
  - investigation of PAOCs/delineation of AOCs;
  - remediation activities;
  - regulatory closures; and
  - remediation construction certifications.
- Completed outside of RCRA CA in accordance with Michigan Act 451, driven by redevelopment

Clark Street Technology Park

Identification of PAOCs

- Identified in Fall 1995-1997 during Phase I ESA and demolition

Investigation of PAOCs/Delineation of AOCs

Two-phased drilling program

1) Phase II ESA
   - involved installation of >200 boreholes, soil sample collection, and laboratory analysis
   - identified which PAOCs were to be considered AOCs

2) Phase II ESA
   - designed to delineate the extent of impacted material at each AOC
   - >100 additional soil borings were installed

Clark Street Technology Park

Remediation Activities

- Soil contaminated with organic/ inorganic constituents was excavated and disposed of off-Site
- Soil contaminated with only organic constituents was excavated and treated on Site with a medium temperature LTTD unit

Clark Street Technology Park

Regulatory Closures

- Remediation of impacted material at the former RCRA Subtitle C Interim Status Hazardous Waste Container Unit (approved by MDEQ-WMD)
- Removal of LUST systems and associated impacted soil
- Appropriate documentation completed and submitted to MDEQ in 1996-1997
- Approval of all closure documentation for LUST issues by MDEQ-STD
- Ongoing environmental activities, as required

Clark Street Technology Park

Certification

- Known AOCs have been remediated and certified by independent consultant
- New issues addressed on an as required basis during redevelopment

Post Remediation Conditions Circa 1997

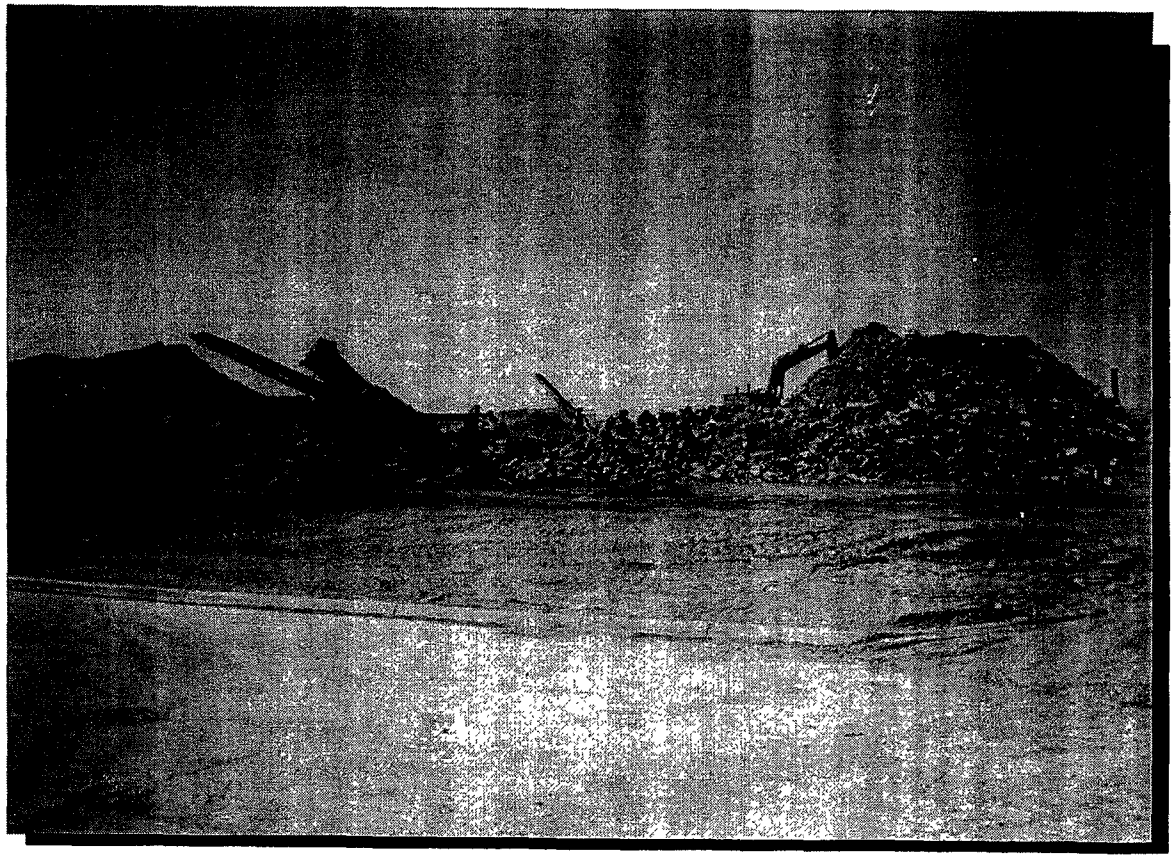
Clark Street Technology Park

Current Status

- Redevelopment includes:
  - MPS Group;
  - Federal Express; and
  - MBE businesses.

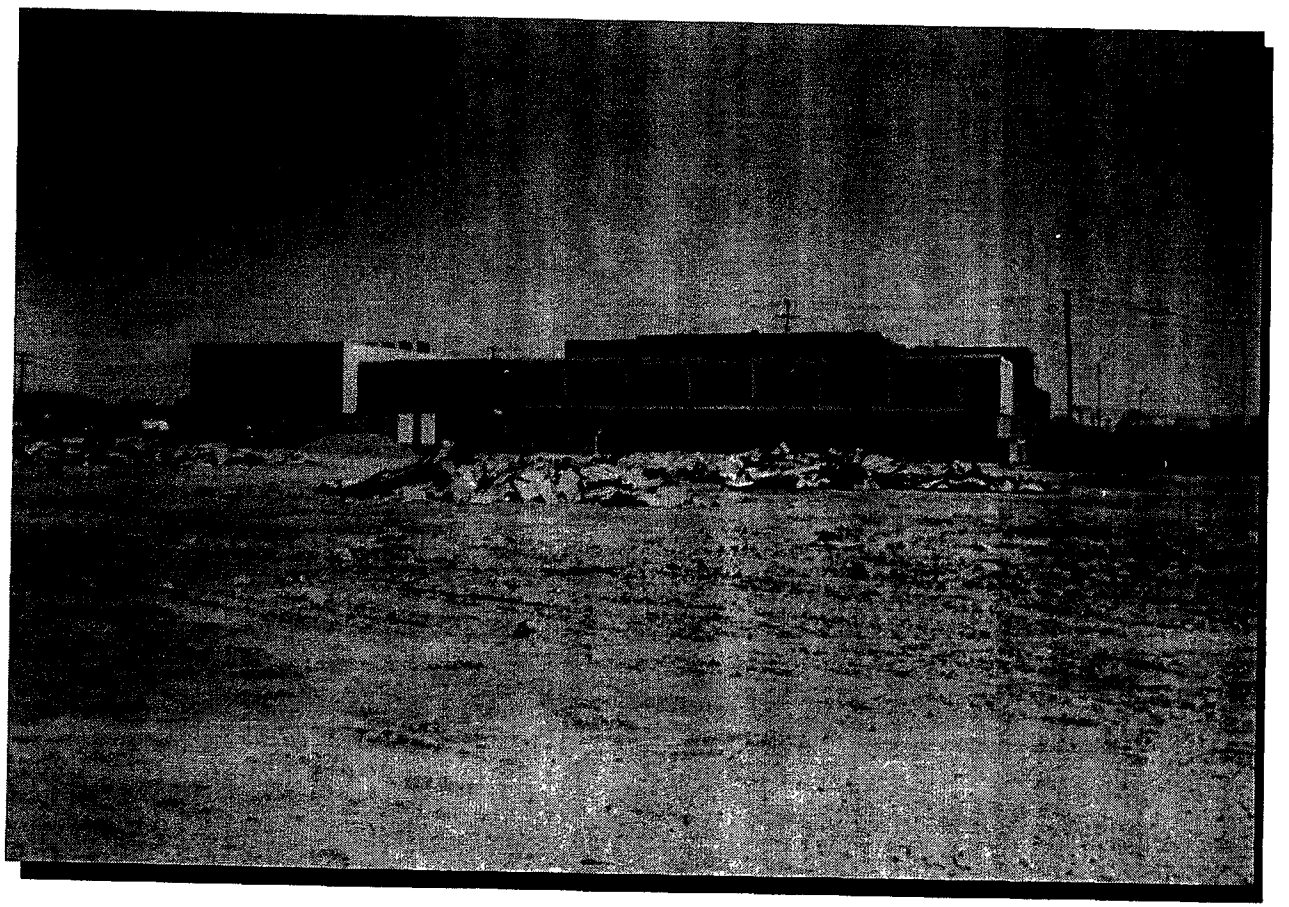
Demolition

Demolition and Recycling of Site Materials April 28, 1999

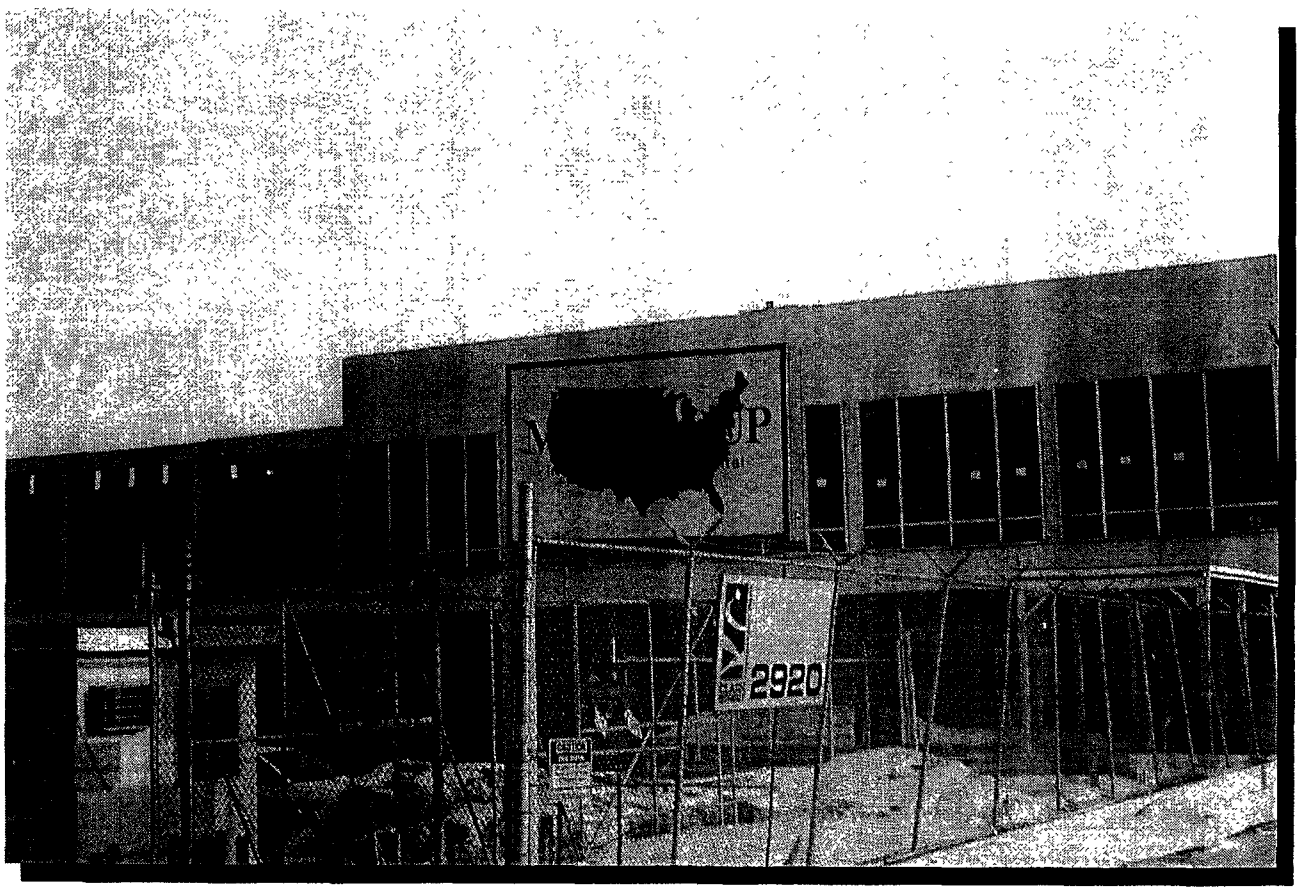


Demolition

Former Engineering Building was renovated as a component of the Redevelopment

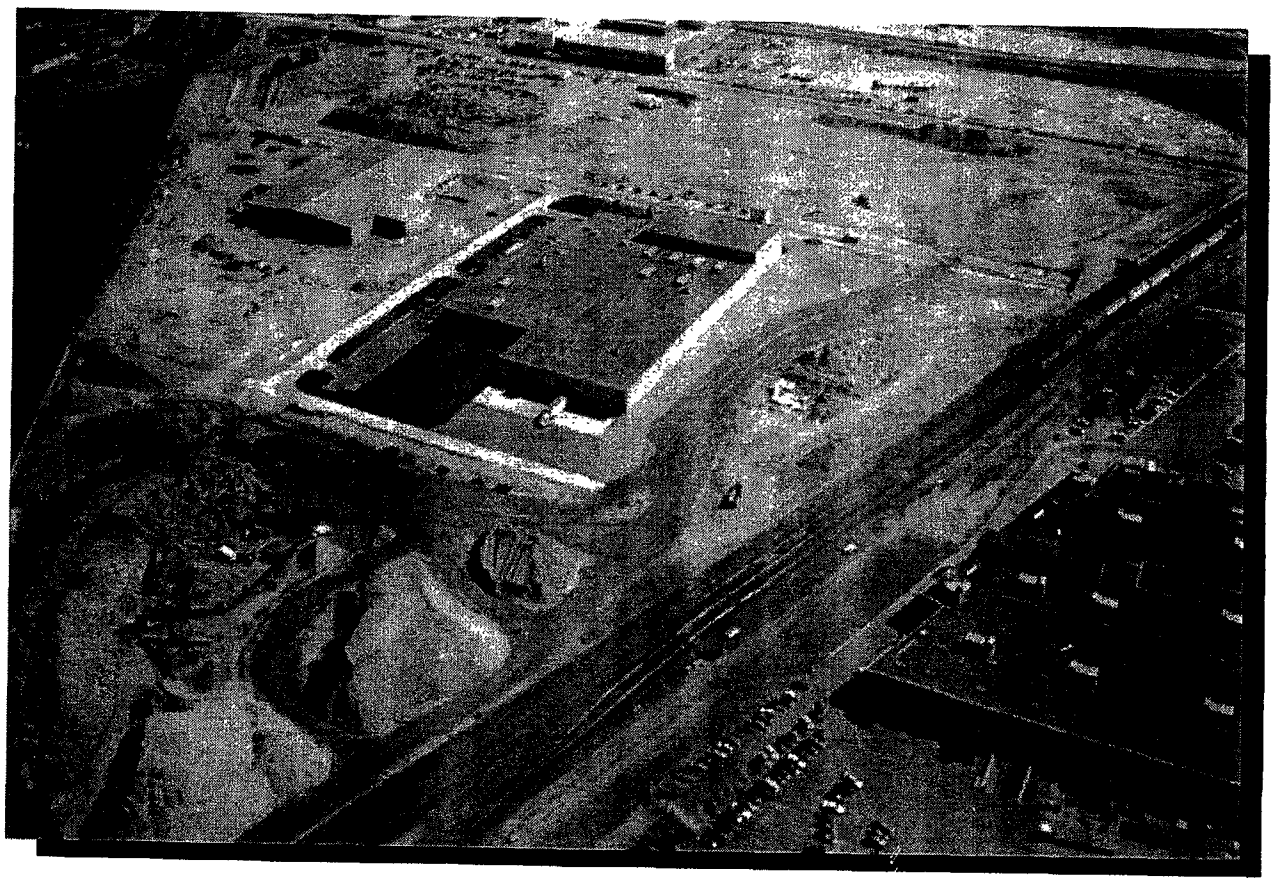


MPS Group



Aerial

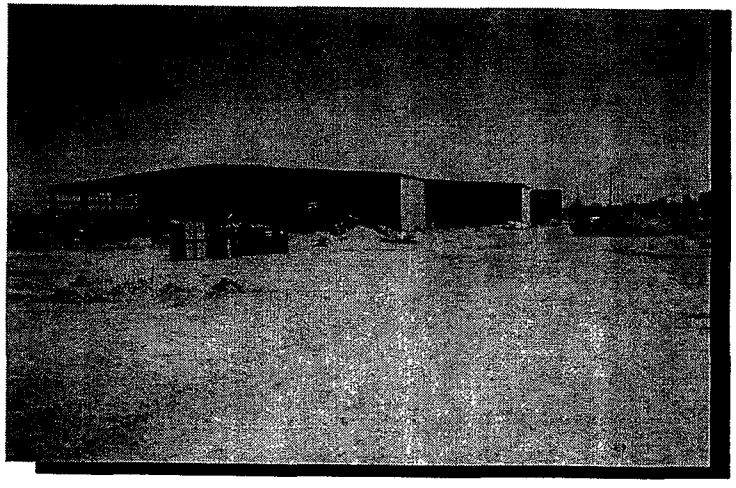
Aerial view of Clark Street Technology Park, April 28, 1999



