

Challenges and Successes during Implementation of Residential Soil Remediation Program – 14567

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ABSTRACT

The project included excavation of approximately 140,000 cubic yards of contaminated waste fill from a residential neighborhood in Hamden, Connecticut. Pre-construction activities included negotiations with regulators to establish site-specific cleanup standards, eliminating the need for individual land use restrictions, and establishing protocols for excluding a property if a homeowner refused access. Extensive efforts were put toward obtaining approval of a unique post-excavation sampling plan that allowed for on-site analysis of samples with only periodic laboratory analysis to confirm results. This allowed excavation and backfill activities to move forward more quickly and reduced laboratory costs by approximately 2 million dollars.

Pre-construction planning also included arranging for excavated material to be used as part of the cap being installed at a former illegal landfill under control of the State of Connecticut Department of Energy and Environmental Protection (CTDEEP). Proximity of the landfill and reduced disposal cost negotiated with the CTDEEP significantly reduced overall project costs.

After over 5 years of investigation, design, and planning, construction began in August of 2010. It was anticipated that construction activities would take 3-5 years. After excavation of the initial 35 properties in 2010, the excavation contractor reevaluated their approach and recognized efficiencies that would allow them to accelerate the schedule which would both save the client money and minimize disruption to the property owners.

The paper focuses on the unique issues encountered during the planning and implementation of field activities. It will specifically discuss how the project was completed efficiently and successfully despite the challenges related to dealing with over 250 individual property owners and residents.

INTRODUCTION

The project included excavation and disposal of approximately 140,000 cubic yards of contaminated waste fill from a residential neighborhood in Hamden, Connecticut. Waste materials present in the neighborhood included residential waste from open burn dumps that were historically present in the area, as well as industrial waste from manufacturing facilities located several miles away in New Haven, Connecticut. Waste materials were placed in the neighborhood from approximately the 1890s through the 1950s, prior to construction of the majority of the homes.

In 2001 environmental impacts were identified at a middle school located within the Newhall Street neighborhood, investigations were conducted on the school property as well as the surrounding residential properties. The middle school was subsequently closed and a new school was built outside of the subject neighborhood.

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This paper focuses on the specific issues and challenges encountered during the planning and implementation of field activities associated with remediation of the approximately 250 non-public (residential and commercial) properties where waste fill had been identified.

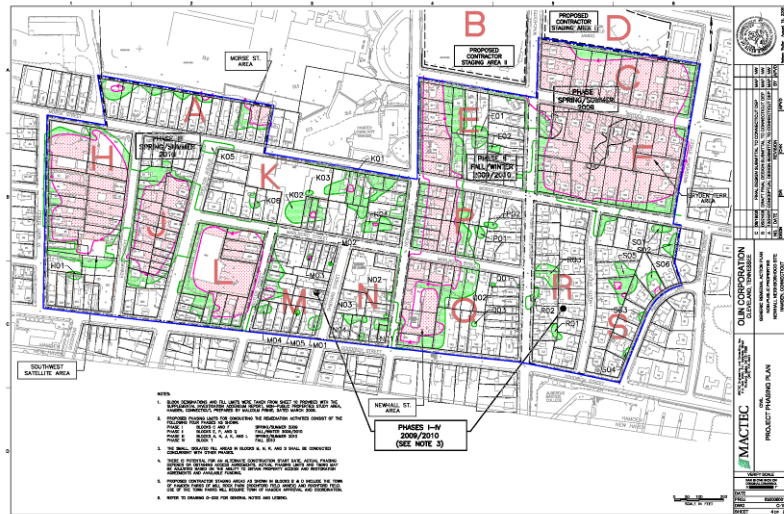


Figure 1: Map showing Consent Order Boundary and Approximate Extent of Fill

BACKGROUND

The Newhall Street Neighborhood is an approximately 18-block area in the southern part of Hamden, Connecticut that historically consisted of wetlands and low-lying areas. Waste materials were used to fill these areas from the late 1800s to the mid-1900s. Subsequently, homes, public buildings, and parks were built on the historic fill areas. Environmental investigations showed that the historically deposited fill includes materials such as ash, slag, coal waste, and other industrial and household trash. The constituents most frequently detected in the waste fill are metals, including lead, and semi-volatile organic compounds.

