FINAL REPORT

WESTBANK ASBESTOS REMOVAL PROJECT
NEW ORLEANS, LOUISIANA

RAPID RESPONSE CONTRACT NO. DACW45-94-D-0054
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IT PROJECT NO. 768209

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Executive Summary

This summary report details the activities performed at the Westbank Asbestos Removal Project in New Orleans, Louisiana under the Rapid Response Contract No. DACW45-94-D-0054, Delivery Order No. 29 during the periods of July 11, 1996 through August 21, 1998 and November 9 through December 12, 1998.

IT Corporation (IT) executed this action which included the removal and disposal of asbestos containing material (ACM) from residential properties, schools and day care facilities. The ACM material was utilized as a concrete-like substance in yards, driveways, walkways and servitudes. The material is estimated to consist of approximately 43% asbestos, chrysotile, and crocidolite.

The project was originally slated to perform removal activities at approximately 600 sites throughout the Westbank area. As the project progressed, additional sites were identified and 1363 properties were addressed.

Prior to the work being performed on any site, a sketch of the proposed excavation limits for the ACM was prepared by the USEPA's START contractor, Ecology & Environment, Inc. (E&E). Approval from the resident for access and restoration was obtained and utility clearances were made prior to mobilizing to a site. The removal work was performed using conventional excavation methods using local asbestos removal subcontractors for the initial approximately 1100 sites and IT crews for 200 sites during the period of July 11, 1996 through August 21, 1998. A local subcontractor was utilized to perform the removal work for the final 26 sites addressed during the period of November 9 through December 12, 1998. The material was removed and placed in trucks for transport to the Jefferson Parish landfill for disposal. At the completion of the removal activities, confirmation samples were collected by START to verify the removal process. A geotextile liner was then placed in the area where the ACM was removed to identify the removal limits for any future excavation performed in the area.

Upon completion of the ACM removal activities, the restoration of the site was performed. Driveways and walkways were replaced with either limestone or concrete, and sand and sod were placed in the yard areas. This work was also performed by local subcontractors.

IT provided oversight of the removal and restoration activities and documented all aspects of the work. Individual files were maintained for each site which detailed the limits of excavation, the quantities removed and restored, disposal information and any other pertinent information. ACM removal and restoration activities were performed on 1363 sites throughout the Westbank area as part of this project.

1.0 Introduction

This Final Report has been prepared by IT Corporation (IT) for the U.S. Army Corps of Engineers (USACE), Omaha District, on behalf of the U.S. Environmental Protection Agency (USEPA) Region VI. This report provides a summary of the activities completed at the Westbank Asbestos Removal project located in New Orleans, Louisiana. This work was performed under the USACE Rapid Response Contract No. DACW45-94-D-0054, Delivery Order No. 29 from July 11, 1996 through August 21, 1998 and from November 9 through December 12, 1998. Table 1 lists the primary points of contact for the project. Appendix A contains copies of key correspondence generated during the project.

The project consisted of the following primary tasks:

- Site Visit
- Work Plan Preparation
- Site Mobilization and Command Post set-up
- ACM Removal
- Site Restoration
- Documentation of Site Activities.

Sections 2.0 through 16.0 of this Final Report provide an overview of the project activities performed. Section 17.0 presents general project conclusions and recommendations. The Appendices of the Final report contain the field work documentation and other data generated during the project.

Due to the fact that each site has an individual file containing the specific documentation for that site and the large number of sites, these files are included in this report by reference only. Should any specific site document be required by any party, these may be obtained from either the USACE, USEPA or IT.

1.1 Site Background Information

The Westbank asbestos site is located in the Westbank area of New Orleans, consisting of the Jefferson Parish communities of Bridge City, Westwego, Marrero, Harvey, and Gretna and the Orleans Parish community of Algiers. Asbestos-containing material (ACM) had been found in

residential yards and other high access areas such as schools and day care facilities. The ACM was found mainly in driveways, walkways, rights-of-ways, and playgrounds. The material is estimated to consist of approximately 43 percent asbestos, chrysotile, and crocidolite.

The source of the ACM has been determined to be from the John-Manville plant that operated in Marrero from 1929 to 1975. They manufactured various asbestos-containing products which produced and aggregate by-product. The aggregate by-product was pulverized and mixed with filler such as gypsum, dolomite, or calcite. This asbestos containing aggregate /filler formed a concrete-like material when mixed with water. This material was offered to the public free of charge.

