

**Title of Presentation:** Managing For Success at a Superfund Site

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**Abstract:** The objective of this paper is to discuss the successful management of the factors impacting the execution of a Superfund Project. The Seymour Manufacturing Site located in Seymour, Indiana, will be used to discuss the factors. The Seymour site was one of the first negotiated responses. The project is a PRP lead program. The site has been in the operation and maintenance phase for 12 years. The design and construction phase of this project finished two years ahead of schedule. During the operation and maintenance phase, all performance criteria have been met. The work has been conducted without a negative impact on the public or the environment.

The strategy for management of the Seymour project will be discussed. Areas of focus include the overall PRP organization, execution team organization, communications, schedule control, cost control, community relations, and regulatory agency interfaces.

At the conclusion of the design and construction phase, the project was reviewed for areas of improvement. Lessons learned were identified. The application of these lessons to future projects is discussed.

**Introduction**

The Seymour Recycling Center was one of the first sites remediated under the Superfund program. The facilities have been constructed and the site is in the operation and maintenance phase. The construction was completed approximately two years ahead schedule, the cleanup has met or exceeded performance requirements, the work was completed without a recordable injury or without a negative impact on the public and with cost in excess of the budget level. Approaches to the project which made these results possible included extensive upfront planning, execution of the work in accordance with the plan, team building among all project participants, strong communications program among participants, timely decision making and a strong public relations program. This paper discusses the scope of the work, the approaches to managing the work, the problems encountered as a result of new data developed during the conduct of the work, lessons learned during the project and the results of the cleanup activity.

**Background**

The Seymour Recycling Center Site is located on the southwest edge of the City of Seymour, Indiana. From approximately 1970 until 1980, this 14-acre site was operated as a processing center for waste chemicals. The activities at the site included fuel production, chemical reclamation, incineration and drum crushing.

Over the period of operation of the site, the owners lost control of the facility. As of early 1980, over 50,000 drums, 100 bulk storage tanks and numerous tank trucks were located at the site. A significant number of the containers were in a weakened or damaged condition. Hazardous substances and other substances had leaked from the containers onto the ground resulting in soil contamination, vapor emissions, fires and odor problems.

Beginning in late 1982, a major surface cleanup action was performed by Chemical Waste Management, Inc. The cleanup was monitored by the USEPA and the Indiana State Board of Health. All wastes at the surface were removed including the drums, the bulk storage tanks and contaminated soil from designated areas down to a depth of approximately one foot. A one-foot clay cap was placed over approximately 75% of the site.

The Remedial Investigation (RI) began at the site in August 1983 and continued through November 1985. The RI document was published in May of 1986. The RI concluded that the soil under the site was contaminated, a shallow aquifer under and adjacent to the site was contaminated and a deep aquifer under and adjacent to the site possibly was contaminated. The Feasibility Study (FS) document was published in August 1986.

The approximately 300 Potentially Responsible Parties (PRPs) involved in the site can be divided into two groups. One group was involved in a consent decree focusing on the surface cleanup. Those PRPs who

were a party to this consent decree were absolved of any responsibility for the subsurface cleanup. A consent decree dealing with the subsurface cleanup was entered in the Federal District Court in December 1988. The 109 PRPs who were party to the subsurface consent decree agreed to manage the remedial program. Monsanto, the largest financial contributor to the subsurface remedial program was asked and agreed to be the Trustee for the Trust established to implement the provisions of the consent decree. Geraghty and Miller was selected as prime consultant to the PRPs for the negotiation and design phases of the work. During the course of the negotiation of the 1988 consent decree, an Agreed Order was executed for the installation of a temporary pump and treat system. The system was to be utilized to remove water from the contaminated shallow aquifer and to treat the water in a test pretreatment plant. Data developed during the test would be used to design the permanent treatment facility.