The CTDEEP and various responsible parties entered into a Consent Order (CO) in 2003 which required investigation and remediation of waste fill material within a specific boundary. In October 2007, a Final Remedy Selection Plan detailing the requirements for remediation of the non-public properties was issued by the CTDEEP. The remedy selected to address the presence of waste fill on non-public properties within the CO boundary can be summarized as:

- Excavation of fill within the top 4 feet;
- Disposition of excavated material at authorized off-site facilities;
- Backfilling of excavated areas with clean soil; and
- Restoration of existing features including landscaping, patios, fencing, driveways, etc. that are disturbed during construction activities.

A significant issue identified during the early stages of the project was how to address property owners who refused to provide access to their property to allow the work to be completed. It was determined that if sufficient efforts were made, but the property owner still refused to provide access the property owner would be referred to the CTDEEP and the CTDEEP would assume responsibility for obtaining access. If, within a specific time period and after following a

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defined process, the CTDEEP was unable to convince the property owner to participate in the project, the property would be eliminated from the project. In cases where this occurred, the corporation responsible for remediation of non-public properties was absolved of responsibility to remediate waste fill from that specific property. The owner was notified that they could be held responsible to manage and/or dispose of waste fill on their property and documentation from the CTDEEP to this effect was attached to the deed of the property.

This paper focuses specifically on the challenges encountered during the pre-field preparation and implementation of this residential remediation project. In order to maintain this focus on challenges associated with field-related challenges, the numerous challenges encountered during preparation of the project plans as well as the technical and regulatory negotiations with the CTDEEP are not discussed in this paper.

PROJECT PROCESS

Below is a brief description of the specific steps in the process to move a particular property from planning to completion of required activities. Subsequent sections of this paper will describe some of the challenges that could have caused this well-defined process to go off track, a description of efforts taken to avoid issues, and the lessons learned throughout the process.

- **Obtain Access for Property Inventory** – Access agreements were obtained from each property owner to allow staff to enter their property to complete an inventory of items likely to be disturbed during excavation activities. It was made clear during this process that signing this agreement allowed access to the property only for the purposes of completing the non-invasive inventory, and that owners would be asked to sign a separate agreement at a later date that would allow excavation activities.
- **Complete Property Inventories** – An inventory of each property was completed. During the inventory, staff members and an arborist visited the properties where access had been obtained to document all pre-existing items in areas likely to be disturbed during excavation activities. The inventory included identification of specific plant and tree species, and documentation of dimensions and materials of landscaped items such as decks, patios, sidewalks, driveways, etc.
- **Develop and Distribute Property-Specific Remedial Action Plans** – Information gathered during the property inventories was used to develop a Property-Specific Remedial Action Plan (PSRAP) for each property. The PSRAPs were mailed to the property owners, and included including a map showing the expected extent of excavation on their specific property, items likely to be disrupted, a map showing proposed restoration plans, and photos of example replacement items. The PSRAP also included a copy of the Access and Restoration Agreement that the property owner would be required to sign to allow excavation to be completed.
- **Conduct PSRAP Review Meetings** – Staff met individual with property owners to discuss the PSRAP. The purpose of these meetings was to ensure the property owners' understanding of the overall project goals, extent of excavation and disruption to their specific property, and to request that they sign the Access and Restoration Agreement

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allowing excavation activities to be completed on their property. In many cases, it was necessary to meet with an individual property owner several times before the Access and Restoration Agreement was signed.

