

**2009 ABANDONED MINE LAND
RECLAMATION AWARDS**

**WEST SUSCON
ABANDONED MINE RECLAMATION**

**OSM 40(3734)101.1
Jenkins Township
Luzerne County, Pennsylvania**

Submitted By

**Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Abandoned Mine Reclamation
Wilkes-Barre District Office**

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Project Information

Project Start Date: March 9, 2006
Project Completion Date: January 19, 2007
Total Construction Cost: \$1,331,708.51
Project Reclaimed by: Pennsylvania Department of Environmental Protection
**Construction Contractor: Russell Postupack Culm Corporation, Inc.
109 Silverbrook Road
McAdoo, PA 18237-3106**
**Property Owner/Developer: Mericle Commercial Real Estate Services
600 Baltimore Drive
Wilkes-Barre, PA 18702**

Nomination Team:

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**Date Submitted
March 26, 2009**

INTRODUCTION

When the Surface Mining Control and Reclamation Act of 1977 (SMCRA) was enacted, its purpose was to provide a relatively simple and straightforward solution to address a rather complex and extensive problem, that being, to establish a nationwide program to protect society and the environment from the adverse effects of coal mining. While there have been great strides made in reclaiming abandoned mine sites, much remains to be done and the challenges are greater than ever.

Even before SMCRA, the Commonwealth of Pennsylvania was well aware of the problems it faced concerning vast tracts of landscape decimated by under-regulated mining of coal, a valuable natural and economic resource. An inventory of abandoned mine land (AML) features includes approximately \$1.1 billion of Priority 1 and 2 AML problems that Pennsylvania needs to address.

So, how does a governmental agency go about tackling such a huge problem? Much in the same way a person would go about eating an elephant - one bite at a time, and with a little help from our friends.

PROJECT LOCATION AND MINING HISTORY

Problem Area (PA) 3734 is located in Jenkins Township, Luzerne County, Pennsylvania, just east of Exit 175 off Interstate 81 in what is known as the Northern Field of the Anthracite Coal Region. (See Figure 1)

The Northern Field, comprising the Lackawanna and Wyoming valleys, is a canoe-shaped structure extending from Forest City, Susquehanna County south through Lackawanna County to Mocanaqua, Luzerne County, a distance of about 50 miles. The coal seams tend to follow the surface topography of the valley, extending from one side of the valley to the other, a distance of about 8 miles at its widest point.

While deep mining occurred throughout the seams, strip mining was confined primarily to the valley side-slopes where the coal deposits were closest to the surface. The underground mining was conducted using the room and pillar method. Access from the surface was by vertical shafts, slopes and tunnels. Where deep mining was done close to the surface along the outcrop of the seam, oftentimes subsidence events in these areas propagated to the surface in a phenomenon known as a cropfall.

The West Suscon project was a poster-child mine scarred area with a veritable stew of AML features such as dangerous highwalls (DH) associated with the strip mining, shafts, slopes, cropfalls and other similar openings from the surface to the abandoned underground mine workings classified as vertical openings (VO), mine spoil areas (SA), water bodies in some of the pits associated with the highwalls and for good measure, abandoned mine drainage (AMD) emanating from several of the features.

These various features were created as a result of both deep and surface mining that occurred in the Red Ash, Top Red Ash, Bottom Split Red Ash and Bottom Red Ash coal seams. The upper-most seam, the Red Ash, was about 35 to 45 feet below the surface. Strip mining at the site was discontinued some time prior to 1968 by Kaminski Brothers. For the most part, the site lay fallow until reclamation and subsequent development began.

DESCRIPTION OF AML PROBLEMS

The following table lists the AML Features (AMLF) addressed by this project:

Keyword	AMLF No.	Priority	Dimensions
DH	1	2	1600' x 150' x 30'-45' high
DH	2	2	750' x 120' x 20'-35' high
DH	3	2	400' x 300' x 45' high
DH	4	2	1400' x 250' x 30'-40' high
DH	5	2	1100' x 170' x 30'-45' high
DH	6	2	560' x 470' x 22' to water
DH	7	2	500' x 200' x 22' high
DH	8	2	400' x 400' x 30'-40' high
SA	12	3	10'-35' in height
VO	15	2	3.5' high x 3.1' wide x indeterminate depth*
VO	16	2	3' high x 5' wide x indeterminate depth*
VO	17	2	4' high x 8' wide x indeterminate depth*
VO	18	2	4' high x 4' wide x indeterminate depth *
VO	19	2	4.5' high x 14' wide x 40' deep
DH	20	2	900' x 300' x 30' high
VO	21	2	3' high x 6' wide x 8' deep to level void
VO	22	2	6' high x 15' wide x indeterminate depth*
VO	23	2	6' high x 10' wide x 15' deep
VO	24	2	8' square x 25' deep vertical shaft
VO	25	2	9' square x 10' deep vertical shaft