The Louisiana Department of Environmental Quality (LDEQ) began investigation at the site in January 1990. The U.S. Environmental Protection Agency (USEPA) conducted a site assessment in March 1990 and found levels below detection limits for air pathways. The USEPA also conducted a Preliminary Assessment and Site Inspection which resulted in a decision not to pursue further federal action under Superfund at that time.

During subsequent visits to the site at the request of the LDEQ, the USEPA determined the deterioration of the ACM was such that much of it had become friable. This deterioration greatly increased the potential for release of the asbestos from the ACM and raised significant concerns for human health, and was the basis for this removal action.

1.2 Preliminary Information

Prior to the initiation of this phase of the Westbank project, the USEPA START contractor investigated potential sites throughout the Westbank where ACM was thought to exist. The approximate horizontal extent and anticipated volume of the ACM at each site was detailed. The original estimate identified approximately 600 sites which required attention with additional sites anticipated. Preliminary lists of sites and a map of the identified sites were furnished to IT and the USACE.

2.0 Site Visit

On July 11, 1996, representatives of the USEPA, the START contractor, USACE, and IT met in New Orleans to view several sites and to discuss the project requirements. The background of the project was discussed and approximately 10 sites were visited to assess the project scope. Potential sites for the establishment of the Command Post were also reviewed.

The preliminary schedule for the execution of the project was discussed as was the anticipated approached to the ACM removal techniques. The inclusion of local subcontractors and resources to perform the work was encouraged by the USEPA and discussions were held to determine how best to accomplish this goal.

3.0 Subcontractor Solicitation Meetings and Selection

On August 15 and 16, 1996, pre-bid meetings were conducted at the Holiday Inn in Gretna, Louisiana. Potential local subcontractors for the ACM removal and restoration portion of the project were invited to discuss the project requirements. The scope of the work for each task was discussed and questions were answered regarding the intended work. After the meetings, several sites were visited to permit the potential subcontractors to view representative areas to be addressed during the project.

Based on the request for proposals and the pre-bid meetings, seven subcontractors submitted proposals for the ACM removal and six proposals were received for the restoration portions of the work.

Appendix B contains the sign-in sheets for each pre-bid meeting.

4.0 Command Post Location and Setup

Prior to the work beginning on the project, a command post was established in the area adjacent to the state of Louisiana office building at 2150 Westbank Expressway in Harvey, Louisiana. The command post was utilized to perform administrative duties for the project as well as being used by the subcontractors for the storage of equipment and supplies used during the project. At the beginning of the project, the site also included a separate trailer for the general public to inquire about the project and to notify the USEPA of any additional sites which may need to be addressed.

The perimeter of the site was fenced with a standard 8-foot chain-link fence with barbed wire along the top. Two sixteen-foot vehicle gates were installed along the Scotdale drive side and a pedestrian gate was placed adjacent to the parking lot on the north side of the Command Post.

An area approximately 300 feet by 300 feet was covered with geotextile material and then covered with approximately six inches of limestone. As the project progressed, the covered area was expanded approximately 100 feet to the south to provide additional space.

A water line was installed along the south edge of the original limit of the limestone and eventually covered when the area was expanded. Due to problems with the water line from the high truck traffic in the yard area, the water line was abandoned in place and a new line was run along the perimeter of the lot along the fence line on the north edge and then turned south to the location of the decontamination trailer.

Three office trailers were placed along the north edge of the yard adjacent to the north fence line, one for the USEPA/START team, one for USACE/IT, and one for the use as a public relations trailer. The trailers were set and anchored according to the local requirements. Portable steps were placed at each doorway. Figure 1 details the initial layout of the command post.

As the project progressed, additional trailers were added to handle the increased staff required on the project. Figure 2 details the final layout.

Electric service was installed to provide power to the office trailers and yard lights were placed on the east and west sides of the gravel area to illuminate the area. The subcontractors were required to connect to the disconnects provided for any electrical needs for their operations at the Command Post. Telephone service was brought to the site by the local telephone company and initially 12 lines were provided. This quantity was expanded as the project progressed.

4.1 Current Status of Command Post

The trailers have been removed from the Command Post, the electric and phone services disconnected and all the equipment removed from the site has been returned to its point of origin.