- **Determine Whether Temporary Relocation is Required and Obtain Signature on Temporary Relocation Agreement** - In cases where it would be necessary to temporarily relocate residents of a specific house during excavation activities, a Temporary Relocation Agreement was obtained prior to excavation activities. In order to develop plans for temporary relocation, specific information regarding the number, age, and gender of all occupants was gathered, as well as any special needs that may have to be accommodated during temporary relocation.
- **Pre-Construction Meeting** – The Remedy Selection Plan required that a pre-construction meeting be held with the owner of each property within the weeks leading up to the initiation of field activities. During the preconstruction meetings, property owners met with the contractor to ask final questions about the work planned for their property, make arrangements to move personal property located within the proposed work area, and to review safety considerations associated with the project. During these meetings, documentation regarding the condition of the building's foundation, including in some cases, documentation by a structural engineer, was also completed.
- **Construction** – Excavation was completed on a block-by-block basis with no excavation being initiated until access issues were resolved with all properties on that block.
- **Restoration** – Restoration was completed on a block-by-block basis in accordance with the maps and plans included as part of the individual Access and Restoration Agreements.
- **Preparation of Property Specific Remedial Action Reports** – Following restoration activities, a Property-Specific Remedial Action Report (PSRAR) was prepared for each property where excavation was completed. These documents were submitted to the property owners for comment as well as to the CTDEEP. After a 30-day period during which the property owners had the opportunity to comment on the report, the PSRARs were approved by the CTDEEP. This approval was considered documentation that the remedy had been completed to the satisfaction of the CTDEEP.
- **Semi-Annual Post-Construction Inspections** – Project plans required that the properties be inspected annually for two years following excavation activities to ensure successful restoration of items disturbed as part of the project. Plants and trees that were not successfully restored were pruned or replaced, as appropriate. If the condition of a landscaped item such as a fence or driveway did not meet project specifications, the appropriate repairs or replacements were made.
- **Prepare Final Inspection Reports and Terminate Access Agreements** – Following completion of the two years of semi-annual inspections, a report documenting that the inspections were completed and that the necessary repairs were made, is prepared and submitted to the CTDEEP. At this time, the individual Access and Restoration Agreements with the property owners were terminated.

CHALLENGES ENCOUNTERED DURING PREPARATION FOR FIELD ACTIVITIES

Environmental impacts were first identified in the Newhall Street Neighborhood in 2001. In the years that followed, several responsible parties entered into a CO with the CTDEEP, extensive subsurface investigation activities were completed in an attempt to define the extent of contaminated fill, and negotiations with the CTDEEP and local officials from the Town of Hamden continued. By the fall of 2008, when contractors were ready to initiate the process of completing inventories of the first properties slated for excavation, there was a significant faction of the community that did not agree with the selected remedy. Many believed (and hoped) that their homes would be purchased, others felt that an alternate remedy would be preferable, and others were convinced that the project would “never happen” because of the perceived lack of action taken since environmental impacts were identified.

Below is a discussion of some of the major hurdles encountered by members of the project team during the process of getting ready for field activities.

Community Opposition

While members of the project team were attempting to obtain access to complete the required property inventories, there were several groups in the neighborhood that opposed the project. These groups developed out of an “official” committee that interacted with the CTDEEP during selection of the remedy, and were led by individuals who, in some cases, were well respected within the community. Generally, the individuals leading the opposition groups also had their own interests and specifically took issue with either the corporation completing the cleanup, the CTDEEP, or the Town of Hamden.

The opposition groups distributed fliers and held informal meetings during which it was recommended that individual property owners refuse to speak to members of the project team or the CTDEEP. They posted signs throughout the neighborhood expressing disapproval with the project, and instructed the property owners to not sign any documents regarding the project. Leaders of one opposition group convinced a number of property owners that the group would speak and make decisions on behalf of the property owners. When pressed by the project team and the CTDEEP, the opposition group were unable, or unwilling, to provide documentation confirming that the group represented the property owners in any formal way.