*Due to the collapse hazard inherent with the various openings, it is often not possible to physically measure or even estimate the depths involved with the opening and therefore the depth is listed as indeterminate.

AML Features 9, 10, 11 and 13 were located in the south corner of the PA and subsequently not included in the reclamation project as the property owner was already in the process of reclaiming those features as part of their site development work.

PROJECT DEVELOPMENT - RECLAMATION CONSIDERATIONS

The project area is located east of the Northeast Extension of the Pennsylvania Turnpike (Interstate 476), about one mile from the Old Boston residential area of Jenkins Township. Figure 2 is an aerial photograph taken prior to the reclamation on which the approximate grading limits of the New Boston Road 2 North, Old Boston and West Suscon reclamation projects have been superimposed. Both the Pennsylvania Turnpike and Interstate 81 can be seen along the west side of the photograph, along with a portion of the Old Boston residential area.

A bat survey was conducted on seven of the openings as part of the project development. The survey found that there were no bats present at two of the openings (AMLF 15 and 16), two bats were caught and identified at one opening (AMLF 18), sixteen bats were caught and identified at one opening (AMLF 22) and a single eastern small footed bat was caught at three of the openings (AMLF 17, 19 and 21). Since bats were found to be using the mine openings, sealing them would have to be addressed in a particular manner which is addressed later in this discussion. There were no other threatened or endangered animal or plant species identified, nor were there any historic or cultural resources identified in the project area.

The project site is located within the Mill Creek watershed which is part of the Susquehanna River Basin. There were eleven water bodies at the site. Six of them had poor water quality because of low pH. One had high iron content. Three had good water quality but no wetland vegetation, so there was no requirement to mitigate. Lastly, one area was dry at the time of the investigation. AMD was flowing from AMLF 17 and 22.

Under normal circumstances, the reclamation of the West Suscon abandoned mine land site would accomplish exactly what was intended by SMCRA, which is to eliminate the health and safety hazards associated with past coal mining in close proximity to residential areas. However, add an ambitious property owner, who also happens to be a developer, as a partner, and the project goes from ordinary to extraordinary.

The challenges at the site were many, including: the elimination of the significant health and safety problems associated with the highwalls by using material from the surrounding spoil piles; control both underground and surface drainage; preventing access to the abandoned underground mine openings through the various openings at the site while at the same time protecting the bat population and grading the entire area in such a way as to achieve a landscape that conforms to the surrounding area but that could also serve as a starting point for the planned future development.

During development and preliminary design stage discussions with the property owner, Mericle Commercial Real Estate Services (Mericle), Mericle indicated that they intended to commercially develop the site once reclamation was completed. In order for the site to support commercial development, any fill placed in the area would have to be engineered fill. In other words, the fill would have to be placed in lifts and compacted in order to achieve a pre-determined density. Since SMCRA funds are intended only to eliminate the hazard, a methodology had to be considered that would not only reclaim the hazard, but also leave the area in such a way as to allow the commercial development. The solution was a cooperative effort between the AML contractor who would perform the reclamation activities and the property owner who would perform the compaction work. This same type of partnership with Mericle had been successfully executed on a smaller scale under Contract OSM 40(3748)101.1, East Askam, Hanover Township and under Contract OSM 40(2239, 3035)101.1, New Boston Road 2 North, Old Boston, Jenkins Township, both also in Luzerne County.

PROJECT DESIGN - HEALTH AND SAFETY ISSUES

The design of the project had to address the excavation and grading to eliminate the dangerous highwalls and associated pits, seal the various mine openings, and contend with the abandoned mine drainage.