Michigan Avenue Entrance

Michigan Avenue Entrance January 11, 2001

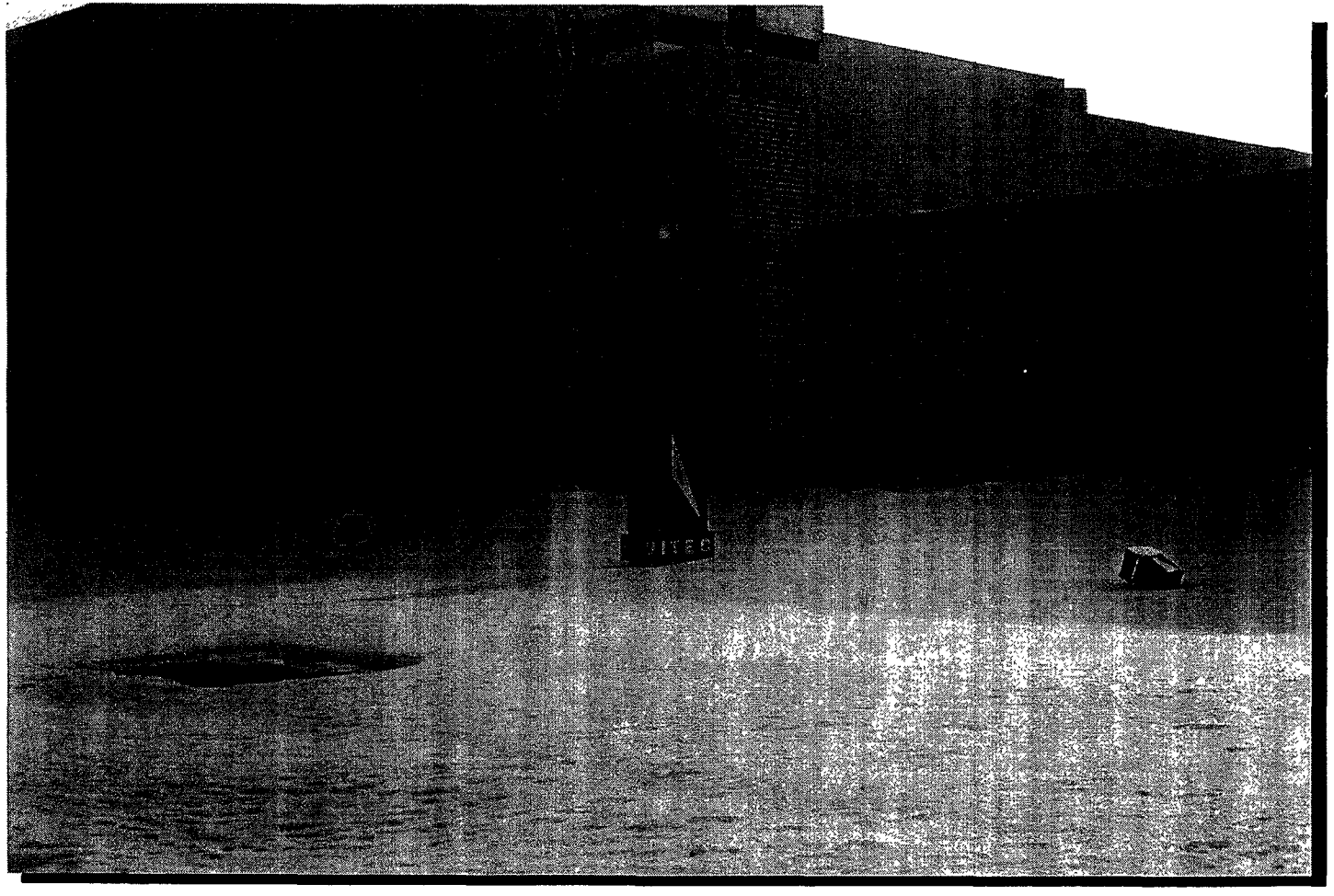
Federal Express Building



Construction April 28, 1999

January 11, 2001

Vitec



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E. Lessons Learned

- Be proactive during early stages of project
- Develop level of trust with U.S. EPA
- Address identified issues early as Interim Measures
- Establish good track record with community and other stakeholders
- Be flexible. Redevelopment activities require the ability to adapt to new constraints.
- RCRA CA is ultimately similar to the standard of practice self implemented to address environmental issues within business transactions

Phyto-Cover at a RCRA Site

presentation by

Martin Hamper
Principal Scientist
Arcadis, Geraghty and Miller, Inc.

PHYTO-COVER at a RCRA SITE

Presented at:
RCRA Corrective Action Conference
United States Environmental Protection Agency Region 5
January 17, 2001

Martin Hamper, P.G., C.P.G.

ARCADIS Geraghty & Miller, Inc
35 East Wacker Drive, Suite 1000
Chicago, Illinois
312-263-6703

ARCADIS

PHYTO-COVERS

- One of the applications of phytoremediation

PHYTOREMEDIATION APPLICATIONS

- Degradation
- Extraction
- Containment

DEGRADATION

- Enhances microbial degradation in the root zone
- Metabolism in the plant

EXTRACTION

- Specialized species extract contaminants into leaves
- Transpiration into the atmosphere

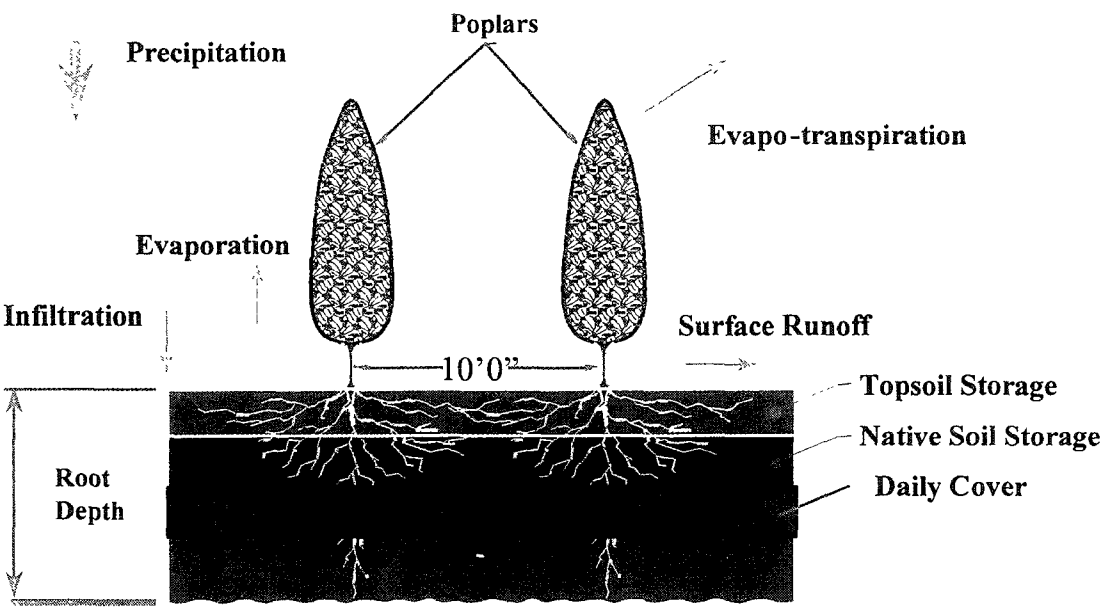
CONTAINMENT

- Physical Containment
  - Binds to soil
  - Root accumulation
- Hydraulic Containment
  - Groundwater Plume Control
  - Phyto-Cover

PHYTO-COVERS

- Evapotranspiration Cover
  - Composed of soil and plants to minimize water infiltration
- Phytoremediation Cover
  - Evapotranspiration and degradation of the underlying waste

Conceptual Phyto-Cover Diagram

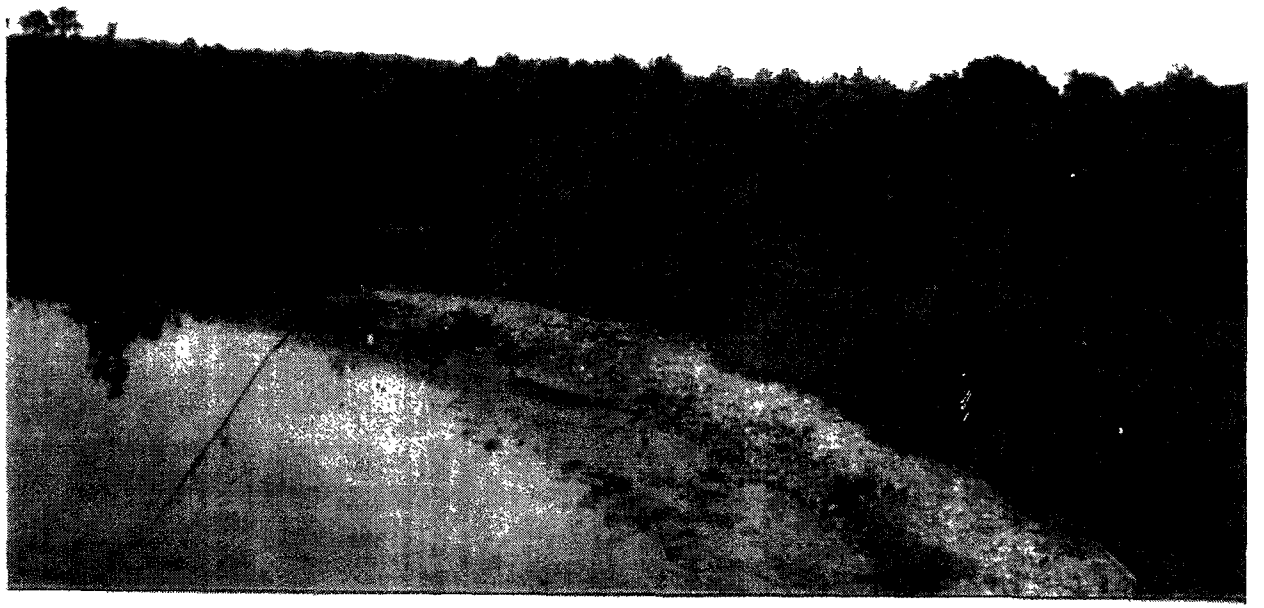


ARCADIS

Installation

ARCADIS

After 3 months



ARCADIS

After One Year

ARCADIS

After Two Years

ARCADIS

RCRA PERFORMANCE STANDARDS FOR COVERS

- Have a permeability less than or equal to that of the bottom liner or natural subsoils present
- Provide for long-term minimization of liquids through the landfill
- Accommodate settling such that integrity is maintained
- Promote drainage and minimize erosion or abrasion of the cover
- Function with a minimum of maintenance

Hammond Site Phyto-Cover Profile

- Two-foot thick soil cover
- Six-inches of top soil
- Grass understory
- Poplar trees planted at approximately 1,100 trees per acre

Understory Planting

- Fast growing annual grass for short-term erosion control
- Deep-rooted grass for long-term understory
- Nitrogen-fixing species for long-term soil fertility
- Modeling indicates that grass will transpire 27 inches per year of water
  - As tree mature, shade increases
  - Grass transpiration rate will decrease as tree transpiration rate increases

Conservative Design Assumptions

- Low site-wide slope factor (2%)
- Additional under-estimation of surface-water runoff by the runoff curve method
- Consumptive-use coefficient is lower than known measured values
- Shallower root depth than typical for selected vegetation in the design

Permeability less than or equal to that of the bottom liner or natural subsoils present

- No liner present at site
- Subsoil at site is sand

Maintenance Attributes

- Accommodate settling such that integrity is maintained
  - Little settling anticipated
  - Inorganic waste
- Promote drainage and minimize erosion or abrasion of the cover
  - Cover slope to drain
  - Phyto-Cover minimize erosion of cover
- Function with a minimum of maintenance
  - May need irrigation

Provide for long-term minimization of liquids through the landfill

- Pump and Sponge
- Vegetation is the Pump
- Sunlight Provides the Energy
- Soil provides the Water Storage

Water Balance Analysis

A. Precipitation

- Long term daily records

B. Runoff

- SCS curve number model

C. Evapotranspiration

- Measured or synthetic

D. Storage (field capacity)

- -

E. Percolation =a - b - c - d

Hammond Site
Water Consumption Rates-Trees

- At a density of 1,100 trees per acre
  - After fourth season, these rates are equivalent to 40.5 in/yr and 72.5 in/yr, respectively, and
  - will continue to increase through the 7th growing season and flatten out in the 10th season
- These rates exceed the average annual precipitation rates of approximately 32 in/yr
  - A comparison of these rates indicates that there will be a net loss of groundwater after the cover reaches maturity

Cost Comparison
Multi-Layered Cap vs Phyto-Cover

- Multi-Layered Cap
  - Capital Cost $1.9 Million +/- $ 0.5 Million
  - O&M $ 6K +/- $1.5 K per year
- Phyto-Cover
  - Capital Cost $ 0.9 Million +/- $0.25 Million
  - O&M $ 7.5 K +/- $1.9K per year

Phyto-Cover - Benefits

- Equivalence to RCRA cap objectives
- Cost-Effective
- Promotes ecological stability & diversity
- Dynamic and flexible engineered system
- Aesthetically preferable with beneficial reuse
- Limited O&M (not perpetual)
- Promotes completion of landfill lifecycle

Phytoremediation at Wood River

presentation by

David Tsao, Ph.D
Environmental Research Engineer
BP Amoco

bp

Phytoremediation at Wood River

by: ***David Tsao, Ph.D***
BP Corporation

OVERVIEW:

- **Background** - Site Situation / Phyto-Solution
- **Greenhouse Experiments** - Plant Screening
- **Tree Stands** - Water Uptake and Transpiration
- **Groundcover Plots** - Rain Interception

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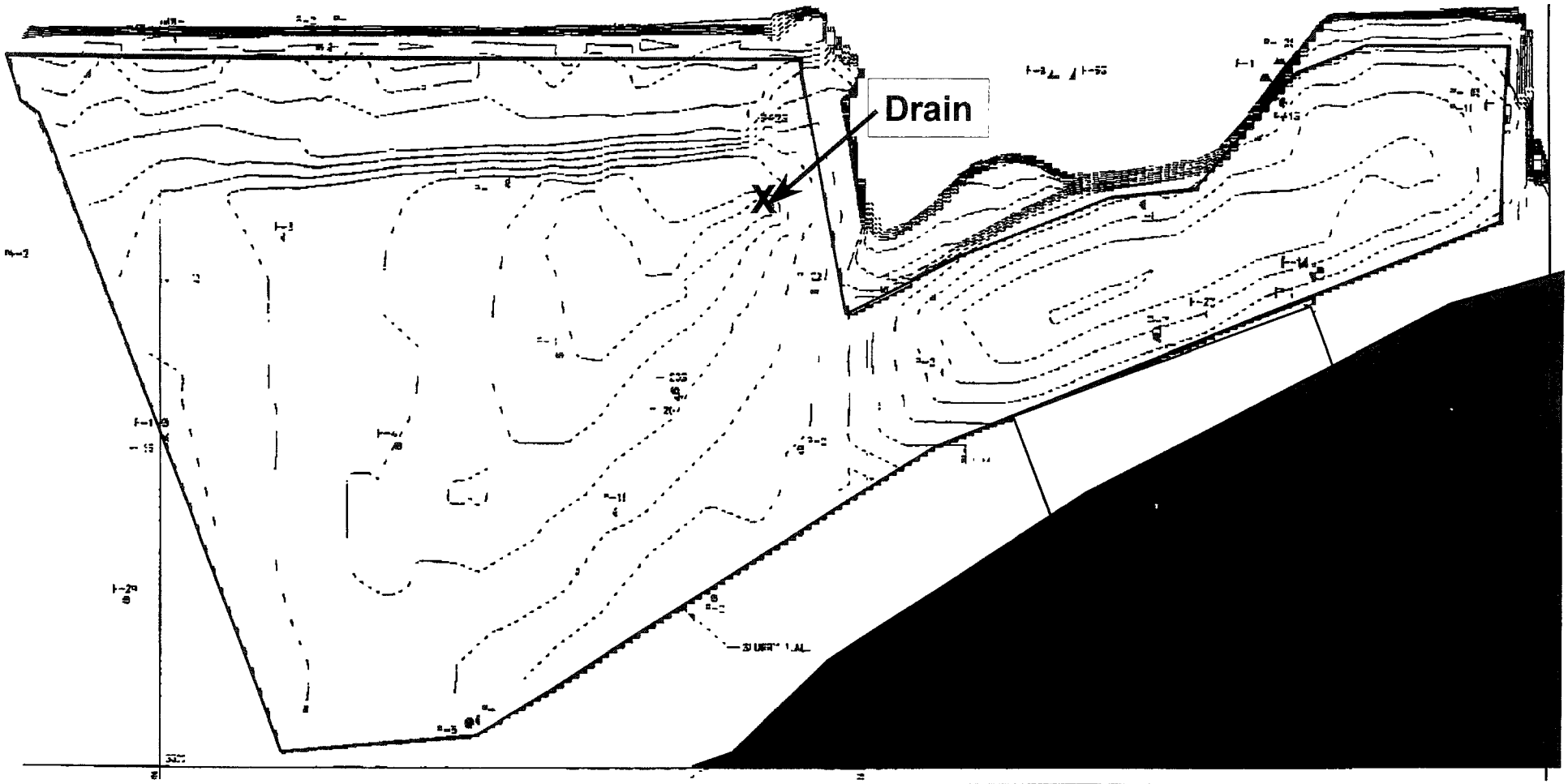
WOOD RIVER
Closed Disposal Facility (CDF)