The perimeter fence remains and the rock base material has been graded and left in place. The above ground water line has been removed and the water meter removed by Jefferson Parish.

5.0 Mobilization

The IT staff mobilized to the project site on September 30, 1996 to begin the project. The selected ACM removal subcontractor, Quality Environmental, Inc. from Slidell, Louisiana also began to move in their decontamination trailer, equipment and supplies.

The office equipment and furniture was rented from local vendors, the telephone system installed and the administrative functions for the project were set up and initiated.

A second mobilization occurred on November 9, 1998 to complete an additional 26 sites which were not completed during the initial phase of the work.

6.0 Preconstruction Meeting

A preconstruction meeting was held on October 3, 1996 prior to the start of the ACM removal activities. Representatives from the USEPA, USACE, LDEQ, IT, the USEPA START team, the removal and restoration subcontractors, and local government officials met to discuss the project and its proposed execution. The sign-in sheet listing the attendees is included in Appendix B.

After introductions were made, the USACE provided an overview of the project organization and the procedures for the execution of the project. Concerns and questions from all parties involved were addressed as required.

The major issues of the meeting included concerns with the state of the Jefferson Parish landfill roads to be used during the disposal of the ACM. The method of covering the material at the landfill on a daily basis was also addressed. A meeting at the landfill was proposed and conducted later in the day to resolve these issues.

Other issues addressed included safety of the residents during the work, traffic control around the project sites, and keeping the communities informed of the progress of the work.

After the meeting with the local officials concluded, a meeting was conducted for the construction portion of the project with USACE, USEPA, START, IT and the subcontractors participating. Issues relating to the specifics of the project execution, safety, chain-of-command, emergency procedures, air monitoring requirements, and documentation were discussed.

7.0 Site Identification and Initiation

Prior to beginning work on any property, initial notification and documentation was required. This step of the project was performed by the START team. Through preliminary research for the project, an initial list of sites containing ACM was prepared. This list was the starting point for the sites to be addressed during the project.

7.1 START Team Duties

The USEPA START team, consisting of representatives from Ecology & Environment, Inc., was required to provide a sketch of the each property and field data sheet detailing the limits of the ACM removal and to obtain the access agreements required to perform the work. The sketch provided would show the horizontal limits of the ACM and the proposed depths of excavation in each area. The limits of excavation were also marked in the field by the START team.

The START team was also required to review the proposed restoration of the property with the owner and to obtain a signature that the homeowner has agreed to the proposed work. When complete, this documentation was then forwarded to the IT Site Supervisor for the site to be scheduled for construction.

7.2 Preliminary Notifications/Documentation

Upon receipt of a site from the START team, IT prepared the documentation for submission to the Louisiana Department of Environmental Quality (LDEQ) to obtain the proper paperwork to permit disposal.

A AAC-2 form, Notification of Demolition and Renovation form, was prepared which listed the information regarding the site including the owner's address, project name, contractor performing the work, waste transporter and other pertinent information. This form was then forwarded to the LDEQ for review and approval.

Upon approval of the AAC-2 form, the LDEQ forwards the requested number of Asbestos Disposal Verification Forms (ADVFs) to the subcontractor to be utilized as verification of the disposal. The quantity of ACM material shipped, the date shipped, and transporter name is completed on the form prior to shipment of the waste. One ADVF form must accompany each load disposed of at the landfill. Any excess forms ordered but not utilized were returned to the LDEQ when the project had been completed.

Copies of the completed documentation for each site are included in the project file for each property. A sample site file is included as Appendix C of this report.

The local utility notification service was contacted to identify any utilities on each property and emergency authorities were contacted to alert them of any road closures prior to the removal work commencing on a particular site. The owners/tenants of each property were notified prior to commencement of work.

A comprehensive pre-removal video of each property was taken prior to any work being performed on a site. The purpose of this video was to document the existing conditions of the property prior to any work being performed. The videos are currently in the possession of the USEPA.

8.0 Asbestos Containing Material (ACM) Removal

8.1 Site Setup

Prior to the removal of the ACM beginning at each site, the area was isolated to restrict access for everyone except those performing the work. Caution tape was placed around the general area and asbestos tape was used to delineate the exclusion zone where only those wearing the proper personal protective clothing (PPE) were permitted to enter. Consideration of the best layout for the loading of the truck to transport the ACM was taken into account when preparing the site. In areas where the depth of excavation was adjacent to walkways or locations determined to be close to public traffic, orange construction fencing was placed to prevent access. If required, wooden walkways were placed to permit the resident to access his property during the excavation and restoration phases of the work. Critical barriers were placed over windows and air conditioning units if they were immediately adjacent to the work.

