

# THE BUZZ

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## ***Environmental Systems Operations, Maintenance & Monitoring***

By Paul H. Werthman, P.E

**I**f mechanical process equipment is not properly operated and maintained it may not perform effectively, efficiently, or reliably, and it may wear out prematurely. The same is true for environmental facilities and equipment. If groundwater/wastewater treatment, air emission controls, or remediation systems are not properly operated and maintained they: may not consistently achieve discharge quality requirements; may experience frequent shutdowns; may use excessive amounts of power, fuel and/or chemicals. Such ***operational and maintenance problems with environmental systems and equipment can result in: increased utility and labor costs; fines and legal expenses; production cutbacks; and extended remediation or treatment schedules.***

Many environmental treatment or remediation systems are custom designed for site-specific applications and can be very sophisticated. Multiple technologies, equipment and controls are often designed to work together to reduce a variable mix of contaminants to concentrations in the sub-part-per-million range. Consistently producing treatment efficiencies in excess of 99 percent, as often is required, is no small trick. Typically harsh Upstate NY winters can also present additional operations and maintenance challenges.



*Frequent field checks on TurnKey's mobile soil vapor extraction system maintains optimal performance.*

Monitoring of environmental treatment and remediation systems and environmentally-impaired sites is commonplace. Sampling of environmental media (i.e. groundwater, surface water, soil/fill, sediment, air and/or biota) and laboratory analyses for a wide array of physical and chemical parameters is typically performed to: determine the nature and extent of environmental contaminants; gauge remediation progress relative to site-specific cleanup objectives; verify compliance with air emissions,

# OM&M

(continued from page 1)

water discharge, or other regulatory standards, guidance, consent order, or permit conditions. Environmental monitoring can extend over many years and cost thousands of dollars in analytical costs each year. **Best environmental monitoring practice seeks the right balance between sufficient data and cost** by tailoring sampling frequency, field and analytical parameters, sampling and testing methods, data quality, and reporting to each project- or site-specific application and objectives.

One of the fundamental precepts upon which Benchmark and TurnKey were founded was the need of many clients for a comprehensive array of environmental services from planning and design through construction, start-up, operation and monitoring.....soup to nuts.....start to finish ....or whatever is needed to assist their in-house resources get the job done. Our multi-talented staff and experience have proven that **good design and good operations, maintenance and monitoring (OM&M) go hand in glove. Great engineering design cannot overcome poor OM&M, but great OM&M can sometimes overcome design deficiencies.** Engineers, scientists and technicians who:



*Groundwater monitoring at an industrial facility.*

negotiate terms of permits, consent orders or work plans with the regulatory authorities; conceive, specify, install, and start-up environmental facilities; are uniquely qualified to assist or fully operate, maintain and monitor system performance of in an efficient and effective manner.

## **Case Study– Former Coke Plant By –Products Groundwater Remediation System O M & M:**

Refining and storage of light oils as a by-product of metallurgical coke manufacturing at this inactive integrated steel mill in Upstate NY resulted in light non-aqueous phase liquid (LNAPL) in shallow soil/fill and floating on the water table as well as a dissolved-phase groundwater plume flowing off-site into a surface water body.

Shortly after acquiring the property, our client, recognizing the urgency of the situation, engaged Benchmark and TurnKey to assist them negotiate Order on Consent with the New York State Department of Environmental Conservation and to design, build, operate, maintain and monitor a fast-tracked remediation. The remediation system consists of: 10 groundwater collection wells with automated LNAPL collection systems installed in 3 of the wells; a 30-gpm shallow-tray air stripper to remove dissolved volatile organic constituents (VOCs) from the groundwater; a 900 scfm catalytic oxidizer to control VOC air emissions; and 2 infiltration galleries to return treated groundwater and flush residual contaminants from the soil/fill.

The treatment system operates on an automated batch basis to reduce energy costs and is housed in a retrofitted 15'x 20' building. The system was constructed and started-up on schedule within 5 months after the Order was executed. The system has removed nearly 3 tons of pure chemicals from the site in the first 8 months of operation and consistently achieves greater than 99.9% treatment efficiency.



*Groundwater treatment building on left with blue catalytic oxidizer on right.*

# Brownfields Cleanup Program Stimulating Redevelopment

By Thomas H. Forbes, P.E.