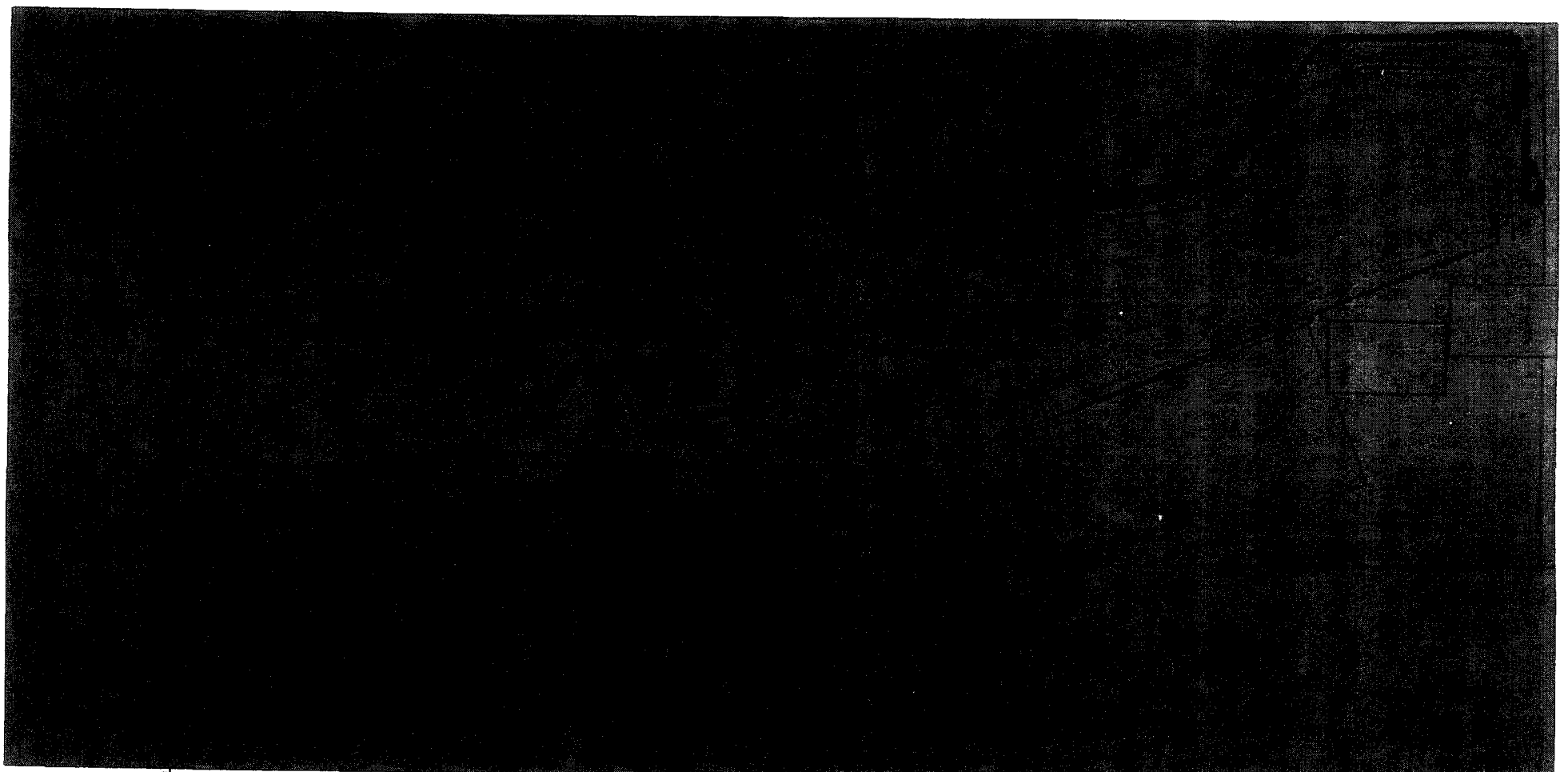


0 100 200
Scale in Feet

C Control Plots
1-4 Test Plots
Plots and Tree Stands Not to Scale

Hydrocarbon and Environmental Management

WOOD RIVER
Closed Disposal Facility (CDF)



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Scale in Feet

C Control Plots
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Plots and Tree Stands Not to Scale

Hydrocarbon and Environmental Management

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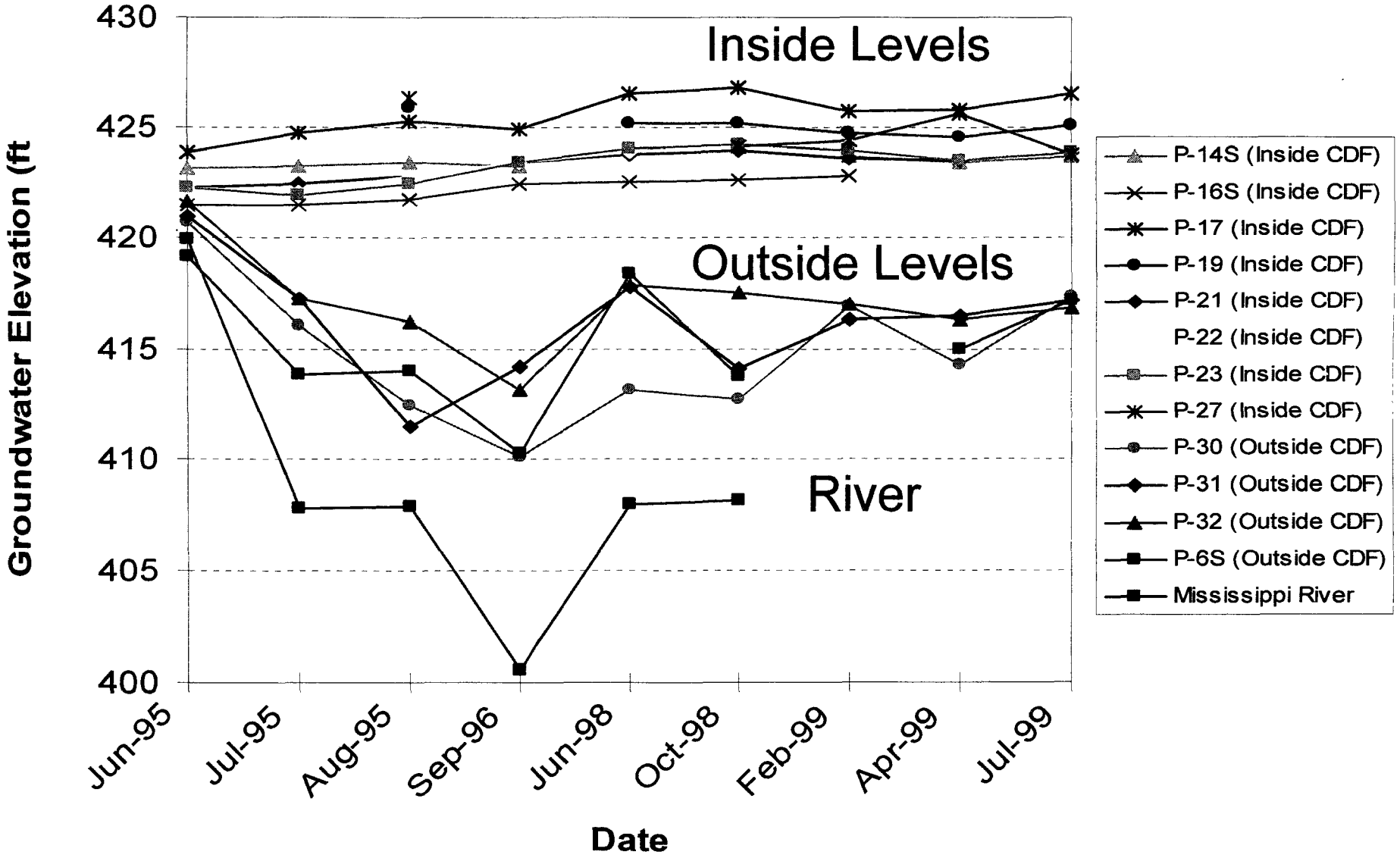
Liquid Levels



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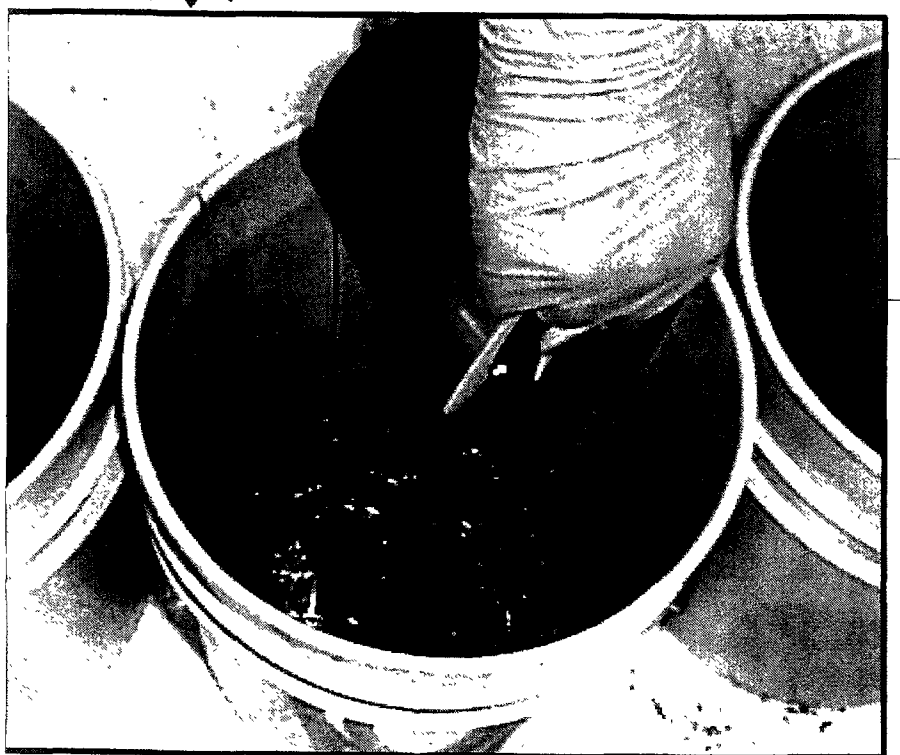
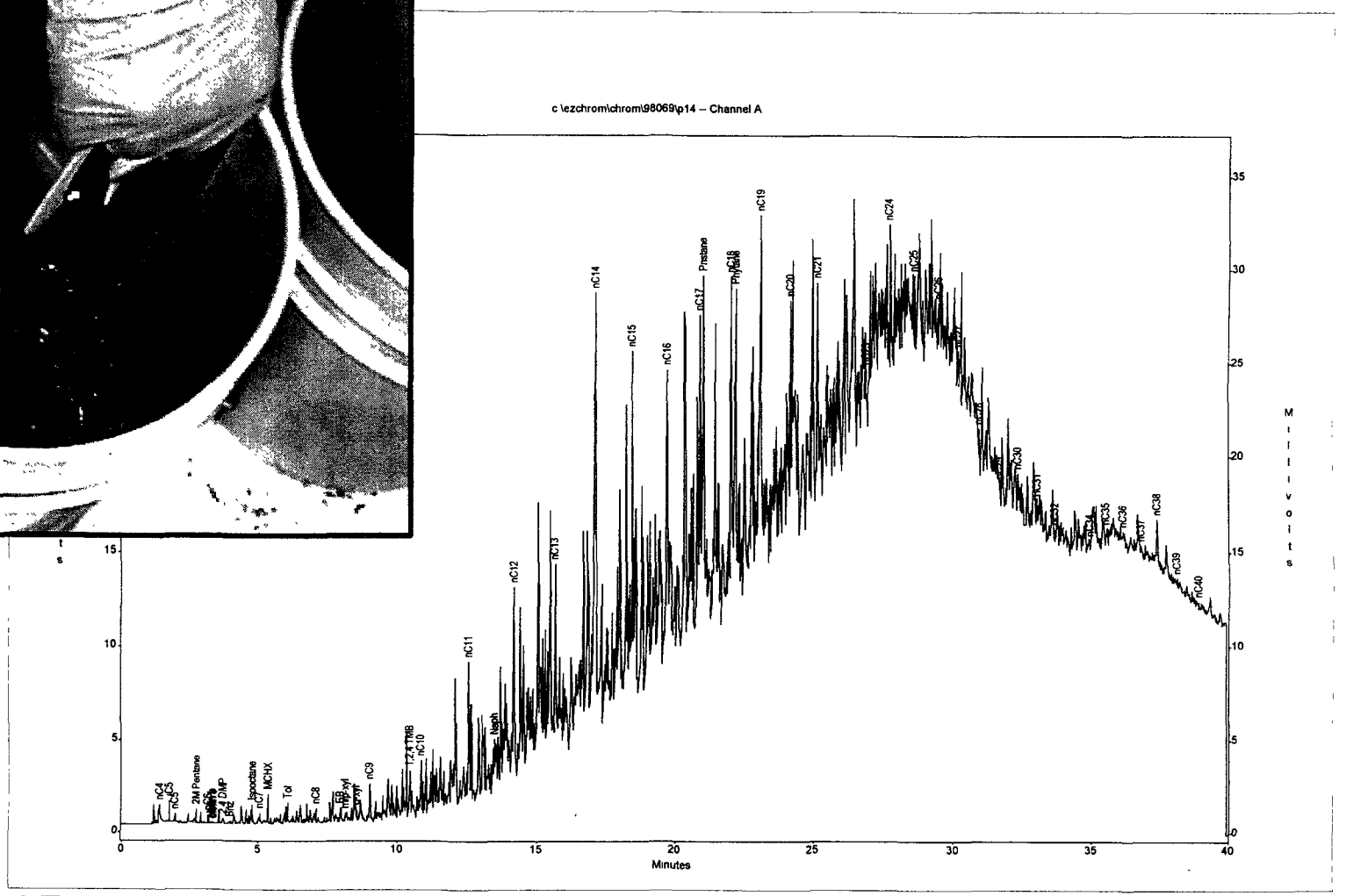
CDF Contents
(Typical Chromatogram)





Hydrocarbon and Environmental Management

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Comparison of Options

- **Install a Physical Pump and Treat System**
  - ➔ No electrical utilities to the site
  - ➔ No piping to the site
  - ➔ No on-site waste water treatment facility
- **Collect water and truck to a POTW**
- **Estimated Cost = $1.5 to $2.0 M** (best-case scenario)

- **Use Phytoremediation:**
  - ➔ Provide "slow pressure release"
  - ➔ Easy to install
  - ➔ Solar-powered
  - ➔ Potentially treats hydrocarbons in-situ
- **Tree Stands**
  - ➔ Take up and transpire existing liquid within the CDF
- **Groundcover Plants**
  - ➔ Intercept rain, prevent infiltration into the CDF
- **Estimated Costs = $250 to $500 k**

Estimated Savings = $1.0 to $1.5 M

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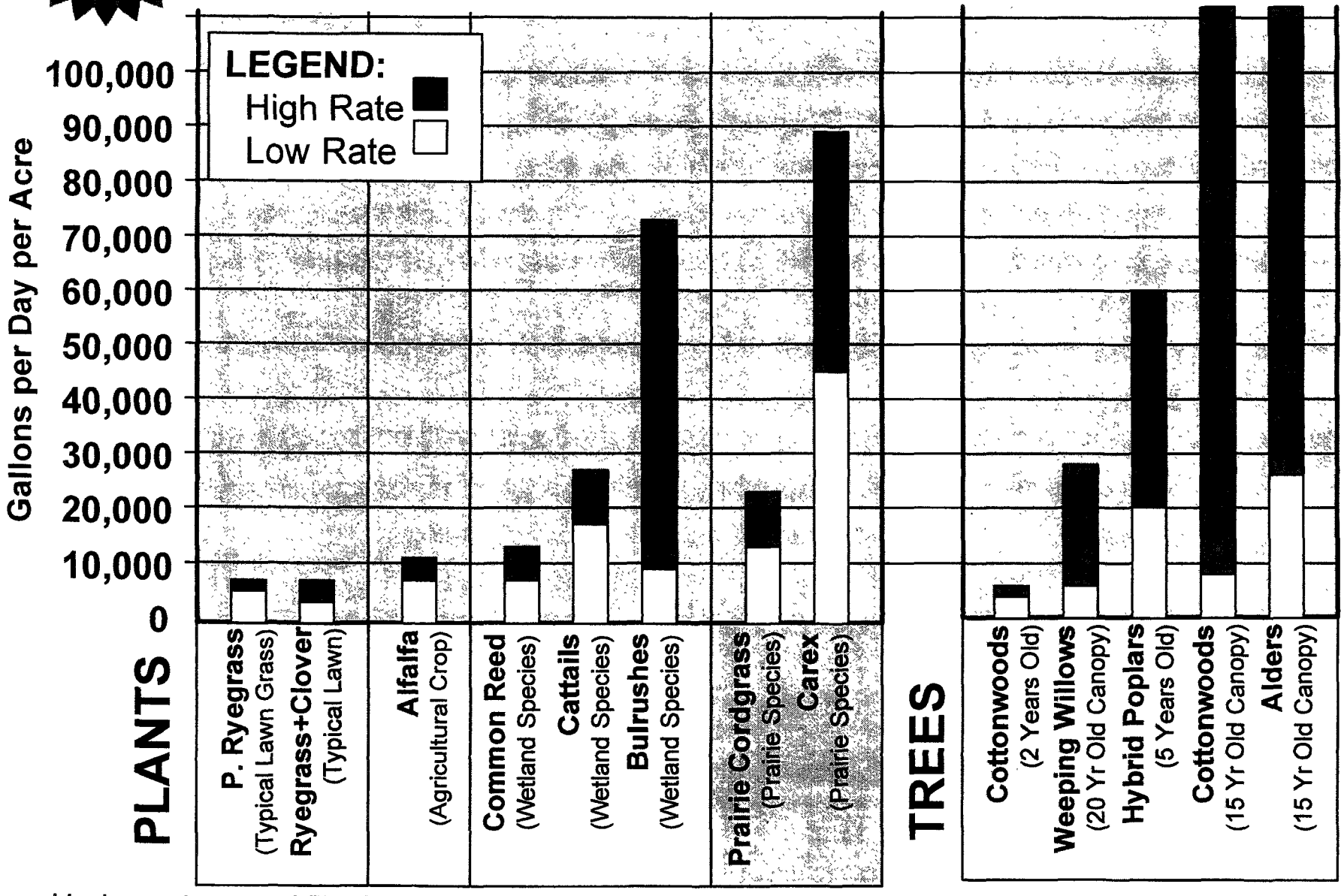
Plant Selection
(Transpiration Rates)