**Project Scope**

The remedial program for the Seymour Recycling Center can be broken down as follows:

Problem	Solution
Contaminated shallow aquifer	<ul style="list-style-type: none"> <li>• Pump and treat system.</li> <li>• Long-term operation and maintenance.</li> <li>• Groundwater monitoring.</li> <li>• Resident well location study.</li> </ul>
Potentially contaminated deep aquifer	<ul style="list-style-type: none"> <li>• Groundwater monitoring.</li> <li>• Potential for pumping restrictions from the aquifer.</li> <li>• Potential pump and treat.</li> </ul>
Contaminated soil	<ul style="list-style-type: none"> <li>• Building demolition.</li> <li>• Vapor extraction system.</li> <li>• Off-site soil excavation.</li> <li>• Multi-media cap.</li> <li>• Roads, fences, drainage.</li> <li>• Enhanced bioremediation.</li> </ul>
Air monitoring	<ul style="list-style-type: none"> <li>• Baseline air study.</li> <li>• Construction monitoring.</li> <li>• Community monitoring</li> </ul>

The schedule for completion of the installation of the facilities was 58 months following entry of the consent decree. The long-term operation of the facilities and monitoring of the progress of the cleanup extends for up to 30 years.

**Execution Strategy**

In the fourth quarter of 1988, prior to the entry of the consent decree, an execution strategy for the project was developed. Key objectives of the strategy focused on these areas:

- Aggressive project schedule -The schedule in the consent decree specified 58 months for completion of the installation of the facility. Intensive early planning was used to develop a detailed schedule and plan to meet and, if possible, beat the schedule. This effort was extremely important since calculations indicated that for each year in the delay of the operation of the pump and treat system, the pumping time would be extended by up to 7 years. In addition, once a project team is established, the ongoing fixed cost is significant. An aggressive schedule was developed which, if accomplished, would complete the installation of the facilities in 28 months. Keys to the schedule logic were working the project elements in parallel rather than sequentially as defined in the Remedial Action Plan. In order to accomplish this aggressive schedule approach, approaches to expediting agency approval were developed.
- Avoid engineering interruptions - To avoid additional cost and to improve engineering continuity, it is advantageous to avoid changes in key project personnel. The consent decree required the PRPs to submit the project documents in stages,, and following approval, to proceed to the next phase. Following this approach would create situations whereby the engineering staff would be idled while waiting on agency comment/approval. To avoid this interruption, the plan called for the design to proceed “at risk”.

- Large Bid Packages - In order to attract major national construction contractors, the plan called for the preparation of large lump sum bid packages. The intent was to draw upon well resourced major firms for the work. Their approach would provide flexibility to reach to major changes in the work.
- Experienced Remedial Contractors - The approach was to identify and use only experienced construction contractors with remedial project experience. Approximately 45 firms were screened to develop a final bid list of five firms for the major construction package.
- Meet/Beat Project Budget - CERCLA projects are under time and performance pressures with cost taking a secondary role. In order to raise the level of importance of cost to the project team, budgets/cost tracking/cost emphasis programs were put in place.
- Shorten Communications Lines - In order to expedite design approval (within the design team and within the agencies) several programs were implemented. Included were:
  - PRP representative located in the design contractor office.
  - Informal, intermediate design reviews were held with the agencies.
  - Weekly conference calls with all lead personnel.
  - Monthly senior management reviews in the field.
- Solve the Problem - The PRPs signed on to a consent decree intended to solve the environmental problems at the site. The team realized the potential for new data which could impact the scope of the work as defined in the RAP. The team was charged with "solving the problem" even though the new data could require additional work or could result in elimination of or change to the scope as specified in the RAP.

### **Team Approach**

In order to develop a positive relationship among the parties involved in the work, effort was placed on team building. The parties included the PRPs, USEPA, IDEM, the City of Seymour and contractors. The intent was to develop a team devoted to execution of the project rather than a group operating along divisional lines.

- Project Interfaces - The number of interfaces and approvals required in a remedial project are extensive. In the case of the Seymour project, the list included the following:
  - The Trustee's representative.
  - USEPA.
  - IDEM.
  - City of Seymour.
  - Consultants to USEPA (3-5).
  - Consultants to the Trustee (two separate consultant offices).
  - Outside laboratories (2-4).
  - Consultants to the Trustee's prime consultant (3).
  - Trustee's law firm.

In addition to the review and approval of engineering designs, there were three key documents utilized by USEPA and IDEM in approving each segment of the work. These documents were:

- Workplans.
- Health & Safety Plans (HASPs).
- Quality Assurance Project Plans (QAPPs).
- Community Relations - Community relations for a remedial project are extremely important. A positive relationship can benefit the program. A negative relationship can have a detrimental impact on the conduct of the work. In the case of Seymour, a strong program focusing on this area was implemented. Actions taken were:
  - Early and frequent meetings with key community leadership.
  - Develop a rapport with local press.