Figure 2: Sign supplied to residents by group campaigning against the project

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Members of the project team followed a strict protocol when dealing with members of the community opposition group or the residents who deferred to the group. Extra effort was made to inform the property owners that each owner individually had to determine whether or not they would participate in the remedy, and that they alone would sign the Access and Restoration Agreement. Property owners were also informed of the consequences of refusing to participate in the remedy, up to and including the potential that an Environmental Order would be issued which would essentially make the property owner responsible for the presence of waste fill on the property.

The activity and effectiveness of the opposition groups decreased dramatically once the project team was in the field full time and it became clear that the project would move forward as planned.

Communication

Effective communication with the owners and occupants of the properties within the CO boundary was one of the most critical aspects of obtaining access and preparing to move forward with excavation activities. The process approved by the CTDEEP to document that sufficient effort was made to obtain access to each property within the CO boundary was referred to as the “Best Efforts” process. This process required attempts to contact the owner of a property in writing, over the phone, and in person. If the project team was unable to obtain access to a property it would later be necessary to demonstrate to the CTDEEP that Best Efforts had been made, therefore each step of the process was documented with mail delivery receipts, phone logs, or field notes.

In many cases, the first challenge in obtaining access to a property was identifying and locating the current owner. Many of the properties were not owner-occupied and tenants who were influenced by the community opposition groups were distrustful of members of the project team and hesitant to provide contact information for their landlords. In the event that a property owner could not easily be located, members of the project team used a variety of tools to attempt to locate these individuals. These efforts included making phone calls from various phone numbers, leaving business cards requesting a call back, and indicating that the property owner could email, text, or reply in writing if that was preferred. In some cases, the CTDEEP was enlisted to use resources beyond those available to the public to track down a property owner. It was only after locating a property owner, and ideally obtaining a legitimate mailing address, telephone number, and email address, that the Best Efforts process could begin.

One communication issue that was anticipated, but did not become a significant issue during implementation of the project was the potential that a language barrier would exist between property owners and members of the project team. In cases where this could have been an issue, arrangements were made for a family member to translate the required information.

The CTDEEP had agreed that after a specified process, property owners who refused access would be eliminated from the remedy. In addition, they agreed that work would not be initiated on a particular block until all access issues on that block had been resolved. Therefore documenting all resident communication and each step of the Best Efforts process became a critical part of resolving access issues (whether the homeowners signed the Access Agreement or were eliminated from the remedy) and moving the project toward implementation.

Coordination with Non-Residential Properties

The majority of planning and strategizing focused on how to implement the project on residential properties, however, there were several commercial properties and three churches located within the CO boundary where waste fill had been identified. The commercial properties included a convenience store and bar that would be minimally impacted by the proposed work. In addition, the non-residential properties included a non-profit association that held weekly food drives, a rental agency, and a business that manufactured and sold window blinds. Excavation on these properties was more extensive and included parking lots, and in some cases, delivery and loading docks.

In an effort to be consistent with access negotiations with residential property owners, the same process was followed with business owners and representatives of the churches. The property owner or the chairperson of the board of trustees was required to sign the Access and Restoration Agreement and no payments or financial compensation was provided. Owners of the commercial properties were assured that the contractor would make arrangements that would allow their business to remain open throughout the project.

During the planning phase, it was believed that arrangements may have to be made for the churches to hold some services and other activities at alternate facilities in the neighborhood. If this was necessary, the project team would agree to pay any fees charged by the alternate facility to hold church services and or events and the contractor would be asked to minimize the length of time that any of the church properties were disrupted.

Dealing with Special Needs

The template for the Access and Restoration Agreement was drafted by attorneys familiar with the project and was intended to be signed, without modification, by the owner of each property where excavation was proposed. One challenge encountered during the process of obtaining access and planning for field activities was to adequately document and plan for the unique needs of the occupants of each property.