Hydrocarbon and Environmental Management

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Plant Selection
(Rain Interception Capacities)

Plant/Tree Species % Interception

Natural Grass Pasture	14-19%	<<<<< Baseline Numbers
Mixed Species	26%	<<<<< Baseline Numbers
Buffalo Grass	31%	
Alfalfa	34%	
Big Bluestem	57%	
Tall Panic Grass	57%	
Little Bluestem	50-60%	
Oak Trees	24%	
Ash Trees	24%	
Spruce and Fir Trees	30%	

- **Leaf Structure**
  - ➔ Wide vs. Narrow
- **Leaf Surface**
  - ➔ Waxy vs. Hairy
- **Leaf Positioning**
  - ➔ Vertical vs. Horizontal
  - ➔ Position in Canopy

Data Based on 0.5" Rain Event in ½ Hour

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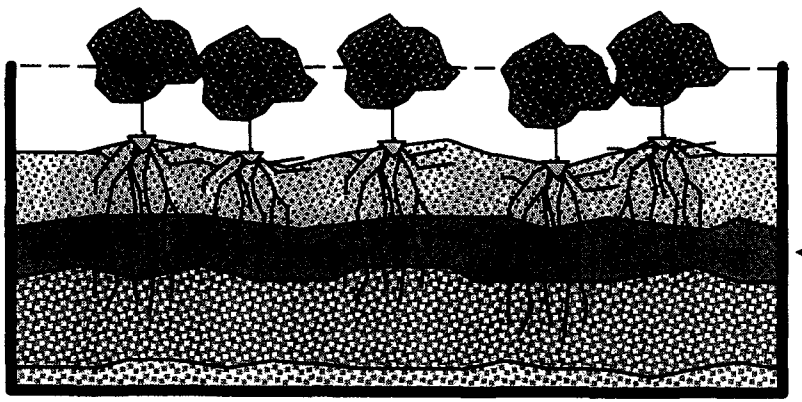
Plant Selection
(Tolerance Screening)



SPECIES TESTED:

Red Fescue	FAIL	Wetland Alfalfa	SUCCESS
Canadian Thistle	FAIL	Quack Grass	SUCCESS
St. Johnswort	FAIL	Perennial Rye	SUCCESS
Voyager II Alfalfa	FAIL	Birdsfoot Trefoil	SUCCESS
Honey Locust (Tree)	FAIL	Crownvetch	SUCCESS
		Big Bluestem	SUCCESS
		Willow (Tree)	SUCCESS
		Cottonwood (Tree)	SUCCESS

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Plant Screening Experiments

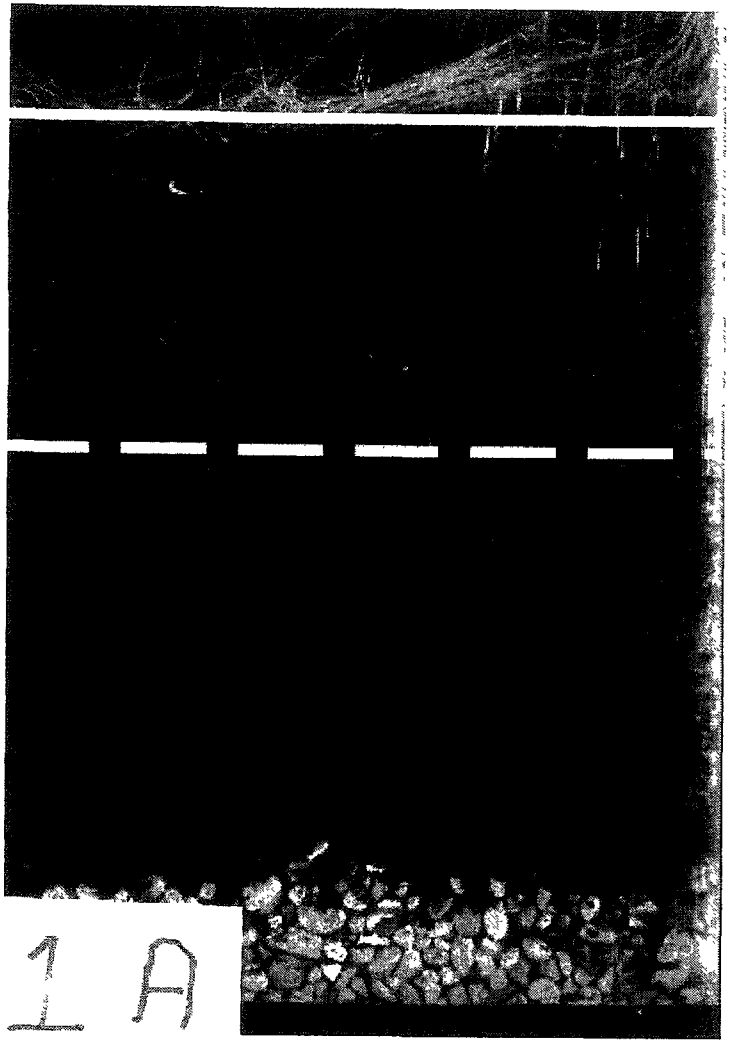
Preliminary Results - Tank 1A/1C
(Red Fescue Grass)

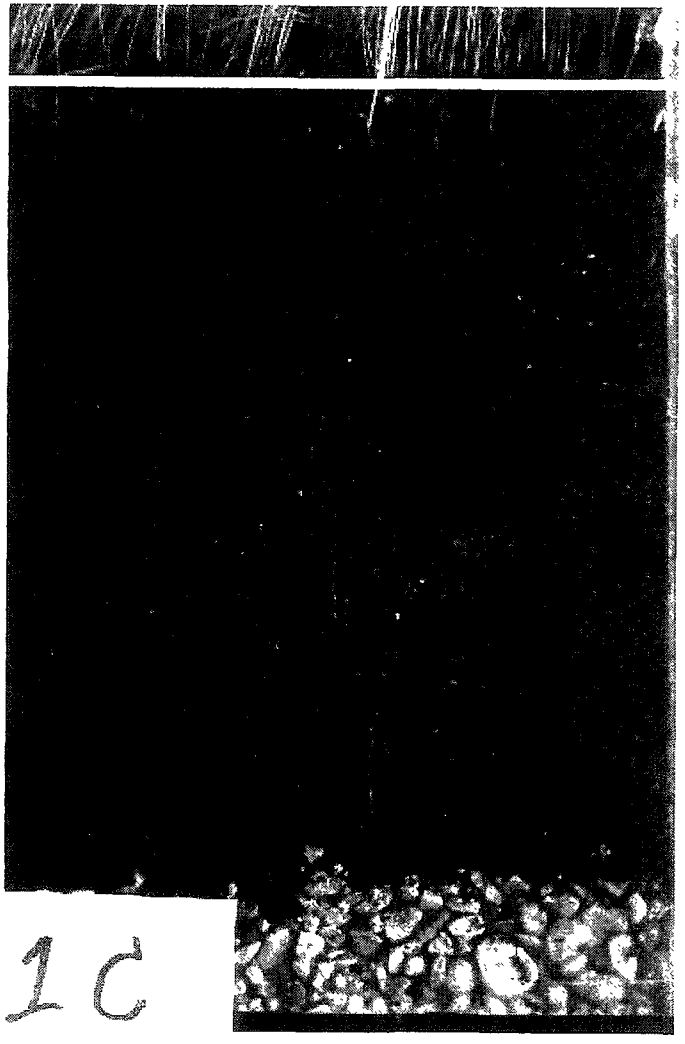
bp

Plant Screening Experiments

Preliminary Results - Tank 1A/1C

(Red Fescue Grass)





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Plant Screening Experiments

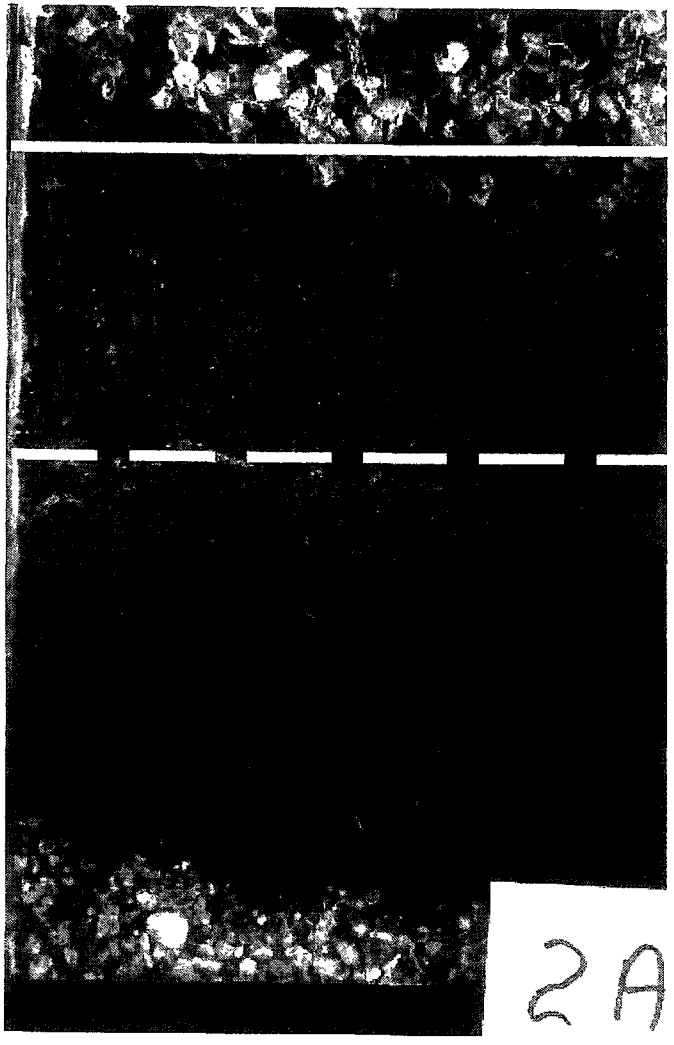
Preliminary Results - Tank 2A/2C
(Wetland Alfalfa)

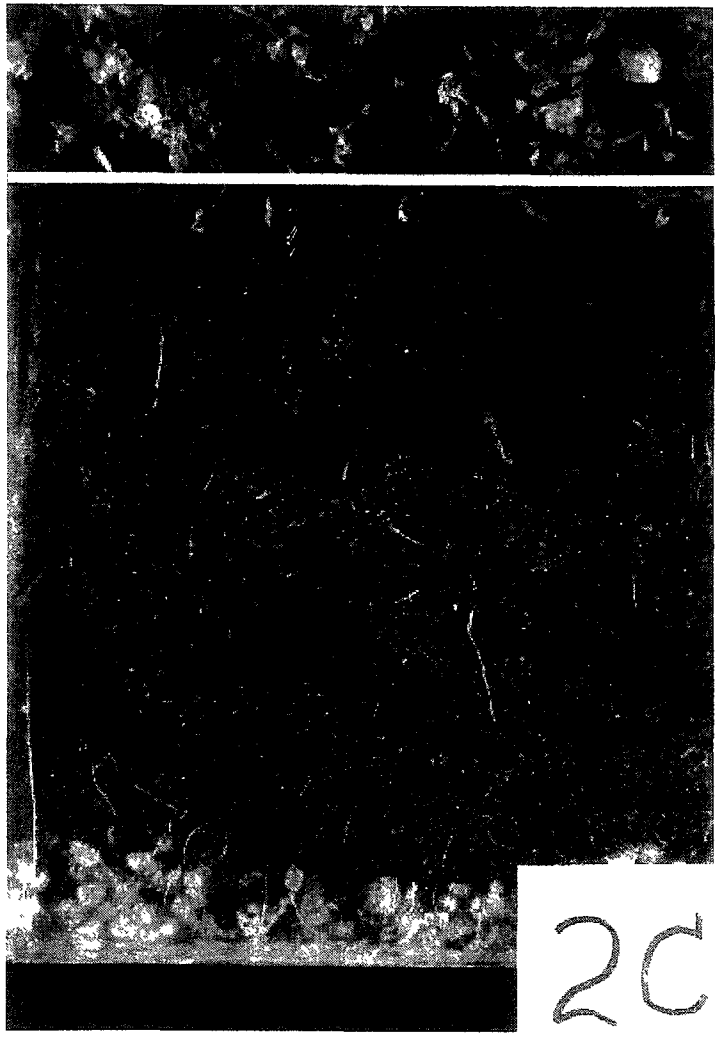
bp

Plant Screening Experiments

Preliminary Results - Tank 2A/2C

(Wetland Alfalfa)





Plant Screening Experiments

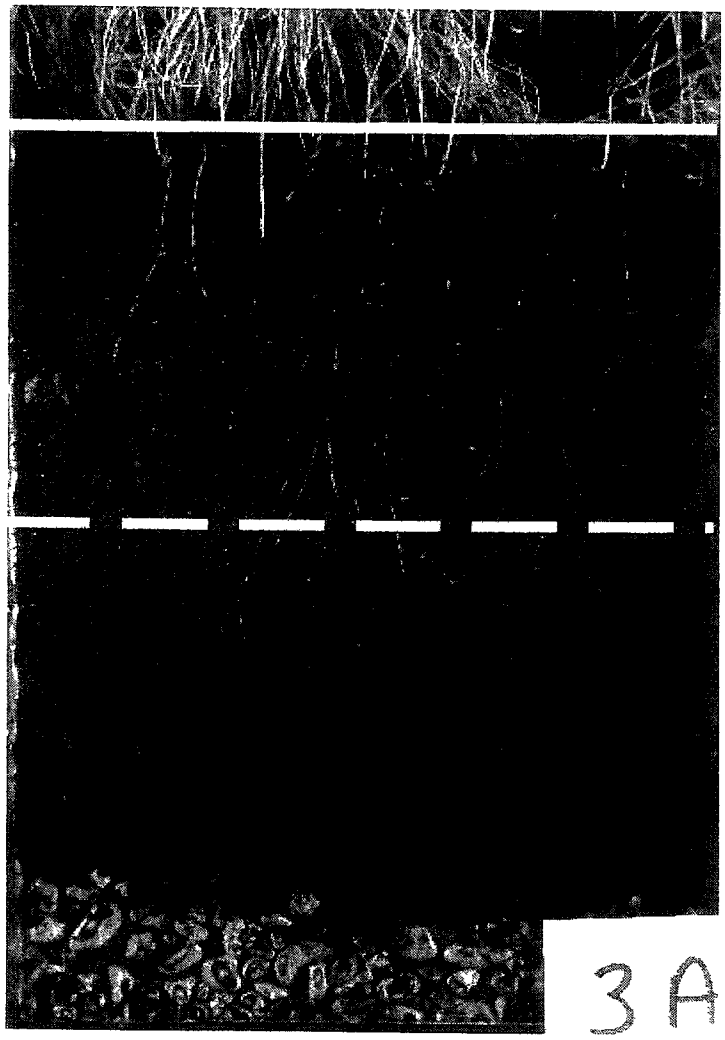
Preliminary Results - Tank 3A/3C and 3B/3D
(Perennial Rye / Quack Grass)

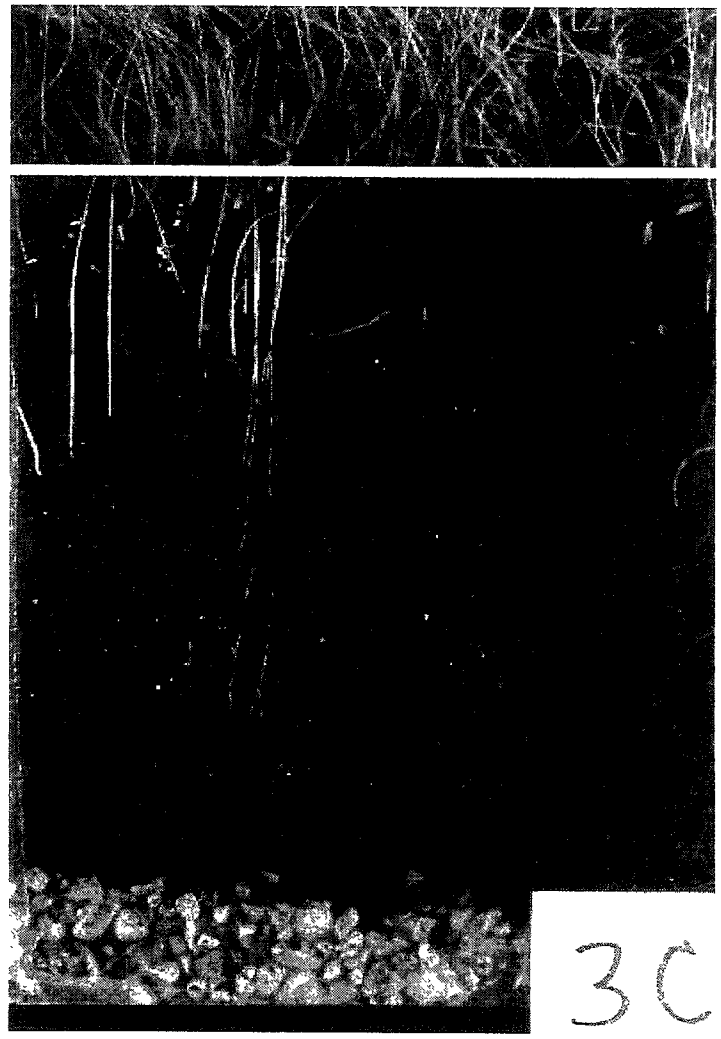
bp

Plant Screening Experiments

Preliminary Results - Tank 3A/3C

(Perennial Rye)