A temporary decontamination/change room was constructed at the perimeter of the exclusion zone to permit the workers a place to change into and out of their PPE. This was constructed of steel rebar and black polyethylene sheeting. Any time a worker entered or exited the exclusion zone, he was required to pass through this area.

Road barricades were set up as required to either close the road or to restrict vehicle access by the general public. If required, the driver of the trucks would act as flagmen during the removal activities.

Water hoses were connected to the nearest fire hydrant to supply water to each location. A water meter was obtained for each crew from Jefferson Parish to account for the water usage during the project. The hoses were laid and anchored to minimize trip hazards to the general public.

8.2 ACM Removal

8.2.1 Removal Depths and Horizontal Limits

The initial depth of the ACM was anticipated to be approximately 4 inches thick. The removal depths were established at this depth, with the permitted excavation up to six inches. The subcontract for the removal portion of the work was based on a per square yard basis based on the 4 inch thickness.

As the project began, it was quickly noticed that the ACM thickness varied greatly between each site. The ACM extended both vertically and horizontally beyond the site sketches for each site. Due to this discrepancy from the original anticipated depths, a per cubic yard removal cost was negotiated with the removal subcontractor. This rate was paid when the excavation extended beyond the six inch depth of any excavation with prior approval of IT and the USACE.

As the variance in the ACM depths became apparent, the maximum depth of excavation was set at two feet per the USEPA Action Memorandum for the project. This depth was adhered to for several properties until it was determined that the ACM exceeded even this depth in some areas and the quantity for disposal of the material would be greatly increased for the entire project.

After discussions with the USEPA, the depths of excavation were set based on the anticipated future use of the area of removal. In yard areas, the maximum depth of excavation was set at one

foot. In driveways, walkways and other areas which were to receive concrete or limestone restoration, the depth of excavation was set at six inches.

Servitude areas which contained ACM were excavated to a depth of one foot in all cases.

Table 2 provides a summary of the properties addressed during this project and the quantities of ACM removed at each site.

8.2.2 ACM Removal Methods

The ACM was generally removed using a combination of backhoes, picks, jackhammers, wheel barrows and small hand tools such as concrete cutting equipment. The crews consisted of a LDEQ qualified supervisor, an equipment operator, and three to six field technicians depending on the site. The material was removed and placed in the backhoe bucket for placement into a nearby dump truck. The size of the truck also varied with the size of the site being excavated. At some of the larger properties, an excavator was used to remove the ACM. On large confined areas, a small bobcat type excavator was used.

During the excavation of the ACM, extreme care was taken to avoid damaging any existing utilities, pipelines, landscaping or any structure which may be nearby. In most cases, where any structures or appurtances existed, such as fences and trees, the ACM was removed from around the structure without effecting the status of the structure. In the instances where a water line or gas line was damaged during the work, a local plumber was contacted to repair the damage as soon as possible.

The removal usually proceeded from the rear of the property to the front and was excavated to the required depths. If the ACM extended in either a greater horizontal or vertical distance than that which was anticipated, the IT Foreman, along with input from the USACE OSR and USEPA, would make the decision as to weather to chase the material or to stay within the pre-defined limits. Upon the completion of excavation, the START team was notified in order to perform a visual inspection and collect a sample for confirmation of the ACM removal.

8.2.3 Geotextile Liner Placement

Once the start team inspection and sampling was complete, a 10 mil geotextile liner was placed in the excavated area to delineate the limits of the excavation. This geotextile was laid over the excavated area and anchored in place using large nails. The liner was placed to cover the entire area excavated as well as the sidewalls of the excavation.

9.0 ACM Disposal

As the ACM material was removed from each site, the material was placed in subcontracted trucks for transport to the Jefferson Parish Landfill for disposal. This landfill, operated by Waste Management, was an approved asbestos landfill by the LDEQ and obtained a CERCLA approval in conjunction with this project .