During meetings to review the Access and Restoration Agreements, property owners would often indicate that they would agree to the work if they could be assured that a certain issue or their specific concern would be addressed. These requests ranged from issues of accessibility for a resident whose handicapped ramp would be temporarily unavailable, to concerns about the level of disruption to people who worked overnight shifts or had infants in the home, to ensuring that a pet would be safe when the fencing was removed from a yard. It was important to assure the residents that their concerns would be addressed, but the project procedures did not allow for the text of the Access and Restoration Agreement to be modified, so specific concerns and issues could not be noted on the agreement. In order to document and track these special needs, members for the project team developed a form to be used during one on one meetings with property owners and a spreadsheet that would later be communicated to the contractor and reviewed with property owners during pre-construction meetings.

One issue that was not considered prior to initiating access efforts was that because of age or disability, there may be question as to whether some of the property owners were capable of understanding the work proposed for their property or the implications of signing the Access and

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Restoration Agreement. The Newhall Street neighborhood has a significant elderly population, and this situation occurred fairly regularly during the process of obtaining access. These situations were evaluated on a case by case basis and responses varied from asking the property owner if there was a family member that could be present during a subsequent meeting, to confirming that signature by a third party with Power of Attorney was appropriate.

Establishing Protocols for Unexpected Events

As the project team moved closer to the initiation of excavation activities, it became clear that situations could arise for which no protocol had been established. It was important that, to the extent practicable, these situations be identified, that a protocol be developed, and that the CTDEEP approve the proposed response in advance of encountering an unexpected event in the field. Having a protocol in place would allow the field team to respond to an unplanned event in a predictable way that had been approved by the CTDEEP. This would minimize delays to the construction schedule that would cost money and increase the amount of time an individual property owner was disrupted. Examples of these “what if...” situations included:

- What if an active or inactive underground storage tank (UST) is encountered?
- What if the roots of trees on an adjacent property where we don't have access are damaged and the tree doesn't survive?
- What if the waste fill extends beyond the expected limits and onto a property where an inventory was not completed?

A written protocol describing how each of these situations would be handled if encountered in the field was developed. The protocols were submitted to the CTDEEP for approval prior to the initiation of excavation activities. The UST protocol was used several times when both active and inactive USTs were encountered during excavation activities. The project team was aware of some of the USTs in advance because of information gathered during previous property owner meetings, but several previously unknown USTs were encountered during excavation activities. Because the protocol was approved in advance by the CTDEEP, the contractor did not have to stop and wait for guidance or direction regarding the appropriate response activities.

The protocol that became the most important in keeping the project moving without delays was the “Contingency Access Agreement” developed to be used in the event that waste fill extended beyond the expected extents onto an adjacent property that was not part of the original list of properties requiring remediation. Originally the thought was that this agreement would only be used if it was determined in the field that the waste fill extended onto an adjacent property where the need for remediation was not expected, and therefore no Access and Restoration Agreement was in place. This situation occurred on the very first day of excavation activities. The homeowner was located and was willing to sign the agreement, and excavation activities continued without delay. Subsequently, these Contingency Access Agreements were obtained in advance for properties where excavation was not anticipated “just in case” the waste fill expanded beyond the expected extents.



Figure 3: Aerial view of one block during excavation and backfill

CHALLENGES ENCOUNTERED DURING FIELD ACTIVITIES

Below is a discussion of some of the major hurdles encountered during implementation of the remedy. Some of the issues and challenges were identified and quickly resolved by the project team. Others were recognized as challenges inherent to dealing with the public that would persist throughout the project.

Contractor's Approach to Excavation and Relocation

The original project plans assumed that approximately 75% of occupants of the 80 properties on the schedule for 2011 would be temporarily relocated during excavation and backfill activities. This estimate was based on the estimated extent and distribution of waste fill on each individual property and the assumption the occupants would be relocated if two means of safe entrance and egress could not be maintained throughout excavation activities. Preliminary plans were made to rent four to six 2- and 3-bedroom apartments which owners would be cycled in and out of while work was being done on their property. Maximizing the use of the apartments would minimize costs and the transitions between tenants would be timed based on the expected excavation duration provided by the contractor. Other temporarily relocated occupants would be housed in hotels if it was anticipated residents would be relocated for less than two weeks.