- Community presentations.
- Newsletter for local residents.
- Information pamphlet.
- Informational exhibit.
- On-site spokesman.

## Results

As of mid 2001, the results of the remedial work at Seymour are:

- The construction phase was completed in 35 months compared to the consent decree schedule of 58 months. This was accomplished in spite of numerous changes to the scope of work resulting from data developed during the Remedial Design/Remedial Action process.
- The cleanup performance objectives are being met.
- Injury free construction and operation.
- No adverse impact on the public.
- Positive community relations. Project schedule or cost were not negatively impacted as a result of negative public concerns.
- Positive relationships with the City of Seymour and regulatory agencies.
- No stipulated penalties or fines imposed.
- Remedy moving to monitored natural attenuation from pump and treat in October of 2001.
- Cost has exceeded budget.

## Lessons Learned

This project was approached as a traditional capital project with provision for the broad based team involvement and the public relations needs. Numerous lessons were learned which have been used in subsequent remedial projects.

- Planning/Scheduling - The time and effort devoted to the early strategy development was vital to the success of the project. Early planning permitted the team to focus on alternative approaches which have the potential to improve project results. In addition, the team had an opportunity to anticipate potential problems and to prepare plans to react to these problems. Keep in mind-"If you don't know where you are going, any old path will do".
- Agency Approval Time - The amount of time required to work through the overall cycle of document preparation, agency comment, document modification, resubmission and ultimate approval far exceeded expectations. The majority of the documents were submitted three times before approval was obtained. In order to stay on schedule, the PRPs on numerous occasions elected to proceed at risk during the design phase. This approach was successful. Redesign problems were not encountered. Without the close team relationship among all the parties combined with the informal intermediate design reviews, this could not have been accomplished.
- Field Mobilization - The plan called for mobilization of the field in the fall of 1989. In hindsight, the field was established prematurely. The time required to obtain approval of submittals was underestimated delaying the start of field work.
- Design Data - The data provided in the RI was not adequate for design. The RI data was collected in 1983-1985. The design effort began in 1988. A complete set of current data was necessary to finalize the design. The time required to obtain approvals for HASPs, QAPPs and Workplans for the data gathering excessive and delayed the work. In the future, adequate time must be allowed for this data accumulation.

The groundwater data developed during this phase of the project indicated the plume of contamination in the shallow aquifer was far beyond the point determined during the RI.

- Team Approach - The team approach was a key factor in the success of the project. After a period of approximately 6 months, the team jelled and was a positive factor in reacting to project needs. This was particularly advantageous as new data dictated scope changes.
- Intermediate Design Reviews - A key to expediting the approval of the final plant designs was the use of intermediate design reviews with agency personnel. The informal intermediate design reviews

allowed the engineering team to obtain agency comments as the design progressed. Agency concerns could be accommodated at an early stage in the design and prior to submission for final approval. The final design was placed for bid at the same time the design was submitted to the agencies for final approval. With agency concurrence, the major construction contract was awarded less than three months after the final design was submitted for agency approval.

- Cost - Cost results are disappointing. Several factors impacted the cost. These included:
  - Engineering cost was double the estimate. A major portion of the overrun is attributed to the multiple submission of packages to the agencies and the extensive work required to define the extent of the migration of the shallow aquifer plume.
  - Laboratory costs far exceeded expectations. The work required to define
  - Oversight costs for regulatory agencies exceeded estimates.
  - Long term operating and maintenance costs were underestimated.
  - Changes to the scope of work significantly increased the cost.
- Community Relations - The relationships in the community were a positive factor in the success of the project. A diversion of the team resources to handle community issues was not required.

### **Summary**

The remedial work at the Seymour Recycling Center was one of the first projects executed under CERCLA. The remedial work at the site is in the operation and maintenance phase. Construction was completed approximately 2 years ahead of schedule. The process has met all performance criteria. The cost has exceeded the budget estimate. Early strategy development combined with team building and a focus on community relations were key factors in the success of the project. As of the end of September the remedy moves from pump and treat to monitored natural attenuation.