During the project, the waste was placed in a designated site within the working cell and covered and documented per the LDEQ requirements. In January of 1998, a newly constructed cell was completed at the landfill. In order to continue the operations of the project, a variance was requested and granted from the LDEQ to permit the placing of the ACM material in the working face of the landfill. This was required since there was not sufficient volume of waste in the new cell to properly bury the waste according to the normal LDEQ requirements. Once sufficient waste from other sources was present within the landfill, the disposal operation returned to the standard methods.

The landfill provided a discount rate for the disposal of the ACM material from the Westbank project as a result of a waiver of royalty fees granted by Jefferson Parish. The quantities of ACM disposed from each property is detailed in Table 2.

10.0 Post Removal Sampling

The USEPA START team was responsible for the collection and analysis of confirmation samples from each property addressed. When the excavation at each property was complete, START was notified and a composite sample was collected. The area was divided into grids and a representative sample collected. The sample was then sent offsite for analysis.

The soil samples were analyzed by Polarized Light Microscopy (PLM) performed by USEPA 600/R-93/116 Method. Periodically for QA/QC purposes, the samples were analyzed by

Transmission Electron Microscopy (TEM) by USEPA 600/R-93/116 Chatsfield Method. The sample analysis was performed by EMSL Analytical, Inc. in either their Houston or Indianapolis laboratories.

When satisfactory results were obtained, IT was given authorization to proceed with restoration of each property. If the result indicated an unsatisfactory level of ACM remained, a Phase II excavation was performed in some cases. Several criteria was considered when determining whether a Phase II excavation was required including the depth of the initial excavation and the future use of the area.

Copies of the analytical results for each property are included in each respective site file.

11.0 Restoration of Sites

When the excavation was complete at each site and acceptable analytical results had been obtained, the restoration of the property commenced. The property was restored according to the agreement made with the homeowner prior to the work beginning. Table 3 details the restoration quantities performed at each site. The restoration for the final 26 properties was performed for the USEPA by another contractor, CET Environmental Services, Inc., and the quantities restored are included in Table 3.

Prior to the restoration beginning, a post-removal video was taken to document the condition of the site. This was done mainly to avoid any conflicts between the removal and restoration subcontractors. This portion of the video was shot on the same tape and directly following the pre-removal portion for the same property.

11.1 Limestone/Concrete Driveways

The driveways which had ACM material were replaced with either a limestone or concrete driveway to the dimensions which previously existed. The USEPA and USACE representatives determined the appropriate restoration material for each site.

11.1.1 Limestone Driveways

The limestone driveways were placed using either a grey or brown limestone obtained from local sources. In the early stages of the project, the brown limestone was utilized. As the project

progressed, complaints pertaining to the appearance of the brown limestone prompted the decision to use only the grey limestone for the remainder of the project.

The limestone was placed to obtain a final thickness of six inches in the driveway areas. The material was placed, graded and compacted using conventional grading equipment. The final grade of the driveway took into consideration the surrounding drainage patterns to avoid ponding of any water.

11.1.2 Concrete Driveways

In cases where the ACM which existed prior to removal was in good condition, the resident may have been eligible for the driveway to be replaced in concrete. This decision was made, with the concurrence of the USEPA, prior to the removal of the ACM. The concrete driveways were placed at a depth of six inches and included 3000 psi concrete, wire mesh and expansion joints as required.

11.2 Walkways

Walkways through yards and adjacent to houses were restored in a similar manner as the driveways with either limestone or concrete. The limestone was placed at a depth of six inches and the concrete was poured four inches thick. Again, the drainage patterns were carefully considered when restoring the walkways.

11.3 Yard Areas

In the yard areas where ACM was removed, the restoration included the placement of river sand and sod. The sand was placed in six-inch lifts and compacted to prevent future settlement. The final lift was also compacted and left approximately 2 inches below the adjacent area to allow for the thickness of sod. Plastic edging was also placed in some areas to delineate gardens and driveways.

Care was taken during the final grading of yards to allow for the proper drainage and to prevent ponding of water. In instances where ponding did occur, the area was regraded to alleviate the problem.

At several of the larger sites and vacant lots where ACM was removed, hydroseeding of the area was performed after backfill in lieu of sod.