After demobilizing following in the 2010 construction season, the contractor reevaluated planned approach to construction activities on each block and developed a revised plan that would provide them with more flexibility regarding schedule and allow them to complete the work more quickly. They contractor determined that if extra effort was put toward maintaining entrance and egress to each house during excavation and backfill activities, they could reduce the number of occupants requiring temporary relocation. This would reduce the overall cost of the project, but also provide the contractor with more flexibility because the excavation schedule would not be tied to a rigid schedule of residents moving in and out of temporary accommodations.

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In order to make this approach work, the contractor had to be aware of residents' schedules. This included when they would be entering and exiting the houses for work or appointments, when their children would be dropped off by a school bus, when a visitor or home health-aid was scheduled to arrive, and countless other details. The contractor also had to ensure that when the workers left the site at the end of the day, that occupants would safely enter and leave their property. Implementing this approach was labor intensive and required a high level of coordination and communication between the project team, management of the construction team, and residents. The benefit to the project was that it allowed the excavation work to proceed much more quickly and the percentage of occupants relocated as part of the project was reduced from the original estimate of approximately 75% to less than 10%.



Figure 4 and 5: Excavation and backfill around a three story staircase. This work was completed in one day to allow safe access to apartment on the 2nd and 3rd floors.

Structural and Drainage Issues

One of the most significant challenges encountered during implementation of this remedy was related to local drainage and structural issues that existed in the neighborhood before construction activities began. Because the Newhall Street Neighborhood was built on top of waste fill placed in formerly low lying and wetland areas, over time some homes experienced significant settling. The foundations of approximately half of these homes were built of dry stacked stone with obvious settling, and of those with concrete foundations, many had visible cracks. Although the project team documented conditions of the foundations prior to excavation activities, a common complaint among homeowners was that the construction work had caused damage to their home, uneven settling, cracks in garage floors, etc. These claims were generally resolved through showing the individuals photos of their property taken before the work was completed.

Infiltration of water into basements became an issue during the 2011 construction season when Hamden, Connecticut received more than twice the average rainfall. During one particular rainfall of over 2.5", the project team received calls from approximately 15 homeowners who reported water in their basements. In some cases, the area around the foundations had not yet been backfilled, but in some cases, properties were fully restored with concrete aprons and or backfill, topsoil, and sod at grade. After the porous waste fill was replaced with the approved backfill material, rain water was accumulating at low spots adjacent to the houses and seeping through the foundation walls or through cracks that were due to settling.



Figure 6: Photo showing crack in foundation constructed of stacked stone and brick.

The project team responded immediately and realized the importance of resolving these issues and maintaining the confidence of the property owners. Countless hours were spent looking at resident's basements, and visiting properties during and after significant rain events to see where water was coming in and to attempt to determine whether infiltration of water was a preexisting or new condition.

A proposal was made that in cases where a building's foundation would be exposed during excavation, stone backfill be used rather than the common borrow material used as backfill throughout the project. This would allow water to drain through the stone to the underlying native sand or porous fill material that was left in place at depths of greater than four feet. This proposal was approved by the CTDEEP and was implemented immediately. Response to this issue included returning to some properties where restoration was complete, re-excavating and replacing the common borrow material with stone. This solution worked well and water issues occurred in only very isolated circumstances after the contractor began using stone to backfill around building foundations.

One issue that this change in project plans did *not* address was the overall poor drainage in the neighborhood. In general, topography in the neighborhood did not promote drainage toward the street, and the storm water system in the neighborhood was known to be inadequate. Despite this being a well-known problem in the city of Hamden, it became a challenge for the project team because property owners claimed that they had never previously experienced street flooding or drainage issues in backyards that were six to eight feet lower in elevation than the street and storm drains. During the season when the town of Hamden received twice the average annual rainfall, property owners frequently called members of the project team to report street flooding after heavy rains and were dissatisfied if they were referred to the local public works department or the project's Community Liaison employed by the CTDEEP and the town of Hamden.