The recommendation of the bat study was that the openings could be sealed, but only after using bat exclusion techniques. To that end, the contract specifications required the contractor to construct temporary bat enclosures with observation over a three day period to ensure that all of the bats had exited the openings. On the first day of the process, the contractor was to observe the selected opening using night vision goggle technology from dusk until midnight, or until such time that it was determined all bat activity had ceased. At that point, the contractor was to close off the opening by installing the framework and mesh netting needed to prevent bats from re-entering the opening. On the second day, the contractor was to remove the temporary closure, and follow the same observance procedure as the first day. If bats were found to be exiting the opening, the exclusion procedure had to be followed for a third day. If no bats were found to be exiting the opening, the contractor was to securely fasten the temporary enclosure over the opening until such time as the opening would be backfilled.

The remaining openings at the site were sealed in a more traditional manner. AMLF 19 (Figure 3) and AMLF 24 (Figure 4) are representative of the openings that had to be addressed. These openings were to be sealed using a combination of Class C concrete (2000 psi compressive strength at 28 days), rock backfill material (4 to 12 inch rock with a uniform gradation) and common backfill material (soil). AMLF 22 was a slope-type opening with abandoned mine water flowing from it. Plans called for a 24-inch diameter corrugated polyethylene pipe to be placed in the opening with common backfill around it to allow the water to continue to exit the opening while at the same time excluding unauthorized entry. AMLF 17 (Figure 5) presented its own challenges. This opening was located approximately half way up the side of a 40-foot deep strip pit. Abandoned mine drainage flowed from the opening, down the side slope of the pit and disappeared into the bottom of the pit. The floor of the pit coincided with the depth of the second mined underground coal seam, so apparently the water was entering the underground mine workings and thence the mine pool. It was not possible to fill or otherwise excavate this pit in such a way as to keep this flow above ground and out of the mine pool. A scheme was devised to fill the bottom of the pit with seven feet of R-5 rock (largest size being 18 inches), and then continue the R-5 rock up the side of the pit with a depth of about 5 feet and a width of 20 feet to the floor of the opening. The pit could then be backfilled with common material, removing the hazard of the pit while providing a flow path for the abandoned mine drainage to the mine pool.

The impoundments in the pits needed to be completely dewatered prior to grading operations. The water had to be tested and treated before it could be discharged into existing drainage ways off site. The contract specifications allowed several options for dewatering the impoundments. The contractor could elect to drain the water by pumping, grading a channel, or placing temporary pipe conduits in the natural direction of flow. The dewatering operation would also have to be performed at a controlled rate which would prevent: (1) downstream flooding; (2) erosion of the existing stream channels; (3) transportation of sediment outside the project area; and (4) damage to the aquatic life and its habitat. The water filled pits had to be dewatered before any material could be placed in each.

The grading specifications were written so as to alert the contractor that he could be directed to move from one grading area to another as work progressed in order to allow others to perform the compaction operation. It was anticipated and eventually did come to pass that the contractor worked in a number of grading areas concurrently. Additionally, the contractor was required to deposit a sufficient amount of material throughout the grading area so that the material could then be spread and compacted by others. Finally, the contractor was counseled to the fact that he would be required to work closely with the Department and the work being performed by others, so as to perform the work in a timely and harmonious fashion. It sounded good on paper and for the most part worked well in actual execution.

The principal items of work to be accomplished and the approximate quantities were:

Work Item	Quantity
Grading	901,000 CY
Drainage Excavation	8,890 CY
Rock Lining	7,120 SY
Dewater Impoundments	11
Seeding	127.9 acres

The Engineer's Estimate for the work was \$2,050,312.00.

Construction access agreements were obtained from the property owner, all permits and environmental approvals were obtained, an "Authorization to Proceed" was issued by the Office

of Surface Mining, the Contract Specifications and Drawings were submitted, and a bid date of December 5, 2005 was set.

PROJECT CONSTRUCTION - RECLAMATION ISSUES

When the bids were opened, Russell Postupack Culm Corporation, Inc., (Postupack) was determined to be the lowest responsible bidder with a bid price of \$1,663,978.55. Somewhat fortuitously, Postupack had been the contractor for the adjacent Old Boston Project and so was familiar with the concept of performing the reclamation work while working with others performing compaction. The contractor began work on March 9, 2006.