12.0 Documentation of Removal Activities

At each step of the removal and restoration activities, detailed documentation of the work performed was collected. The following documentation exists for each property which was completed during this project:

- Initial site sketch - completed by START
- Field Data Sheets
- Final site sketch
- Start/Completion Dates for excavation and restoration
- Restoration Notice-to-proceed
- QA Reports
- Truck Tracking Forms
- Weigh Tickets
- Removal/Restoration Surveys and Quantities
- AAC-2 Forms and ADVF's
- Pre-excavation, Post-excavation, and final videos.

Each site has a separate file which contains all the information related to the removal activities performed at the site. The original site files are in the possession of the USEPA Region VI in Dallas, Texas and the USACE and IT have a set of copies of these files. In addition, a complete set of video tapes documenting each property during the removal and restoration activities is being kept by the USEPA. Table 4 lists the property numbers and corresponding video tape number on which the site is documented.

Due to the large volume of documentation generated during this project, these site files are referenced only in this Final Report. A typical site file has been included as Appendix C of this report.

Daily QC reports were also completed detailing the work performed on the project. These reports are included in Appendix D of this report. Photographs of some of the project activities are included in Appendix E.

13.0 Health and Safety Requirements

The health and safety requirements for the project followed the guidelines set forth in the project Site Safety and Health Plan (SSHP). There were relatively few health and safety incidents for a project with the volume of workers and safety concerns. The documentation of the safety and health practices conducted during the project are included in Appendix F.

13.1 Tailgate Safety Meetings

Prior to each day's activities, a tailgate safety meeting was conducted at the command post. All IT, USACE, and subcontractor personnel were required to attend these meetings. Safety issues were discussed and concerns of any employee were addressed. Due to the presence of many non-English speaking personnel, the discussions were also translated to Spanish to ensure that all workers were aware of the safety issues.

13.2 Decontamination Practices

At each site a small change room/decontamination area was constructed at the edge of the exclusion zone. This area was utilized by the removal workers to change into or out of the required personal protective equipment (PPE). The asbestos removal workers were required to wear modified Level C protective clothing which included a lightweight dust suit, PVC boots, work gloves and half-faced respirators with T-40 particulate cartridges.

Prior to exiting the site, the workers would remove the protective clothing and package it into an asbestos disposal bag. At the end of the work day, the accumulated PPE would be loaded into one of the trucks hauling the ACM for disposal at the landfill.

The backhoe or excavator buckets, along with the hand tools used at a site would be dry-decontaminated and wrapped in 6-mil poly prior to being moved to the next site. This practice included the brushing of any surface which was in contact with the ACM with a brush or broom to remove any visible dirt of ACM particles. This material was also placed in asbestos disposal bags for disposal at the landfill.

At the conclusion of the work day, each worker was required to shower at the decontamination trailer at the Command Post. The coveralls used by each worker were removed prior to entering the shower and the worker put on his own street clothes after properly showering. The coveralls

were washed on a daily basis. All decontamination water was collected, filtered, and discharged to the sanitary sewer.

13.3 Heat Stress Monitoring

Due to the high temperatures encountered during periods of the work, heat stress monitoring was conducted on all the workers required to wear the Level C PPE when the ambient temperature reached 78 degrees Fahrenheit. This monitoring included the recording of a baseline temperature and pulse for each worker prior to the work shift beginning and repeated readings at specified intervals throughout the day.

13.4 Ambient Air Sampling

To ensure that the ACM removal procedures were not resulting in the offsite migration of asbestos fibers, ambient air samples were collected from the perimeter of the work sites. These samples were collected and analyzed by the START team. The samples were collected using low-flow (2 - l/min) SKC and high-flow (12 to 14 - l/min) Gillian sampling pumps set up adjacent to the work area. At least three air sampling pumps were set up at each site.

The results of the ambient sampling were used to monitor the engineering controls in place to eliminate the migration of asbestos fibers. Over the entire duration of the project, the discharge limit was exceeded in only a few instances. When this occurred, it was determined that more water was required to be used during the removal process.

13.5 Personal Air Monitoring

During the ACM excavation activities, it was required that personal air samples be collected to monitor the exposure of the workers in the exclusion zone. The ACM subcontractor, Quality Environmental, collected samples from at least 2 workers from each crew for the initial phases of the project. Sufficient asbestos exposure data had been collected as of January 13, 1997 to satisfy the negative exposure assessment requirements of 29 CFR 1969.110(f)(2)(iii), and therefore, daily monitoring was curtailed. The air sampling program was then reduced to be performed once every two weeks on the individual with the highest exposure potential in each work crew. When IT performed the ACM removal activities, new personnel samples were collected to satisfy the exposure monitoring requirements.