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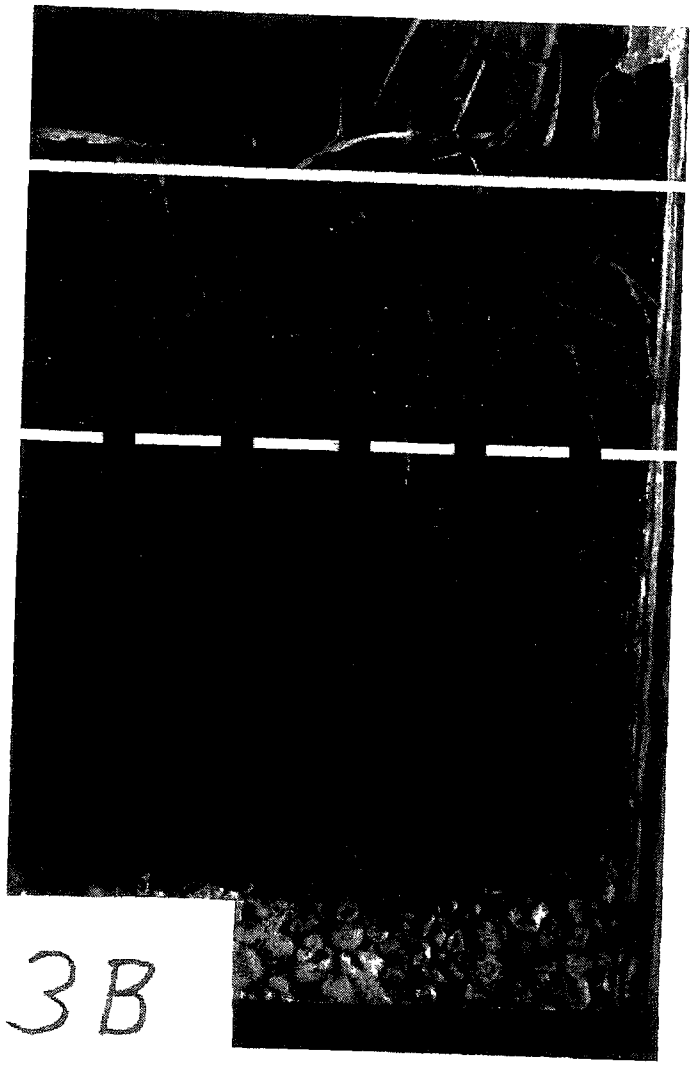
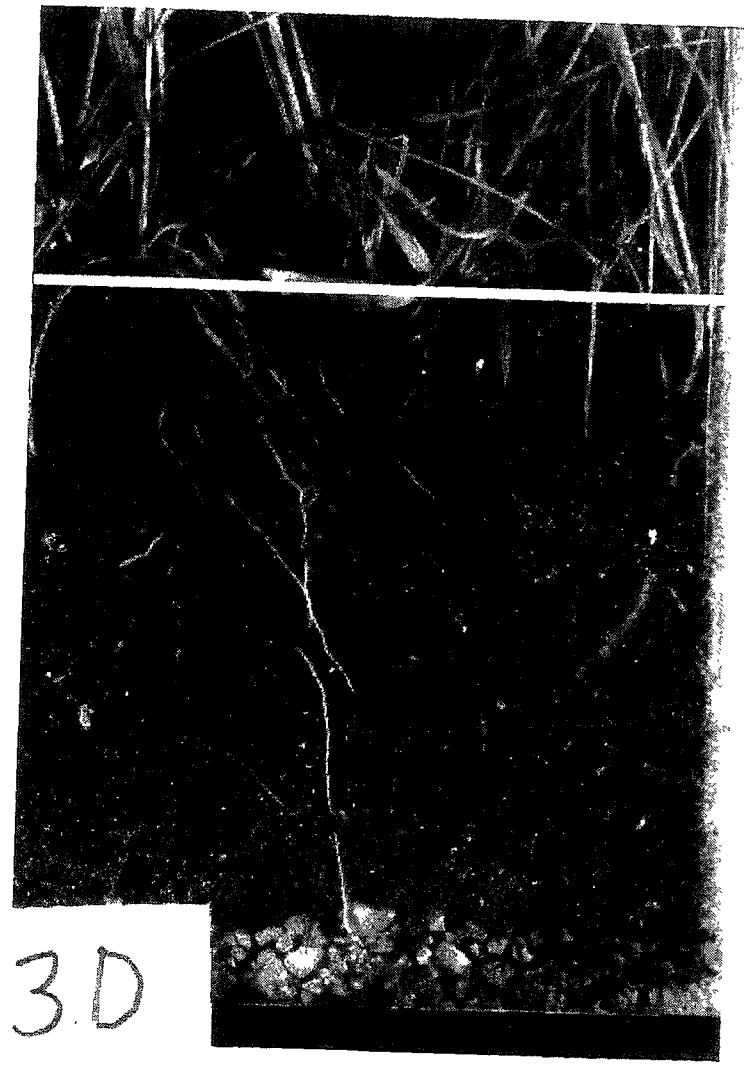
Plant Screening Experiments

Preliminary Results - Tank 3B/3D
(Quack Grass Roots)





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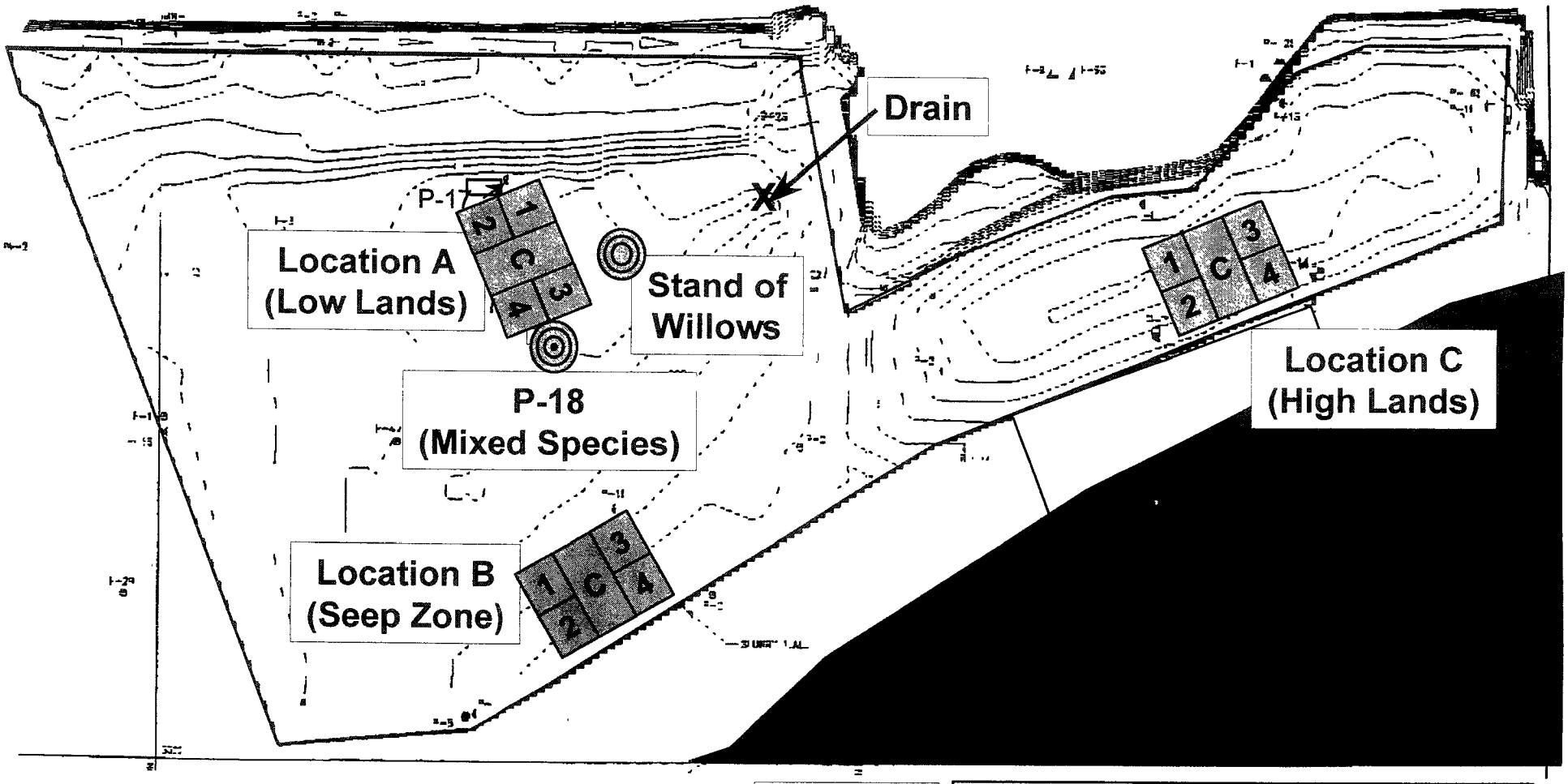
Testing Phytoremediation in the Field



0 100 200
Scale in Feet

C Control Plots
1-4 Test Plots
Plots and Tree Stands Not to Scale

Hydrocarbon and Environmental Management

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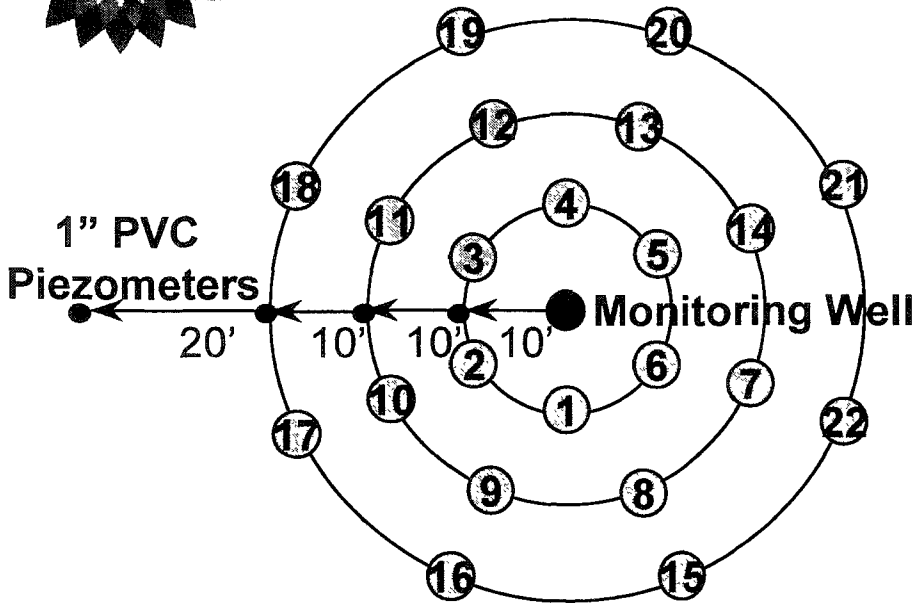
Test Tree Stands



- **Tree Selection:**
  - ➔ Tolerant to CDF Contents
  - ➔ Flood Tolerant
  - ➔ Suitable Climate
  - ➔ Fast Growing
  - ➔ Easy to Establish