When the grading work commenced as required by the specifications, the contractor brought fill material to the pit areas, either by pushing with a Dozer, or by hauling the material with off-highway trucks loaded by an Excavator. Once deposited, the material was spread in lifts over the fill area with a dozer provided and paid for by the developer. The material was then compacted using a compactor that is similar to a sheepsfoot roller. As final grades were achieved, the developer would often employ a smooth roller to compact and seal the surface lift. The understanding with the developer was that the contractor's work could not be held up in the event the developer's equipment or operators were not available. This scenario never occurred and the developer was able to keep up with the contractor's production schedule. Although grading and compacting work seemed to run smoothly, the goals and schedules of a private developer are not the same as in mine reclamation, and therein lay the major challenge of this project. The developer was literally designing the building pad areas and infrastructure concurrently with the reclamation work. Consequently, the developer requested numerous changes in the proposed work, some minor, others quite large.

The saving grace throughout the process was the cooperation of the contractor, who was able to forge a business relationship with the developer, thus allowing him to perform the needed reclamation, while at the same time meeting the needs of the developer. Each requested change by the developer was vetted by the Department to ensure that it would not compromise the requirements of the mine reclamation funding or violate the contract specifications. In cases where it was in conflict, the Department had no choice but to refuse the developer's request. This balancing act continued for the duration of the project. At times, due to its building needs, the developer actually ended up performing some of the reclamation work, resulting in a reduction of cost to the Department. The developer eventually ended up reclaiming AMLF 15, 16, 17, 18, 19, 21, 22, 23, 24 and 25. This is not to say that the contractor was not performing the work in a timely fashion. The official contract completion date was to have been May 5, 2007. The contractor was able to complete the reclamation work by December 29, 2006. In the

end, the contractor reclaimed 110.5 acres by excavating and grading 796,982 cubic yards of material for a final cost of \$1,331,708.51.

POST CONSTRUCTION - PROJECT BENEFITS

Today, it is unlikely a person unfamiliar with this area would think that the site had formerly been a mined-scarred landscape (See Figure 7). Figure 7 is a present-day aerial photograph on which the grading limits of the New Boston Road 2 North, Old Boston and West Suscon projects are shown.

The area is now the site of the CenterPoint Commerce and Trade Park which has attracted such tenants as Lowe's, FedEx Ground, Men's Wearhouse, Entenmann's, DHL, Northstar Communications, New Horizons Computer Learning Center, Factory Direct, Safelite, Ferguson Enterprises, Emery Waterhouse, Communications Testing and Design, Inc., Cintas Corp, a uniform clothing company, Quiet Flex, a manufacturer of flexible duct work for heating and air conditioning, Kinetic Concepts, Inc., a global media and technology company, Kimberly Clark, a producer of paper products and cleaning solutions, and the most recent addition, JP Bowden, an upscale mail order apparel retailer headquartered in the United Kingdom. Figure 8 was provided by Mericle, and it indicates the extent of current and future development along with projected jobs in the CenterPoint East Phase I area, which encompasses the West Suscon reclamation project and the CenterPoint East Phase III area, which encompasses the Old Boston reclamation project. Figure 9 is a photo of the FedEx Ground facility in the CenterPoint Commerce and Trade Park. Currently, these firms employ 1700 people on these reclaimed sites. The CenterPoint Commerce and Trade Park is ideally located just off Interstate 81 and the Pennsylvania Turnpike, which further allow access to nearby Interstates 80 and 84.

The partnership between the Department and Mericle did not end here. The Department's current \$1.1 million Pittston Plaza Mall reclamation project, Contract OSM 40(1333)101.1, in nearby Pittston Township, will employ the same shared backfilling/compaction effort that was used at West Suscon. This 75-acre reclamation project will become Mericle's planned CenterPoint West development, which anticipates the construction of five buildings totaling 1,752,000 square feet.

SUMMARY

The benefits derived from the West Suscon abandoned mine land reclamation project can be summarized as:

- Elimination of public health and safety concerns to a nearby residential area and heavily traveled transportation corridor.
- Increased public awareness of SMCRA through press events.
- Provide for future development while at the same time being sensitive to wildlife resources.
- Leveraging of funds through partnerships.
- Effective use of funds by having some of the AML features reclaimed by the property owner.
- Long term benefits to the community in the form of sustainable jobs with a variety of companies.