**T**he New York State Brownfield Cleanup Program (BCP) is gaining momentum in upstate New York. Designed to promote the reuse and redevelopment of properties complicated by the presence of hazardous waste, petroleum or other contaminants, *a growing number of developers and industrial/commercial businesses that formerly avoided brownfields are now seeking them out as economic opportunities.*

The BCP promotes brownfield cleanup and redevelopment through two primary mechanisms: liability limitations and tax credits, the latter of which include:

- Brownfield Redevelopment Tax Credit (BRTC) - Applicable to site improvement costs for investigation and remediation, as well as tangible property costs (e.g. buildings and infrastructure), the BRTC amounts to 12-14% of the eligible costs for businesses, with the upper end of this range applied to sites cleaned to “unrestricted use” (i.e., Track 1) standards. For sites located in Environmental Zones (En-Zones), which are designated by New York State based on poverty and unemployment rates, the credits are increased by an additional 8%.

- Tax Credit for Remediated Brownfields (TCRB) equals 25% of real property taxes, multiplied by an employment factor that ranges from 0.25 (for 25-49 full-time employees) to 1.0 (for 100 or more full-time employees). For sites in En-Zones, the percentage component of the equation increases from 25% to 100%. The TCRB is transferable.
- Environmental Remediation Insurance Credit (ERIC). is equal to the lesser of \$30,000 or 50% of the premiums paid for environmental remediation insurance.

The credits are applied to the taxpayer’s NY State income/franchise taxes. Any amount of unused credit is considered a tax overpayment and is refunded by the state.

Credits for site investigation and remediation, although not insignificant, may be offset by BCP program costs, including legal, engineering and administrative expenses, DEC oversight costs, and higher testing and reporting standards required under the program. The “big ticket” financial benefit to brownfield developers is the tangible property component of the BRTC, as illustrated below.

## **BCP Tax Credit Illustration– Office Construction Project**

A \$2 million office building is to be constructed on a 2-acre site in a downtown area, of which a 1-acre parcel is considered environmentally impaired and eligible for the BCP. An alternative 2-acre site having no environmental conditions is also available. Both sites are located within an En-Zone. The brownfield site can be purchased for \$40,000. The “clean” site can be purchased for \$80,000. Investigation and cleanup of the impaired property to a level satisfactory for commercial (restricted) use under the BCP, is estimated to cost \$80,000 - \$100,000.

Without the BCP, the brownfield site represents a higher combined land purchase and preparation cost (\$120 – \$140K). With the BCP, the brownfield site will be eligible for a 20% tax credit for commercial cleanup to restricted use standards, yielding a net combined purchase and preparation cost of \$96 – \$112K after the credits are applied. Add to the brownfield site an additional \$40K of BCP application, administrative and DEC oversight costs, and the “clean” site still represents a \$56 - \$72K advantage. However, if 80% of the office construction cost is associated with the 1-acre BCP eligible parcel, the tangible property credit yields (\$2 million x 80% x 20%), \$320,000 in additional tax credit. In addition, if the building will house more than 100 full-time employees, the owner will be subject to a 100% real property tax credit per the TCRB.

Bottom line: The brownfield site wins by \$248 – \$264K, not including the real property tax credit.

# Brownfields *(continued from page 3)*

The above illustration of how:

- ***BCP tax credits can be substantial, especially for sites with large capital improvements***, thereby making brownfields development financially attractive.
- ***BCP program and administrative costs are not inconsequential***, and thus generally not supportive of “speculative” cleanup.
- ***En-Zones, typically in urban areas are especially attractive for brownfield development with nearly double the BCP tax credits.***
- ***Participation in the BCP should be carefully considered in the context of each site’s physical and environmental condition relative to the planned redevelopment to assure economic viability.***

In the above example, if the majority of the office

construction cost were associated with the unimpaired 1-acre parcel, the economics would not have been nearly as favorable.

Other factors to consider before applying for the BCP include: schedule and citizen participation requirements. The BCP requires DEC and public review periods that typically extend the time to construction by several months. In addition, citizen participation may impact the cleanup requirements and associated costs.

Benchmark and TurnKey have assisted developers, property owners and other business interests evaluate BCP benefits, prepare applications, and perform site investigations, evaluate, implement remedial measures, and plan and engineer redevelopment at over 450 acres of brownfield property. Redevelopment projects on these sites include offices, restaurants, banquet facilities, hotel complexes and business parks. For additional information, contact Tom Forbes ([forbes@benchmarkees.com](mailto:forbes@benchmarkees.com)) or Paul Werthman ([pwerthman@benchmarkees.com](mailto:pwerthman@benchmarkees.com)).