Figure 7: Street flooding in a portion of the neighborhood with inadequate storm drainage.

This intersection is within the CO boundary but no excavation was completed in this portion of the neighborhood.

Resident Interaction with Contractors and Project Staff

Following excavation and backfill in each block, a variety of subcontractors would visit each property to complete restoration in accordance with the Access and Restoration Activities previously signed by the property owner. One challenge that was encountered in this process was that the property owners would frequently try to direct the workers on their property. They requested that additional plants be planted, that their driveway be expanded, that their fence was being installed in the wrong location, and sometimes asked the subcontractors to stop working until their issue was resolved.

After several incidents of frustrated subcontractors leaving their work area and returning to the construction staging area for guidance, the project team realized that communication between the homeowners and landscaping, fencing, or restoration subcontractors had to be controlled. The subcontractors were instructed that to the extent practical and safe, they should keep working and only take direction from the construction company. If a homeowner communicated a concern to a worker, the worker was to provide the homeowner with contact information for one of two specific points of contact who was in the field full time.

In addition, during the pre-construction meeting, the property owners were explicitly told that if they have a question or concern about restoration work being completed on their property they should allow the workers to continue. Property owners were then given the same two points of contacts. Homeowners were informed that if the workers were wrong (i.e. the fence truly was in the wrong place), that they should let the work continue, and someone would return and make the correction at a later date. This reinforced communication guidelines for both the workers and the homeowners and ensured that the right members of the project team were making decisions and directing the work.

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Another challenge that reinforced the need to adhere to a chain of command and control communication was the attempts of homeowners to “trade” restoration items. During the process of obtaining access, homeowners were allowed to change certain elements of how their property would be restored as long as the changes were cost neutral to the restoration. These changes to restoration items were documented on the site plan that became part of the Access and Restoration Agreement. This process was worked out in advance and proved an effective way to track changes that property owners previously requested and approved.

The challenge was encountered when homeowners asked for additional modifications to restoration items after the work was underway. In most cases, homeowners wanted trade certain plants and trees for something more ornamental or eliminate trees to compensate for a more expensive style fence. Homeowners would approach the fencing or landscaping contractor and request that some changes be made. They would generally be referred back to the two points of contact. In some cases, the property owners would attempt to confuse the issue by claiming to the construction foreman that a certain change had already been approved.

After several situations where homeowners “misrepresented” who they spoke with and what was agreed upon, the project team determined again that communication with the property owners needed to be further controlled. All project staff and subcontractors were informed that any resident requests should be referred to the two points of contact and that they would respond to the property owners directly and provide specific direction to the restoration subcontractor on how to proceed. This proved to be an effective solution to homeowners attempting to get work completed on their property that was beyond the scope of the project.

CHALLENGES ENCOUNTERED FOLLOWING PROPERTY RESTORATION

After excavation, backfilling, and restoration an informal inspection of each property was completed. Following these inspections, a punch-list of pending items was developed and distributed to the restoration subcontractors. In theory, the end of project team’s day to day interaction with a property owner should coincide with completion of the punch list items. After the first block of properties was completed it became clear that would not always be the case. The sections below describe some of the challenges encountered after restoration was complete.

On-Going Resident Requests or Dissatisfaction with Restoration Items

After restoration of a certain block was complete, the majority of activity moved to a different part of the neighborhood and there was very little project activity in the block where work was complete. This seemed to create a sense of uneasiness (occasionally bordering on panic) among property owners that if a problem arose, no one from the project team would be available to respond to their concern. As a result, property owners began stopping by the field offices or stopping any member of the project team asking for one of the two points of contact call or stop by to discuss an issue. Because it was easier to understand a problem in person than to hear it described over the phone, this led to frequent calls and visits to properties where work was technically complete.