Bald Cypress

Cottonwood

River Birch

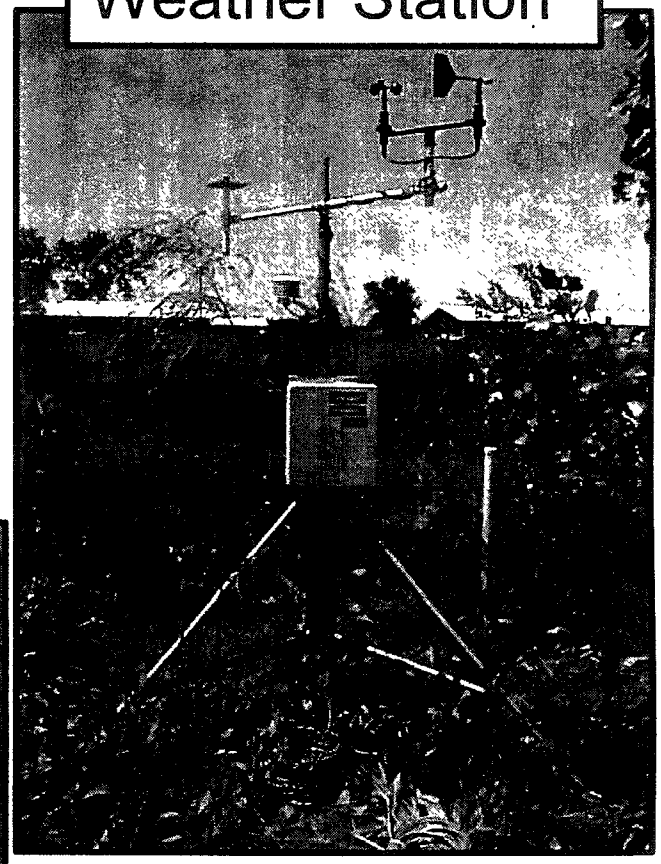
Swamp Oak

Willow

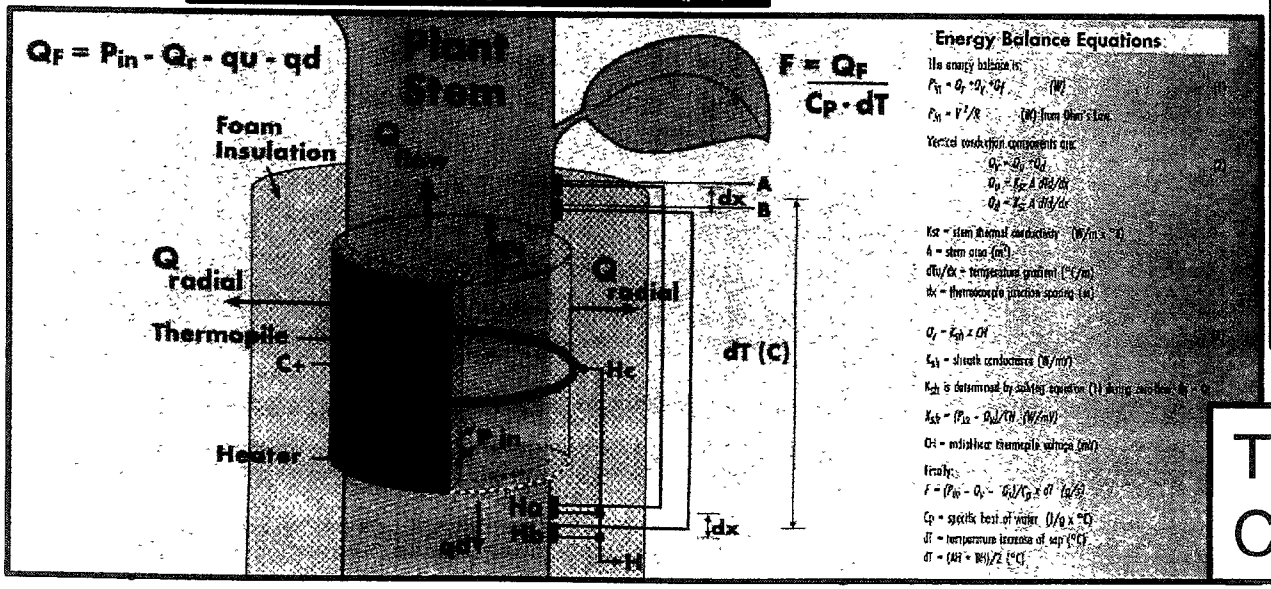
bp

Measuring Plant Transpiration Rates

Sap Flow Sensors Installed on Test Trees



Data Logger and Weather Station

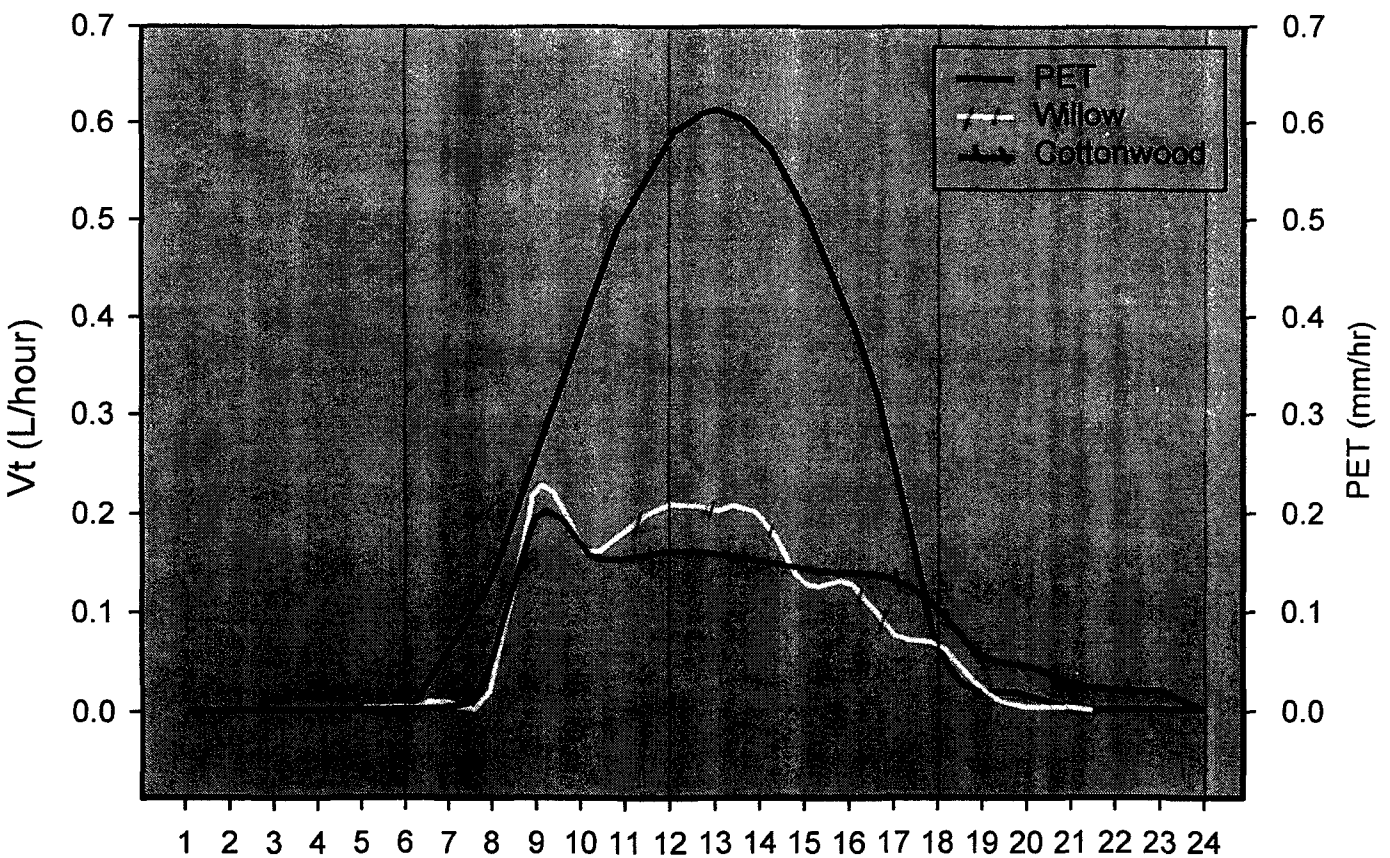


Theoretical Calculations

bp

Transpiration Results
(September to October 2000)

- **Bald Cypress:** **ET = 0.2 to 0.4 L/day per tree**
- **Cottonwood:** **ET = 0.8 to 1.2 L/day per tree**
- **Willow:** **ET = 1.2 L/day per tree**



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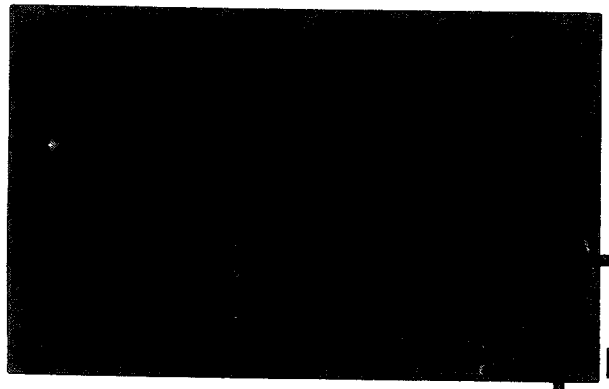
Groundcover Test Plots



50' 50' 50'

Birdsfoot Trefoil

Control Indigenous Species

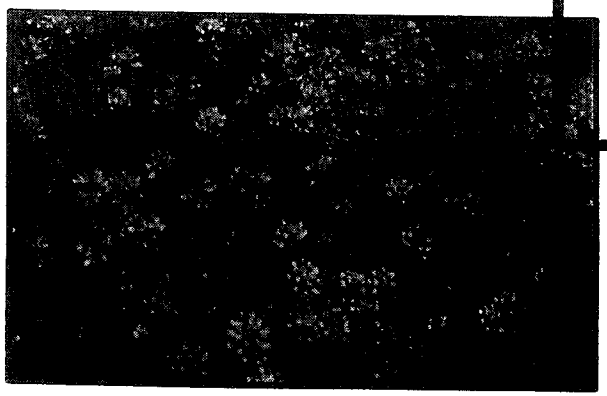
Perennial Ryegrass

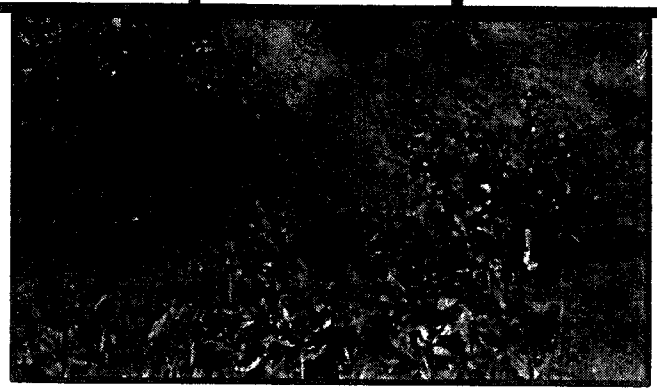
50'

Crown Vetch

Bluestem Grasses

50'





Hydrocarbon and Environmental Management

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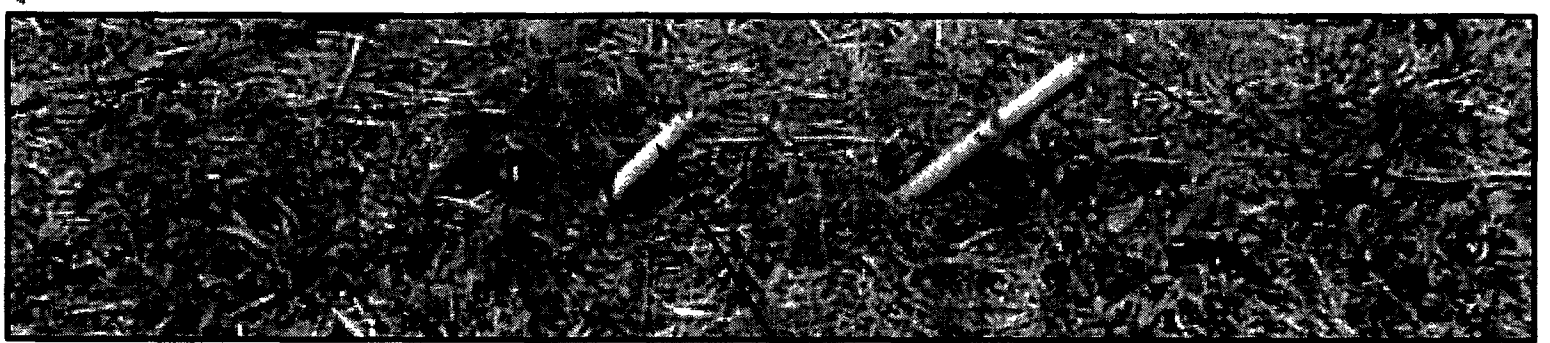
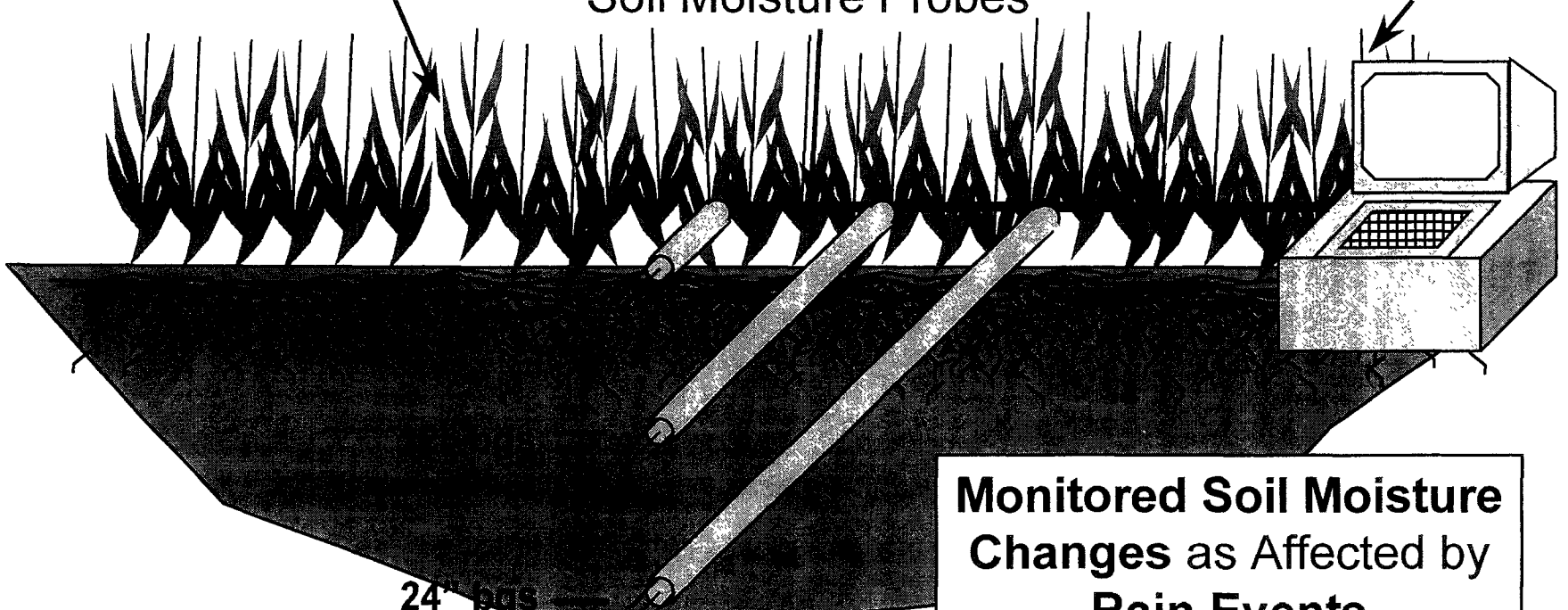
Measuring Soil Moisture



Established Different Canopy Structures

Installed Nested Soil Moisture Probes

Datalogged Soil Moisture Changes



Monitored Soil Moisture Changes as Affected by **Rain Events**

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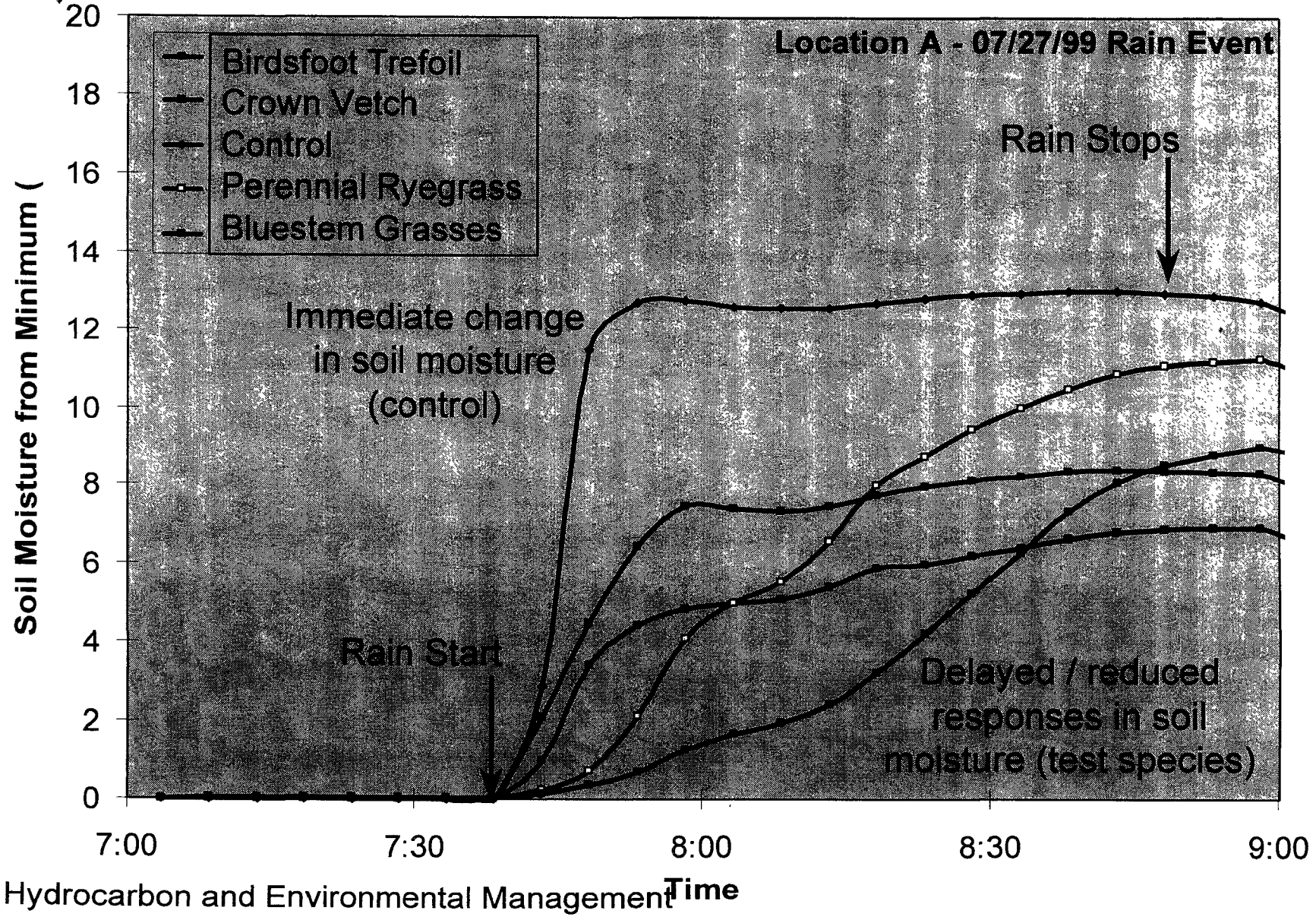
Soil Moisture Results
(Sample)



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Conclusions

- **Remedial Capabilities Offered by Plants:**
  - ➔ **Rain Interception** – prevent infiltration and recharge
  - ➔ Water Uptake and **Transpiration** – provide hydraulic control
  - ➔ **Tolerance to Hydrocarbons** – high concentrations (NAPL ???) possible
- **Conducting Plant Screening Experiments:**
  - ➔ **Invaluable** at providing insights into final species selection for the field
  - ➔ Helped gain **rapid approval** to proceed in the field (**significant cost savings**)
- **Moving into the Field:**
  - ➔ **Multi-year** demonstration projects necessary
  - ➔ Designed to potentially **incorporate into the final system**
  - ➔ Successful **plant establishment** paramount to a successful project (**spend the $$$ here**)
    - 100% tree survivability
    - 100% groundcover plant establishment

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Phytoremediation Resources

- **US EPA Citizen's Guide to Phytoremediation:**
  → http://www.epa.gov/swertio1/products/citguide/phyto.htm
- **US EPA Remediation Technology Development Forum**
  → http://www.rtdf.org/public/phyto/default.htm
- **US EPA Use of Natural Landscapes**
  → http://www.epa.gov/greenacres/
- **US Interstate Technology and Regulatory Cooperation**
  → http://www.itrcweb.org/reports/phyto
- **International Phytoremediation Electronic Network**
  → http://www.dsa.unipr.it/phytonet/
- **AEHS - International Journal on Phytoremediation**

Exit Strategy

presentation by

George Hamper, Chief
Corrective Acton Section
Enforcement and Compliance Assurance Branch
U.S. EPA, Region 5