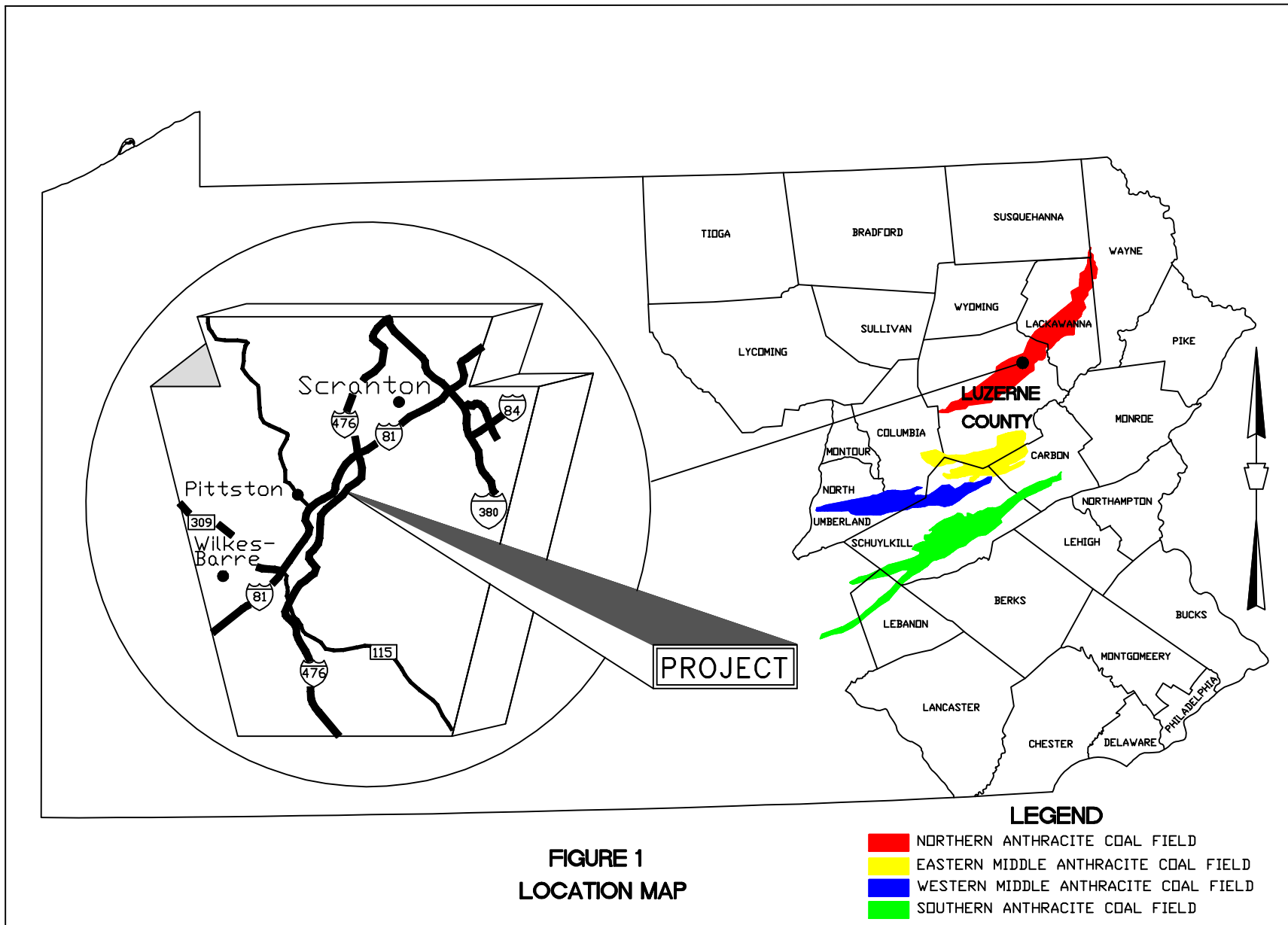


FIGURE 1
LOCATION MAP

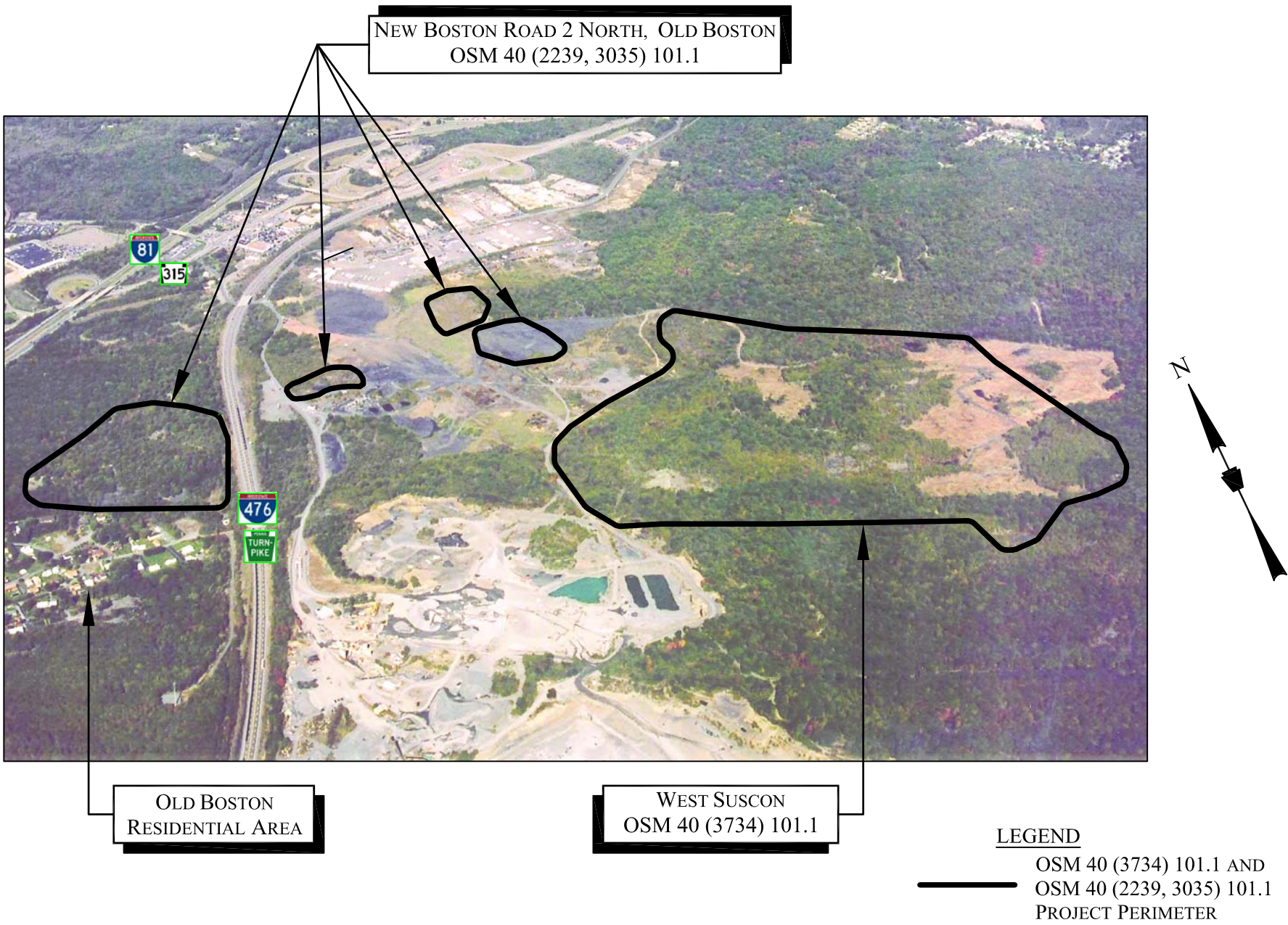


FIGURE 2
(AERIAL PHOTO OF SITE PRIOR TO RECLAMATION AND COMMERCIAL DEVELOPMENT)



FIGURE 3
(AMLF NO. 19)



FIGURE 4
(AMLF NO. 24)



Water coming from mine opening, AMLF No.17
and flowing down the side slope of the strip pit.