The personal air samples were collected by Quality Environmental or IT and were transferred to the START team for shipment offsite for analysis. These samples were analyzed by EMSL Laboratories by NIOSH Method 7400. The results were compiled by the START team and the documentation of this is in their possession.

14.0 Remaining Sites to be Completed

At the conclusion of the project, several sites remained which were not completed for various reasons. These may include businesses, large special sites, sites where the owner denied access or was not identified, or other restrictions. Several of these properties were addressed during the period of November 9 through December 12, 1998. The database for the remaining sites is maintained by the START team for the USEPA.

15.0 Site Tear Down and Demobilization

At the conclusion of the site activities, the project files were boxed and shipped to the USEPA, USACE and the IT Pittsburgh office for permanent storage. The equipment rented for use during the project was returned to the respective vendors. The electric and telephone services were disconnected from the office trailers and the trailers were returned.

The limestone was graded and the grass mowed within the compound. The fence which was installed at the beginning of the project was left in place as were the electrical service panels. The water line was capped and the meter was removed by the Jefferson Parish Water Department. The compound was left in a clean condition for future use by the State of Louisiana.

16.0 Problems Encountered and Lessons Learned

Overall, the project was very successful and completed the goal of the project which was to remove the ACM from residential properties and hence the public health threat.

The problems encountered on the project were minimal but mostly were due to the long duration of the project. The incremental funding which was required caused the pace of the work to fluctuate drastically. This led to problems with the subcontractor maintaining a sufficient manpower staff to perform the work at a steady pace. This also required that IT alter its staff to meet the project needs.

One of the major restoration subcontractors on the project filed for bankruptcy during the project. This subcontractor had fallen behind schedule, had trouble submitting correct invoices and was delinquent in paying their subcontractors and vendors. A second restoration subcontractor was selected to supplement the restoration work and eventually took over this portion of the project when the first subcontractor declared bankruptcy.

A good practice which was utilized during the project was the daily coordination meetings which were conducted each morning. These meetings included representatives of the USEPA, USACE, IT, START, and the subcontractors. The progress of the work, the scheduled work for the day and any problems were discussed. These meetings ensured that all parties were aware of the status of each site and what needed to be accomplished to complete a property.

17.0 Conclusions and Recommendations

In conclusion, the ACM removal project conducted at Westbank was a very successful project and met the requirements provided by the USACE and USEPA under this delivery order. The 1363 sites which were completed far exceeded the original estimate of 600 properties to be addressed. For a project of this magnitude, relatively few problems were encountered from the residents which were not easily rectified. The local subcontractors and workers which were utilized were for the most part very cooperative and strived to achieve the project goals.

For future projects of this nature, several changes may be considered or implemented to improve the execution of the project. These may include the following:

1. If only a small percentage of the funding is available to begin the project, structure the work pace to correspond with the funding allotment. When additional funding is anticipated, prepare the necessary cost estimates and paperwork to obtain the funding so as not to impede the progress of the work.

2. During the selection of local subcontractors, take the time to thoroughly review the qualifications and financial stability of the potential vendors.

3. During a project, maintain a close review of a subcontractors compliance with the Davis-Bacon Wage Act, including the submission of certified payrolls, and also ensure that the subcontractor is paying his vendors in a timely fashion.

4. The timely resolution of project situations, with all parties involved in the decision-making process, will lead to a more efficient and successful project.

Rock Placement at Command Post

Trailer Placement at Command Post

Expansion of Command Post

ACM Material

ACM Material

ACM Driveway

Site Preparation

Temporary Decontamination/Change Room

Placing Truck Liner

Site Preparation

Truck Liner Preparation

ACM Removal

ACM Removal

ACM Removal

ACM Removal

ACM Removal

Completed ACM Removal

ACM Removal

Loading ACM into Truck

Completed ACM Removal

Completed ACM Removal

Completed ACM Removal

ACM Removal Adjacent to Home

Loading ACM intoTruck

Completed Site with Geotextile

Concrete Walkway Restoration

Completed Site with Geotextile

Completed Site with Geotextile and Fencing

Hydromulching after Restoration