Corrective Action Completion Guide Decision Tree

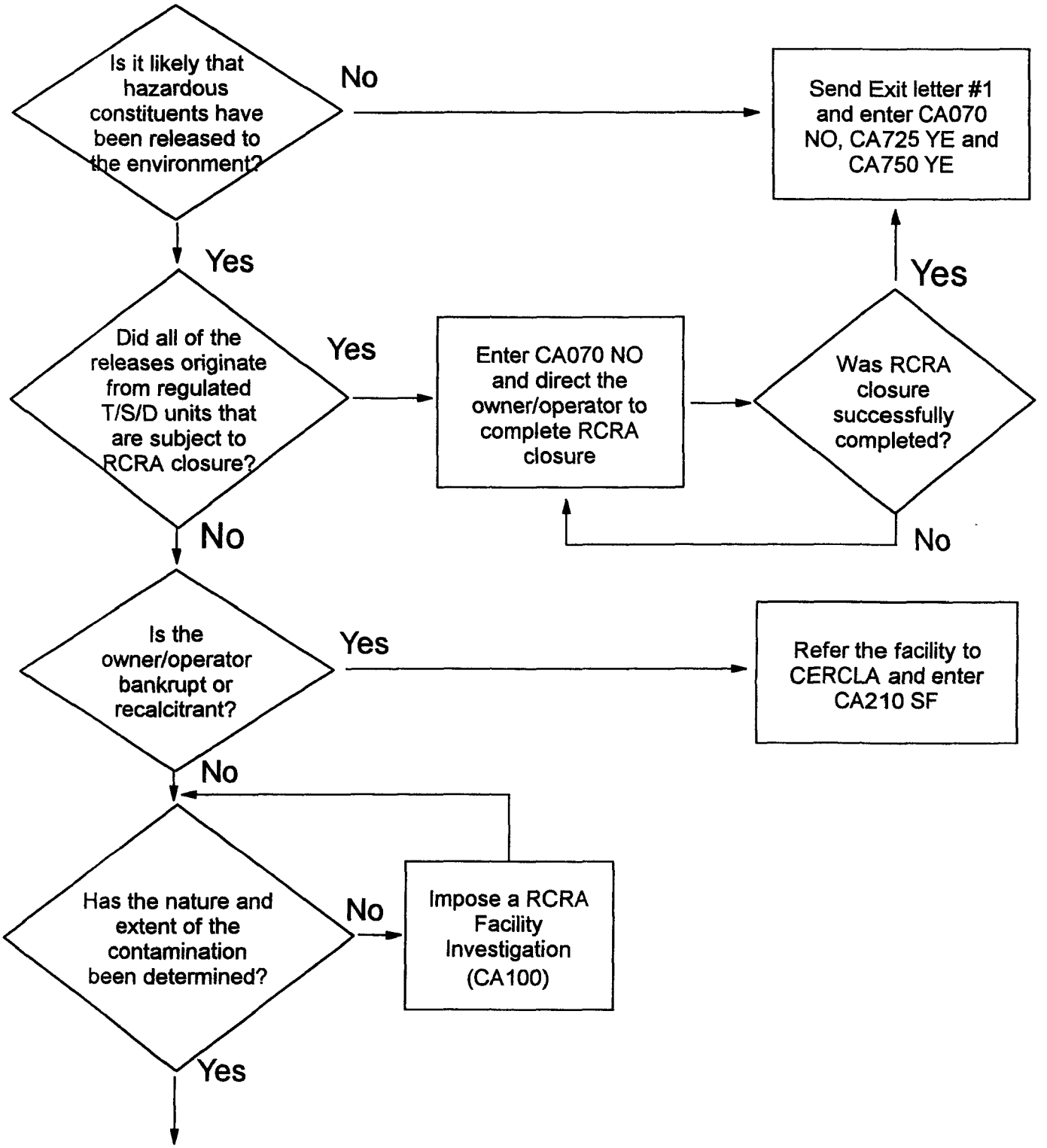
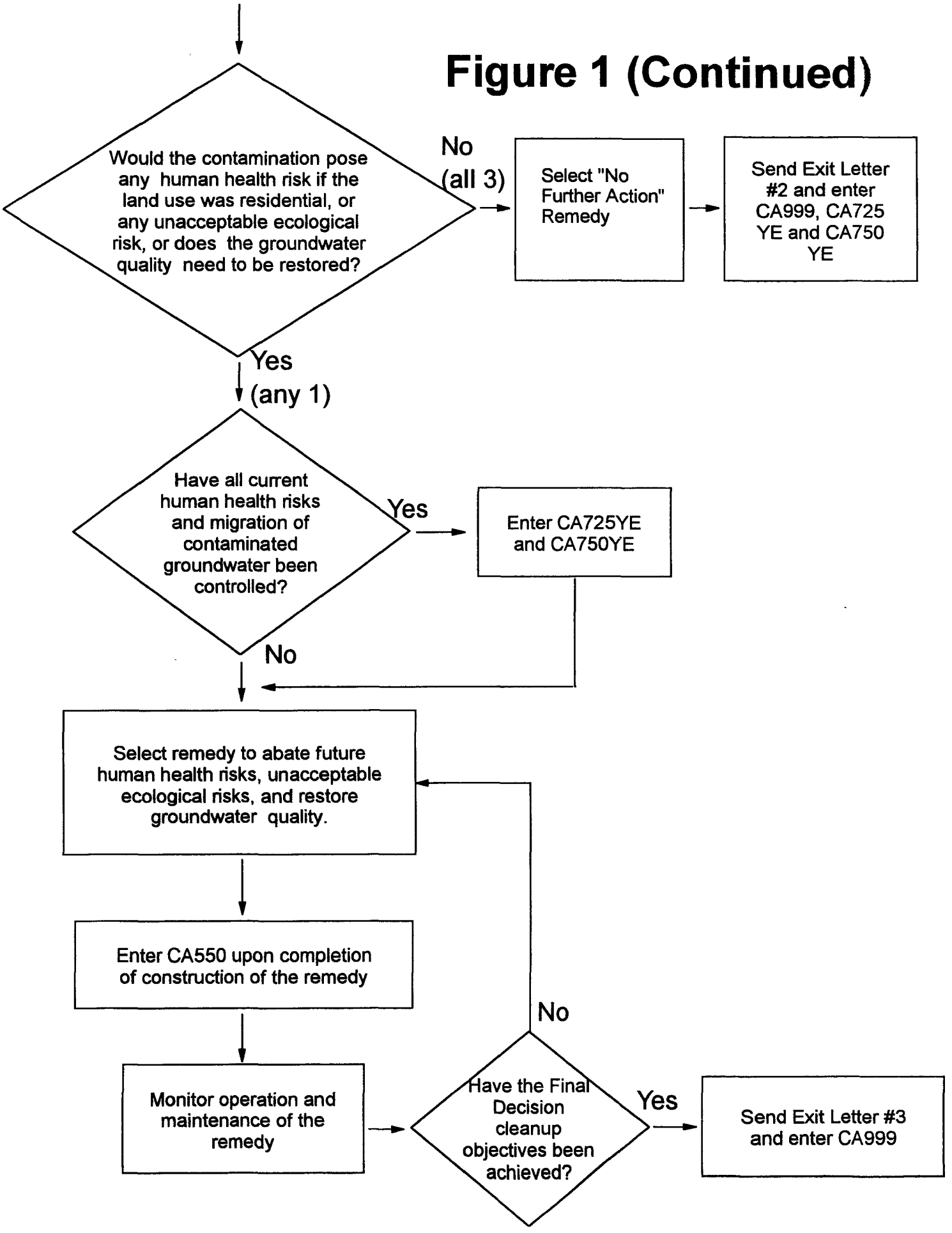


Figure 1

Figure 1 (Continued)



Risk Management Strategy

presentation by

Paula Williams, Toxicologist
Corrective Acton Section
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Introduction

- Risk assessment is the primary tool used to direct remedy selection.

- EPA policy established the continuum for risk managers to work with, such as the cancer risk range of 10^{-4} to 10^{-6}

- Risk managers apply their professional judgement to each case to arrive at a final remedy decision.

- The purpose of this guidance is to unify the thinking of the project managers and unify their professional judgement, therefore ensuring consistent risk-based remedy selections.

The big picture

- Primary remedy driver
  - wetlands
  - large amount of public interest
  - Environmental Indicator determination

- Influence of other statutes or programs
  - TSCA
  - UST

The art of the risk assessment

- Confidence level for the sampling data
  - Sufficient samples
  - Use of historic data
  - Background levels
  - Data gaps

- Confidence and certainty in the risk assessment
  - Calculations are based on sampling results
  - Reasonably conservative assumptions if land use is not certain. A conservative assessment is flexible.
  - If risk assessment is not reliable or conservative, a more conservative remedy may be merited

- Use of the NCP cancer risk range
  - Confidence in risk estimations will influence final acceptable estimated risk within the range

Other corrective action goals

- Ecological receptors or sensitive ecosystems
- Reduction of toxicity, mobility or volume of wastes, especially for PBTs
- Groundwater restoration
  - "Maximal beneficial use"

PBT Strategy

presentation by

Gregory Rudloff, Correction Action Project Manager
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PBT Strategy

Greg Rudloff
Corrective Action Project Manager
U.S. EPA, Region 5

PBTs

PBT Pollutants are:

- Chemicals that persist in the environment;
- Bioaccumulate in food chains;
- Are toxic; and thus
- Pose risks to human health and ecosystems.

Examples of PBTs:

Cadmium

Lead

Mercury

PAHs

Dioxins/Furans

Pentachlorophenol

Heptachlor

Chlorobenzene

Government Performance and Results Act (GPRA)

GPRA Subobjective 4a:

By 2005, reduce the most persistent, bioaccumulative, and toxic (PBT) chemicals in our nation's hazardous waste streams by 50% as compared with a baseline year of 1991.

RCRA Corrective Action Program

GPRA Subobjective 4a will be Indirectly Supported by:

- Recovering PBT chemicals that have been released into the environment.
  - The recovery of PBT chemicals from the environment will reduce future exposures and impacts to human health and the environment due to PBTs.

Methodology:

The RCRA CA program will document the amounts of PBTs removed from the environment at ten EPA-lead sites.

EQUISTAR CHEMICALS, LP (Morris, IL)

Summary of PBTs Removed from SWMUs:

7 Waste Water Treatment Plant Surface Impoundments:

Action: 44,400 tons of sediments removed
Average PAH Concentration = 1300 mg/kg

Result: approximately 115,000 lbs. (57 tons) of PAHs removed

Action: 1,000 cubic yards of sludge removed
Average PAH Concentration = 386 mg/kg

Result: approximately 977 lbs. of PAHs removed

TOTAL PAHs removed from the impoundments: 116,000 lb (58 tons)

Appendix 2 - Meeting Handouts

- October 13, 2000, Guide to Performance-Based RCRA Corrective Action
- January 2001, RCRA Cleanup Reforms II

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
Waste, Pesticides and Toxics Division
77 W. Jackson Blvd, Chicago, Illinois 60604-3590

Date: October 13, 2000

To: RCRA Corrective Action Staff

From: Robert Springer, Director (signed)
Waste, Pesticides and Toxics Division

Subject: Guide to Performance-Based RCRA Corrective Action

Introduction

The Waste, Pesticides and Toxics Division (WPTD) initiated an effort to streamline and accelerate RCRA corrective action in October 1998. We had concluded that corrective action should be efficient and less process-driven. WPTD has implemented a series of changes and intends to continue its streamlining initiative. This initiative has had several successes and has led us to an understanding of how corrective action can be made more efficient. Our goal is to ensure that facilities control risks to human health and the environment as quickly and effectively as possible, and continue the effort through the completion of corrective action. The purpose of this Guide is to express a set of implementation principles that will form the foundation for all of our RCRA corrective action decisions.

This Guide builds on the foundation of program flexibility that has been encouraged through national guidance and the 1999 RCRA Reforms. The RCRA corrective action program has matured to the point where review and approval of implementation activities conducted by many facility owner/operators (O/O) can be made simpler and more efficient. The U.S. Environmental Protection Agency Region 5 (Agency) has provided extensive policy and guidance to enable the regulated community to understand what level of implementation performance is expected. For selected facilities, we believe formal Agency involvement can be limited to a few crucial decision points. By reducing time-consuming and repetitive formal document reviews, revisions and approvals, the Agency and O/Os can devote more resources to improve communications and to expedite corrective action.

A performance-based approach will provide more implementation flexibility throughout corrective action. This approach should also foster an effective professional working relationship between WPTD, the O/O and their consultant(s). We are confident that a performance-based approach to RCRA corrective action, using real time practical decision making, will not only reduce the time needed to complete corrective action, but also will increase the efficiency and cost effectiveness of the overall RCRA corrective action process.

Elements of the Performance-Based Process

To date our efforts to evaluate corrective action have identified certain essential elements:

- Development of a concise history and status report for the facility in the form of a

Current Conditions Report

- Development of a Conceptual Site Model, that is a constantly evolving working hypothesis of potential sources, risks, data needs, cleanup objectives and corrective action solutions that can be used as an effective implementation tool

- Information and Data Collection Planning based on the above two elements, in order to focus the overall corrective action effort on those releases that may pose an unacceptable risk to human health and the environment

- Facility Investigation to confirm what is known about a facility and to fill data gaps

- Development and implementation of appropriate Interim Measures while final Corrective Measures are established

- Evaluation of Corrective Measures and Selection of a remedy to address the identified environmental risks presented by the facility

- Implementation of the Selected Corrective Measure(s) including appropriate operation and maintenance of the remedy

- Confirmation and certification of successful completion of RCRA corrective action

We have determined that, even though all of these essential elements must be completed, four regulatory decision points are central to satisfactory completion of RCRA corrective action. These decision points are:

- Determination that the two Government Performance and Results Act (GPRA) Environmental Indicators have been successfully achieved

- Evaluation of Corrective measure alternatives and selection of the Final Corrective Measure(s)

- Planning and scheduling implementation of the selected Corrective Measure(s)

- Determination and certification of successful completion of the RCRA corrective action

In order to ensure these four corrective action decisions have a solid foundation, Agency or state staff must have confidence in the quantity and quality of the data collected, and in particular, that sampling and data analysis under the essential element of facility investigation have been conducted with adequate quality assurance. WPTD intends, except as discussed in the Selection Criteria Section below, to limit its formal decision making to the above four decision points. It is therefore critical that the O/O ensure that the data provided to the Agency meets the WPTD QA/QC Policy. Corrective measure alternatives must be based on a thorough understanding of releases to the environment and any contaminant migration that may have occurred. Because the Agency has transferred greater responsibility and flexibility to the O/O by removing many of the traditional approval requirements, this understanding can best be achieved

through use of the conceptual site model and effective information exchange established through a relationship built on trust and mutual respect.

Implementation of Corrective Action Elements

RCRA corrective action is primarily environmental risk management. It is intended to identify and confirm current and potential environmental risks, to gather data through facility investigation, and then to select a remedy that will eliminate, to the extent possible, the hazards to human health and the environment. Several important features of performance-based corrective action are cross-cutting in nature and therefore affect all stages of the process. These features are:

1. **Iterative Nature:** It must be recognized that the various elements or phases of corrective action should be implemented in an iterative manner. This is in contrast to the more traditional system which calls for a series of clearly defined steps that are often carried out in a rigid order. Thus, for example, under the traditional system, a) all investigative work would be performed during the RCRA Facility Investigation (RFI) which often ends with a formal risk assessment, b) the process would move to the Corrective Measures Study (CMS), which in turn c) would lead to the selection of the entire facility remedy, d) then move to the design and construction of the remedy in the Corrective Measures Implementation (CMI) phase, and e) any Interim Measures identified during the process would require formal proposal, design and approval.

   A performance-based approach recognizes that corrective action projects can benefit from more flexible implementation. Corrective action will be more efficient if the various steps are performed in an iterative way, sometimes with overlapping process elements and time frames. For example, the development of a conceptual site model early in the process and the implementation of data collection activities based on this conceptual site model is encouraged. In addition, the performance-based process encourages the implementation of corrective measures as early in the process as possible. This may result in corrective measures being implemented at a portion of the facility while investigation is continuing at a different portion. Likewise, some investigative tasks might be reserved until after the implementation of interim corrective measures in order to determine the need for further cleanup activity or to verify the success of the interim measure. In order to make appropriate corrective measures decisions at any one time, we have determined that data should be gathered and decisions made on an iterative basis to allow flexibility, encourage prompt action and select practical solutions.

2. **Risk Based Decision-Making:** Performing risk analysis is by its nature an iterative process and an example of how corrective action can benefit from fully incorporating these principles. A deliberate objective of risk-based decision-making is to bring forward, as appropriate, risk criteria decisions in order to include them as early as possible in the corrective action process. This practice would enable the project manager, who functions as the risk manager, to make initial risk criteria decisions based on data and information available at the outset in order to guide the nature and extent of the investigative work. Communication among the risk manager, risk assessor, and

other interested stakeholders must occur throughout the corrective action effort. Risk analysis and risk management decisions will be conducted throughout the entire corrective action effort. Therefore, a traditional risk assessment, in the sense of preparing a single comprehensive document that once and for all provides a full risk analysis to be used in making all the final remedy decisions, may not be necessary. Making risk criteria decisions early, and as quickly as the data allow for an appropriate choice, will help to focus the corrective action effort on those factors that present the potential threat(s) to human health and the environment.

3. **Data Collection:** The collection of information and data, whether in an initial survey to prepare a conceptual site model or in a formal investigation to evaluate the conceptual site model, should be carried out in stages that most efficiently match the conditions and needs of each particular facility. The planning and performance of investigative work commonly occurs as in a series of actions, with each phase of the investigation building upon and governed by the results of earlier phases. The facility investigation should be organized to carry out a series of often separate efforts that best fits the conditions of the facility and ensures that an adequate facility-wide investigation is completed. The investigation of one portion of a facility should not necessarily wait for the rest of the current phase of an investigation to be completed for the whole facility. Data collection should proceed to a logical conclusion for each portion of the facility. It is critical for data collection to be focused on those factors that present, or have the potential to present, a risk. Risk management decision-making needs should be the primary driver for all data collection. Therefore, only data that support the corrective action decision process should be collected.

   The greatest opportunities to achieve the benefits of streamlining RCRA corrective action occur during the facility investigation, in particular, in the area of data collection. In many instances it is not necessary or beneficial to exercise all of the prescriptive Agency oversight called for in existing permits and orders for the investigation of contamination at a facility. By balancing Agency oversight activities with an increased responsibility on the O/O to do the data collection and to do it right, WPTD believes it is possible to expedite cleanups and focus limited Agency resources.