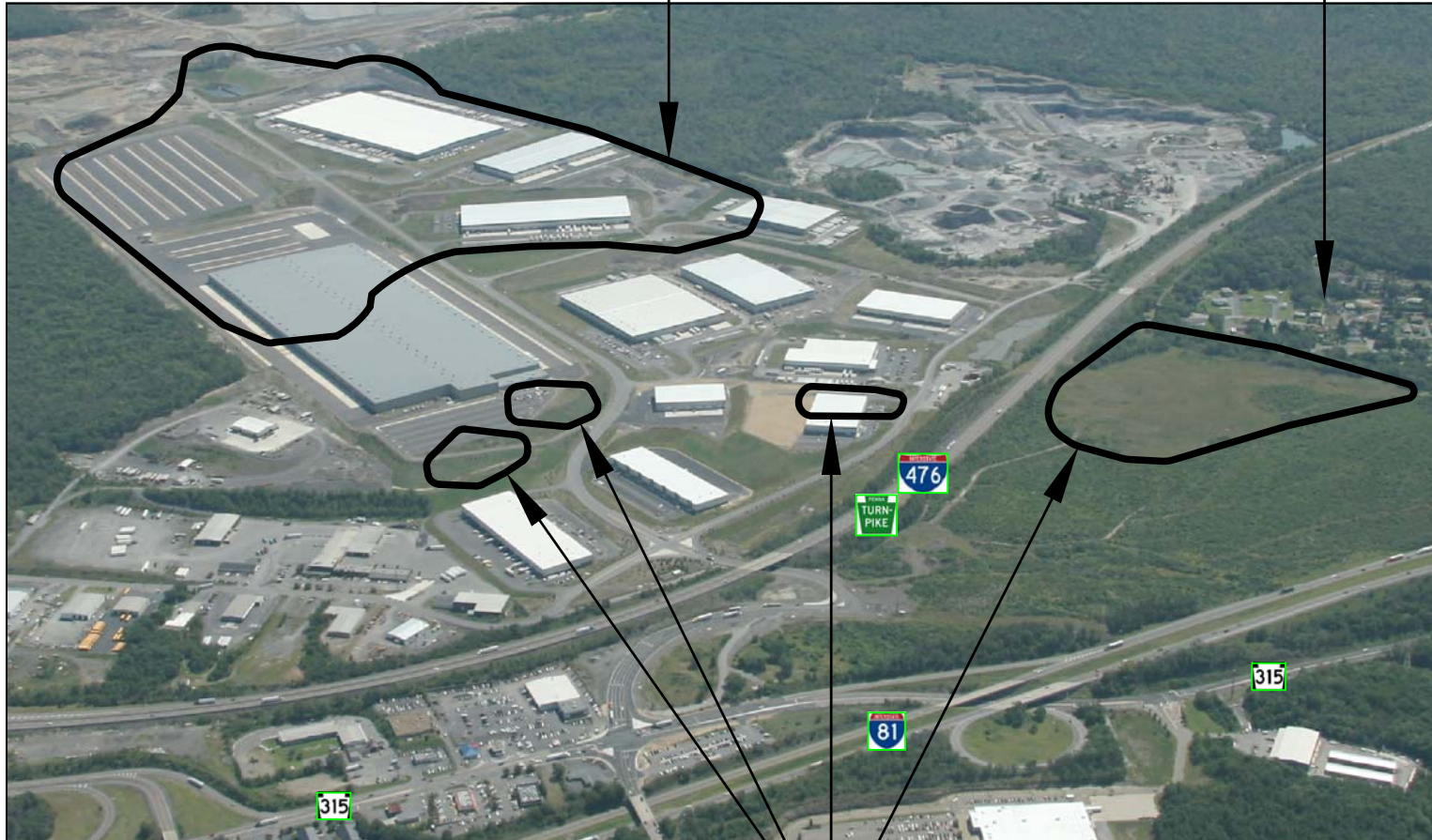


Close up view of mine opening AMLF No.17,
the source of the water shown in the top photo.