Overall, the issues reported by property owners were extremely minor or unrelated to the project work. They included complaints about drainage, requests that someone repair a gutter or torn

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piece of siding on a house, or reinstall a mailbox that was broken or missing before the project work began. Many times, these requests came from elderly residents who admitted that they “missed” the activity of the construction activities and may no longer be able to perform these general home maintenance tasks on their own. Because project work was going on in other parts of the neighborhood, it was tempting to send a laborer or carpenter or employee of the landscaping company to address these minor requests even if they were not associated with the project. Although it was a small percentage of property owners making on-going requested after work was technically complete, members of the project team quickly realized that complying with this kind of request would set a precedent and would lead to hours of additional requests and the worker being treated like a handyman hired by the property owner. The need to deny seemingly simple requests or “easy fixes” lead to many difficult conversations between members of the project team and the property owners.

In some cases, there were disagreements between members of the project team and the homeowners regarding whether restoration was complete or whether a certain item met the project specifications. Efforts were made to resolve this type of conflict at the field level by visiting the property, reviewing the access and restoration agreement signed by the property owner, or providing photos of property conditions prior to excavation work. The vast majority, approximately 90%, of the conflicts were resolved at this level. The remaining 10% of complaints were referred to a community liaison hired by the CTDEEP and the town of Hamden. This approach was designed to allow a third party to understand the issues and serve as a resource to a property owner who was dissatisfied with the response of the project team. The community liaison would communicate the residents’ concerns to the CTDEEP and ask for input from the project team on what steps had been taken to resolve the issue. A determination would be made as to whether any further response was required by the project team and CTDEEP would communicate the results of this determination to the property owners.

In combination with the project team’s efforts to accommodate residents’ requests within the confines of the project, this model for resolving conflict worked extremely well and allowed the project to move toward completion with minimal conflicts.

Post Construction Exit Strategy

Because the construction project very visible in the neighborhood for over two and a half years, residents were very used to stopping by the construction staging area or making a phone call and getting a very quick from a member of the project team. For this reason it was necessary that the project team have a clear strategy for demobilizing and ending the day to day presence in the neighborhood.

As the work was completed, the issues being raised by property owners became less and less critical, and it became obvious that the calls would continue as long as members of the project team were on-site and “available” to the property owners. A decision was made to push through the final punch list items, complete all work required by the CTDEEP, and demobilize from the site as quickly as possible at the end of the 2012 construction season. This plan was developed with the understanding that if a property owner raised a legitimate issue that needed to be dealt with before the end of the construction season, the contractors representatives would be available to return to the site. If residents called with less urgent issues, they would told that work was completed for the season and that outstanding issues with restoration of their property would be identified during the semi-annual inspections scheduled for the following spring.

This exit strategy worked exceptionally well and the resident calls, specifically calls about minor issues or those outside the scope of the project, virtually stopped with days of the project trailers and construction equipment being demobilized from the site.



Figure 8: Construction staging area fenced and locked following demobilization

SUMMARY AND CONCLUSIONS

Environmental issues were identified in the Newhall Street Neighborhood in 2001, and a Consent Order was issued in 2003. Negotiations between the responsible parties, investigation activities, and logistical planning were completed for approximately seven years before the excavation activities were initiated in 2010. While an enormous amount of effort was put toward developing guidelines for communication with property owners and establishing structured protocols for field activities, challenges were inevitable.

Challenges encountered during implementation of the project included correcting misconceptions originating from a community group that opposed the project, obtaining individual access agreements from owners of approximately 250 properties, expediting the process of obtaining access in order to avoid construction delays, dealing with issues raised by property owners that were dissatisfied with some aspect of the project once work, and a many of others. By adhering to pre-established protocols for field activities and interactions with the property owners, the project team was able to work through many challenges without allowing these issues to adversely affect the schedule of the project or the quality of work.

Extensive planning, good communication, awareness of the needs of the individual property owners, as well as a willingness of members of the project team to adjust to changes in construction plans, schedules, and site conditions contributed to the overall success of the project. Because of all these factors, the construction schedule was condensed from the original estimate of five years to less than three years, and considerable savings were recognized.