4. **Stakeholder involvement:** Stakeholders should be identified at the beginning of the corrective action process. Properly managed stakeholder involvement will address the Agency's public participation requirements and enhance the relationship between the facility's O/O, the surrounding community and other individuals or groups that have an interest in the corrective action. Stakeholders should be involved throughout the process, with a communications plan that addresses the needs and circumstances of the stakeholders and O/O of the facility. The communications plan should be modified as needed to reflect developments that occur during the corrective action in order to ensure prompt and accurate information exchange. Stakeholders in the performance-based process include not only representatives of the community surrounding the facility, but also regulatory agency representatives and others who may be impacted by the corrective action.

5. **Owner/Operator responsibility:** Successful implementation of corrective action requires that an effective level of confidence and cooperation be established between the affected O/O's, the regulatory officials responsible for the facility, and other stakeholders. One of the key assumptions implicit in this Guide is that the responsible O/Os have sufficient knowledge, competence and integrity to assume expanded responsibility and the flexibility to implement RCRA corrective action without compromising the results. The O/O's ability to implement corrective action with significantly reduced oversight depends on whether the ultimate standards that govern the effort are clearly established or can be effectively determined for the facility. On an iterative basis, the O/O should evaluate, investigate and remediate a contaminated facility in accordance with a functionally driven process and schedule appropriate to the facility conditions.

   WPTD recognizes that not all policy issues related to RCRA corrective action have been resolved. We intend to continue our efforts to resolve these remaining issues. Nevertheless, the key to effective performance-based corrective action is continued effort on the part of O/Os and regulatory officials to establish practical solutions to implementation issues.

6. **Transparent and Definitive Process:** It is critical that the corrective action decision process be obvious to the point it is transparent and definitive with no hidden agendas. Determinations made by the O/O or by U.S. EPA should, whenever possible, provide closure to an issue. RCRA corrective action can be a lengthy process. Because GPRA Environmental Indicators determinations are based on current facility conditions, and can be modified to address changes in facility status, they provide an excellent interim decision stage in the corrective action process. The Indicators are achieved when the Agency determines that the facility no longer presents a current risk to human health and when migration of contaminated ground water is controlled. This interim success point will provide assurance that a facility presents no current environmental threat while the RCRA corrective action is completed. A final RCRA corrective action completion determination is particularly important when the facility as a whole, or as determined by the Agency, portions of the facility have achieved the cleanup action levels established for the facility. Similarly, if institutional controls are used as part of corrective action, those controls must be clear, effective and enforceable.

Selection Criteria for Performance-Based Corrective Action

WPTD has developed a performance-based model consent order and voluntary agreement. We are currently using these performance-based models to initiate corrective action at remaining facilities subject to RCRA corrective action. However, we recognize that not all facilities subject to RCRA corrective action will benefit from a change in process. In addition, not all facility O/Os have the interest or capability to implement a performance-based approach. For these facilities a traditional consent or other type of order will be utilized.

WPTD is also evaluating facilities that have already initiated corrective action under a traditional order or permit issued by the Agency to determine which facilities could benefit from a shift to a

performance-based approach. In order to ensure O/Os have the knowledge, competence and other factors necessary to effectively participate in this performance-based approach to corrective action, WPTD staff will evaluate each facility scheduled for corrective action to determine the most appropriate implementation mechanism. If identified by the Agency as a potential candidate for this performance-based approach, the O/O of the facility will be contacted to discuss the option of a streamlined approach. WPTD staff will then recommend a mechanism to management for final selection.

O/Os of a facility under a federal traditional order or permit who have an interest in switching to a performance-based approach should contact their project manager. The O/O must define for the project manager why they feel corrective action at their facility would benefit from a change in approach.

WPTD management will then select facilities where this performance-based approach could be used based on appropriate, including criteria:

- The current status of the corrective action mechanism based on: a) how much of the process has been completed, and b) how the change in approach would result in implementation improvements.
- The implementation improvements that will result from the change in approach.
- The facility O/O's demonstration of financial and technical capability to implement a performance-based approach.
- The compliance and corrective action performance history of the facility's O/O.
- The O/O's degree of commitment to expedite corrective action.

Conclusion

Effective implementation of a corrective action that promptly addresses environmental concerns requires the Agency to provide adequate tools for implementation. We now have two approaches to corrective action implementation:1) the traditional process and 2) the performance-based approach outlined in this Guide. This Guide establishes an alternative to the traditional approach to corrective action for those facilities administered by WPTD. It also reinforces the direction of the RCRA Corrective Action Reforms issued by OSWER Assistant Administrator Tim Fields in July 1999 to instill greater flexibility and practicality in our overall implementation of RCRA corrective action. We recognize that program improvement is an ongoing effort. We intend to monitor this approach and to modify it as appropriate in order to continue our efforts to streamline RCRA corrective action.

cc: Steve Heare, OSW
RCRA State Division Directors
RCRA Regional Division Directors
John Quarles, RCAP, Morgan, Lewis and Bockius

United States Environmental Protection Agency | Solid Waste and Emergency Response (5305W) | EPA 530-F-01-001
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http://www.epa.gov/osw

Office of Solid Waste

RCRA CLEANUP REFORMS

Reforms II: Fostering Creative Solutions

The U.S. Environmental Protection Agency (EPA) is implementing a second set of administrative reforms to accelerate the cleanup of hazardous waste facilities regulated under the Resource Conservation and Recovery Act (RCRA). EPA's 1999 Reforms promoted faster, focused, more flexible cleanups. The 2001 Reforms reinforce and build upon the 1999 Reforms and will pilot innovative approaches, accelerate changes in culture, connect communities to cleanup, and capitalize on redevelopment potential, while maintaining protection of human health and the environment.

Why Is EPA Reforming the RCRA Corrective Action Program?

The goals for the RCRA Corrective Action program remain very challenging. To more effectively meet these goals and speed up the pace of cleanups, EPA introduced RCRA Cleanup Reforms in 1999 and is implementing additional Reforms in 2001. The 1999 and 2001 Reforms build upon actions taken by EPA and the states in recent years to accelerate cleanups. EPA believes that the 1999 Reforms remain central to successful implementation of the program. The 1999 Reforms were designed to:

- Focus the program more effectively on achievement of environmental results, rather than fulfillment of steps in a bureaucratic process.
- Foster maximum use of program flexibility and practical approaches to achieve program goals.
- Enhance public access to cleanup information and improve opportunity for public involvement in the cleanup process.

The 1999 Reforms set the near-term focus of the program on attainment of the two Environmental Indicators and established an environment for program implementors to be innovative and results-oriented. The 1999 Reforms have successfully led the program toward *faster, focused, more flexible cleanups*. An example of progress since 1997 is that the number of RCRA cleanup facilities meeting both Environmental Indicators has increased from 47 to 504.

What are the Goals of the RCRA Corrective Action Program?

EPA has established two near-term goals, termed "Environmental Indicators," for the RCRA Corrective Action program. These goals, under the Government Performance and Results Act (GPRA), are that by 2005, the states and EPA will verify and document that 95 percent of the 1,714 RCRA cleanup facilities under GPRA focus will have "current human exposures under control," and 70 percent of these facilities will have "migration of contaminated groundwater under control." The long-term goal of the program is to achieve final cleanup at all RCRA corrective action facilities.

In 2000, EPA held a series of meetings with program implementors and stakeholders, including representatives from federal and state agencies, regulated industry, and environmental and community groups, to discuss program impediments, successful approaches and ideas for 2001 Cleanup Reforms. Central ideas that emerged include the importance of: (1) reinforcing and building upon the 1999 Reforms; (2) empowering program implementors to try new approaches at the site level; and (3) using frequent, informal communication throughout the cleanup process.

What Are the RCRA Cleanup Reforms of 2001?

The RCRA Cleanup Reforms of 2001 highlight those activities that EPA believes would best accelerate program progress and foster creative solutions. The 2001 Reforms reflect the ideas EPA heard from program implementors and stakeholders and introduce new initiatives to reinforce and build upon the 1999 Reforms. Specifically, the 2001 Reforms will:

- Pilot innovative approaches.
- Accelerate changes in culture.
- Connect communities to cleanups.
- Capitalize on redevelopment potential.

The 2001 Reforms include just some of the innovative approaches that have been identified by program implementors and stakeholders. EPA intends to continue work in other areas critical to meeting program goals. In particular, we seek to: continue a dialogue with interested parties on groundwater cleanup and other issues relating to final cleanup; provide guidance for cleanup at facilities with limited resources to pay for cleanup; and, continue to work with federally-owned facilities to meet their Environmental Indicator goals. Similarly, we encourage program implementors and stakeholders to use approaches that improve the program yet are not specifically included in the RCRA Cleanup Reforms.

What is the RCRA Corrective Action Program?

In 1980, when the RCRA law and regulations went into effect, thousands of facilities became subject to hazardous waste management regulations. These regulations have helped ensure that hazardous waste generated from industrial operations is properly managed and does not contribute to a future generation of toxic waste sites. However, many of these facilities had soil and groundwater contamination resulting from their waste management practices prior to 1980. The RCRA Corrective Action program addresses cleanup of contamination at these operating industrial facilities.

Who Runs the RCRA Corrective Action Program?

The RCRA Corrective Action program is run by both EPA and the states, with 38 states and territories authorized to implement the program. Corrective action is conducted under RCRA permits, orders and other approaches.

I. Pilot innovative approaches.

The RCRA Cleanup Reforms Pilot Program will support state and EPA Regional Offices in their efforts to use innovative, results-orientated and protective approaches to speed achievement of Environmental Indicator goals and final cleanup. Stakeholders are encouraged to contact state and EPA Regional Offices with their pilot ideas.

EPA has set a target of 25 pilot projects to be launched in 2001. EPA expects at least one pilot project in each EPA Region, administered by the state or EPA. EPA will showcase pilot projects to share successes and lessons learned and to promote use of similar approaches at other facilities. EPA recommends that stakeholders consider pilot projects in one or more areas. For example, pilots that:

- Achieve program goals most effectively at companies with multiple facilities
- Improve stakeholder involvement and communication to resolve issues where cleanup progress is slow
- Use site characterization technologies or strategies that efficiently assess Environmental Indicators
- Enhance the use of protective and accountable state non-RCRA Cleanup programs to achieve program goals
- Establish EPA Regional or state "corrective action expediters" to focus on cleanups that are stalled or delayed
- Expedite achievement of program goals at federally-owned facilities
- Use Superfund or emergency authorities at RCRA sites for bankrupt or unwilling facilities

II. Accelerate changes in culture.

EPA will help program implementors and stakeholders accelerate changes in culture in how they implement the program by: focusing on results over process; encouraging frequent, informal communication among stakeholders; partnering in training; promoting methods of information exchange; and, using new approaches to meet Environmental Indicator and long-term cleanup goals. EPA will:

- *Promote nationwide dialogue among program implementors and stakeholders on RCRA cleanups.* EPA Regional Offices will work with states in an effort to hold at least one meeting in 2001 in each EPA Region, open to all stakeholders who wish to interact, provide input, or learn more about the RCRA Corrective Action program. Discussion topics could cover local, regional or national topics relevant to corrective action.

- *Conduct targeted training in partnership with program implementors and stakeholders.* EPA will work with interested parties to deliver targeted training, depending upon the needs of those requesting the training and available resources. Training topics could cover, for example: innovative technical and administrative approaches to cleanup; success stories and lessons learned from implementation of the 1999 Cleanup Reforms; Corrective Action program basics; and use of performance-based approaches to corrective action.

- *Use web-based communication to share successes and lessons learned and promote innovative approaches.* EPA will support the establishment of a web-based interactive tool to promote the sharing of successes and lessons learned and to provide for frequent exchange of ideas among all

stakeholders on any corrective action topic, including those that are technical, policy-oriented or site-specific.

- *Overcome barriers to achieving Environmental Indicators.* EPA will clarify the relationship between Environmental Indicators and final cleanups, and how Environmental Indicators can be met within the context of existing orders and permits. EPA will answer "Frequently Asked Questions" about Environmental Indicators, and issue technical guidance on ways to assess the impacts of contaminated groundwater on surface water and indoor air quality. In addition, EPA will demonstrate new uses of enforcement tools to achieve Environmental Indicators.

Focus on Results

The RCRA Cleanup Reforms foster creative, practical, results-based approaches to corrective action. In the field, this means:

- *Providing tailored oversight.* Eliminate administrative or technical steps where not needed to assure effective performance.
- *Using holistic approaches.* Evaluate facilities for overall risk and apply facility-wide corrective action measures.
- *Exercising procedural flexibility.* Emphasize results over mechanistic process steps and eliminate unproductive activities.
- *Setting performance standards.* Establish clear protective standards the owner/operator must fulfill to complete corrective action.
- *Targeting data collection.* Examine actual conditions at each facility to design data requirements as needed to support corrective action decisions.

III. Connect communities to cleanups.

EPA will provide the public with more effective access to cleanup information. EPA seeks to increase public interest in and awareness of cleanup activities, and to further enhance the public's ability to become more involved in decisions about cleanups in communities. EPA will:

- *Clarify principles and expectations for public involvement in corrective action cleanups.* EPA will set out general principles and expectations for providing the public with the opportunity to become involved at corrective action sites. EPA also will share examples of successful public involvement approaches that have been used at RCRA cleanup sites and lessons learned.

- *Increase support of Technical Outreach for Communities (TOSC).* The TOSC program provides communities with technical and educational assistance from universities on issues associated with cleanup of hazardous sites. EPA will provide resources to the TOSC program for community involvement at RCRA cleanup sites and advertise the availability of this program.

- *Place Environmental Indicator evaluation forms and site summaries on EPA web sites.* EPA will place Environmental Indicator evaluation forms and summaries of site cleanup activities of 1,714 RCRA facilities on the web sites of EPA Regional Offices. The evaluation forms and site summaries will provide readily available information on the status of cleanup at these sites.

- *Publicize and promote the use of readily accessible cleanup information sources.* EPA will produce and distribute a pamphlet for the general public that explains how to access RCRA Corrective Action program information and site-specific cleanup information.

IV. Capitalize on redevelopment potential.

EPA encourages program implementors and stakeholders to capitalize on the redevelopment potential of RCRA cleanup sites. Many of these sites are located in areas that are attractive for redevelopment and are poised for community revitalization. These factors can

motivate interested parties to pursue an expedited cleanup, sometimes with additional resources. EPA will:

- *Initiate Additional RCRA Brownfields Pilots.* EPA will launch 4-6 additional RCRA Brownfields pilot projects in 2001. These pilots will be designed to showcase the flexibility of RCRA and the use of redevelopment potential to expedite or enhance cleanups. Pilot applicants could be program implementors or stakeholders. Pilot participants also benefit from technical assistance. Limited funding may become available for public meetings and related activities.

- *Initiate the Targeted Site Effort (TSE) Program to spur cleanup at RCRA sites with significant redevelopment/reuse potential.* EPA will ask each Regional Office to identify two sites for the TSE in 2001. The TSE program will apply to sites that have significant redevelopment/reuse potential, and require a limited amount of extra EPA support to help spur cleanup. The TSE program will provide participants with focused attention, access to RCRA brownfields expertise, and limited funding for EPA to conduct public meetings and related activities.

- *Provide training and outreach to program implementors on using redevelopment potential to meet program goals.* EPA will provide training and outreach to program implementors and stakeholders to promote the environmental and community benefits that can be gained by integrating brownfields redevelopment opportunities and RCRA facility cleanups.

- *Promote cleanup and redevelopment with RCRA "Comfort/Status" Letters.* "Comfort/status" letters provide information regarding EPA's intent to exercise its RCRA corrective action response and enforcement authorities at a cleanup site. EPA will issue examples of letters that have been used to spur cleanup and redevelopment at RCRA facilities.

How Will EPA Measure the Results of the Reforms?

Measuring and recording the results of the RCRA Cleanup Reforms is a priority for EPA and the states to ensure continued improvement of the Corrective Action program. EPA will measure progress in putting the reforms into practice. EPA recognizes program implementors are using new approaches that may or may not be highlighted in the Cleanup Reforms, and will measure progress under these approaches as well. While the ultimate goal of the Corrective Action program is to achieve final cleanups, EPA will continue to measure the near-term success of the program against its Environmental Indicator goals for controlling human exposure and migration of contaminated groundwater.

How Will EPA Involve Stakeholders in Implementing the Reforms?

EPA will provide periodic updates on the RCRA Cleanup Reforms and solicit input from stakeholders through several means, including focus meetings, Federal Register notices, the RCRA Corrective Action Newsletter, Internet postings, and press releases.

EPA seeks continuous feedback from all stakeholders on the need for additional reforms beyond those already underway. EPA values and appreciates the feedback and interest of all stakeholders. However, limited resources may not allow us to respond individually. Based on stakeholder input and our ongoing assessment of the program, we will continue to refine and add to the RCRA Cleanup Reforms, as needed, and will communicate program changes.

If you would like to provide written comments on the RCRA Cleanup Reforms, please mail your comments to: RCRA Information Center (5305W), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW, Washington, DC, 20460-0002, or send an email to the RCRA docket at rcra-docket@epa.gov. Please include the following number on all correspondence, written or e-mailed, to the RCRA Information Center: F-2001-CRII-FFFFF.

For More Information

For information on corrective action cleanups, please visit state and EPA Regional web sites, which can be linked via the EPA corrective action web site at http://www.epa.gov/correctiveaction. The EPA corrective action web site has the latest and more detailed information on the RCRA Cleanup Reforms.

If you have questions regarding the RCRA Cleanup Reforms, please call the RCRA Hotline at 800-424-9346 or TDD 800-553-7672, or visit their web site at http://www.epa.gov/epaoswer/hotline/index.htm.