FIGURE 5

WEST SUSCON - OSM 40 (3734) 101.1
COMPLETION DATE: JANUARY 19TH, 2007

OLD BOSTON
RESIDENTIAL AREA



NEW BOSTON ROAD 2 NORTH, OLD BOSTON
OSM 40 (2239, 3035) 101.1
COMPLETION DATE: NOVEMBER 16TH, 2005

LEGEND

— OSM 40 (3734) 101.1 AND
OSM 40 (2239, 3035) 101.1
PROJECT PERIMETER

FIGURE 7
(AERIAL PHOTO OF SITE AFTER RECLAMATION WITH COMMERCIAL DEVELOPMENT)

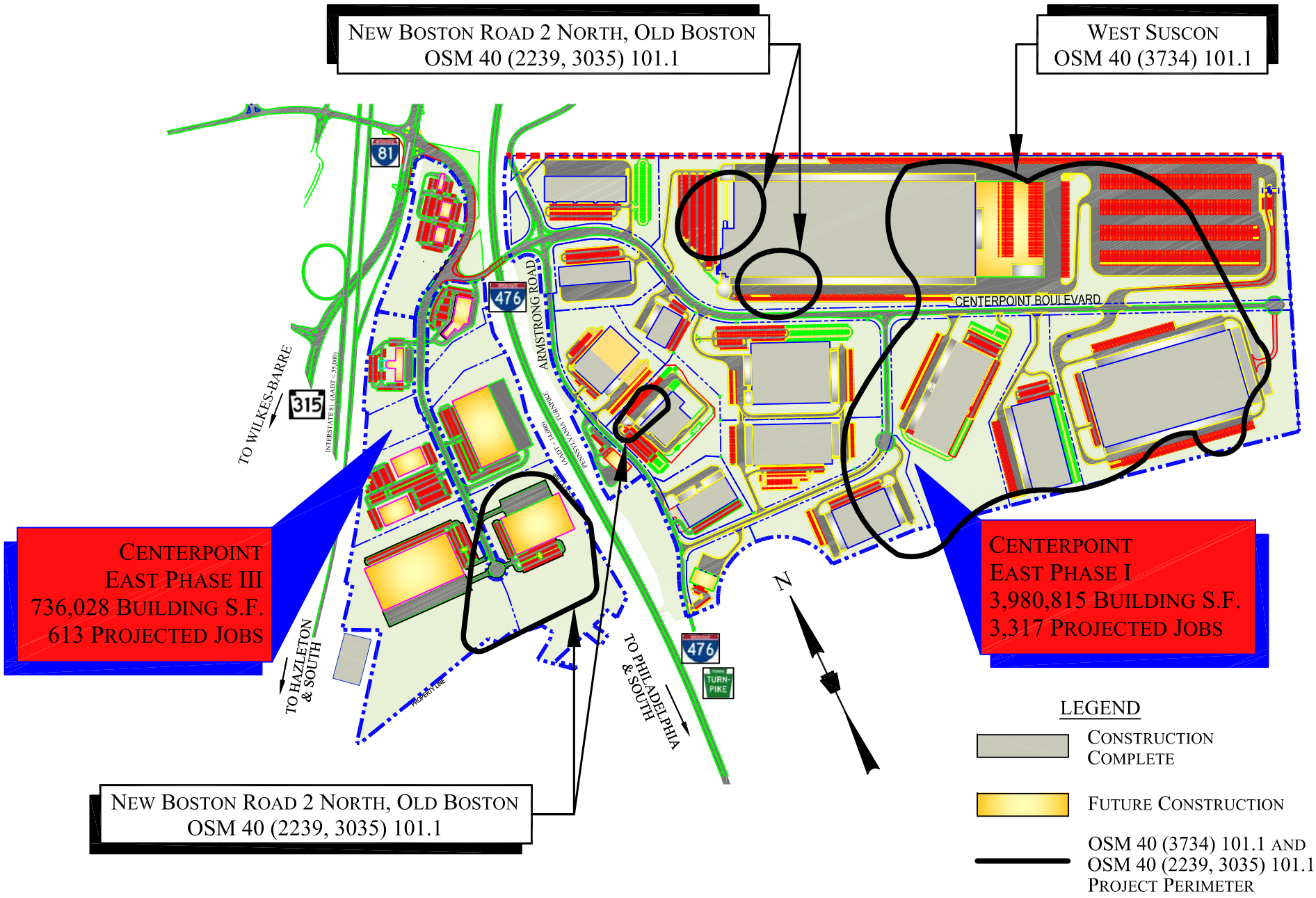


FIGURE 8
(CENTERPOINT EAST PHASE I AND III - CURRENT AND PROPOSED COMMERCIAL DEVELOPMENT PLAN)



FIGURE 9

The FedEx Distribution Center in Centerpoint Commerce and Trade Park