## **BENCHMARK “HEADS” SOCCER COMPLEX & SPORTSPARK IN THE RIGHT DIRECTION**

**W**hen the EMW (Elma, Marilla, Wales) Soccer organization began planning for the development of a new 15-acre outdoor soccer complex in the Town of Elma, Benchmark was engaged to address regulatory issues associated with a 1-acre wetland on the property and prepare a Storm Water Pollution Prevention Plan (SWPPP). Benchmark’s role evolved into preparation of designs for the new fields and associated surface water drainage. Benchmark worked closely with local soil and sports turf consultants utilizing slope and drainage guidelines developed by Cornell and Purdue Universities for northeast climates in the crowned design and dedicated storm drainage collectors on each side of the field. A creative field layout was developed to limit wetland impacts to less than one tenth of an acre, resulting in a balanced cut-and-fill which significantly reduced construction costs. Benchmark provided construction support and inspection services during the summer of 2005 when the complex was constructed.



*Prior to seeding of the new fields, the irrigation piping is laid out for installation.*

**S**ahlen’s Sport Park Indoor Recreation Complex is located adjacent to the EMW outdoor fields and has quickly become one of the premier recreation facilities in Western New York. ***Their most recent expansion involved the design and construction of the largest indoor soccer field in the Northeast.*** The indoor fields are also used for lacrosse, softball and football. As part of the design team, Benchmark reconfigured the site drainage and storm water retention facilities to comply with New York State storm water pollution prevention standards. A 2,000 gallon per day wastewater pump station and sand filtration system and all associated SPDES permitting was engineered by Benchmark and installed as part of the expansion.



# MEGA ASBESTOS ABATEMENT NEARS COMPLETION

By Patrick T. Martin, P.E.

**F**ederal and State regulations were promulgated in the 1980s and early 1990s to contain and abate asbestos in public buildings and workplaces. In the rush to protect the general public from environmental exposure to asbestos, lawmakers probably did not adequately consider or fully understand the chilling effect and economic impact of these regulations on reuse, demolition, and redevelopment of structures with asbestos-containing material (ACM).

**TurnKey is currently managing one of the largest and complex asbestos abatement projects in New York State** at the former Bethlehem Steel Coke Plant site in Lackawanna. This nearly 100-year old facility was once one of the largest coke plants in the United States. The quantity and types of ACM at the facility are extensive and diverse due to the building and insulating practices at the time of facility construction and the complex outdoor piping and vessel storage system.

Initially, TurnKey and our project partner, Watts Engineers, conducted a site-wide pre-abatement asbestos survey that encompassed collection and analysis of over 1,000 samples for the presence of asbestos. The survey determined that there was approximately 73,000 linear feet of asbestos pipe insulation (14 miles), over 269,000 square feet of asbestos-containing siding and roofing materials, and dozens of large tanks and vessels covered with an asbestos-containing coating. The ACM on outdoor piping was seriously deteriorated from years of

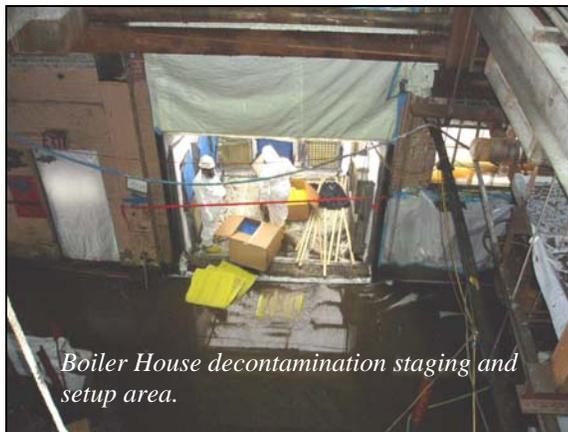
inactivity.

Many other ACMs identified at the facility included gaskets, mortar, mastics, window glazing, and electrical insulation. The survey results were tabulated and locations were mapped on site drawings.

To establish uniform abatement methodologies more appropriate to the



*Outdoor pipe abatement using wrap and cut techniques*



*Boiler House decontamination staging and setup area.*

site - and project-specific circumstances, **TurnKey petitioned and secured eleven regulatory variances from the New York Department of Labor (DOL)** prior to soliciting and awarding the abatement contract. These variances provided a more competitive bidding environment with fewer contingencies. **These variances were particularly critical for cost-effective performance of outdoor tank and piping abatement**, which

would have been prohibitively expensive and difficult to perform under the standard abatement techniques required in the New York State asbestos code rule.

AAA Environmental of Syracuse, NY was awarded the abatement contract in Spring 2005 and has been working continuously since that time. TurnKey, with support from Watts Engineers, has provided full-time contract administration, oversight of the contractor and coordination with the regulatory agencies.

Continuous air monitoring for asbestos fibers is conducted by TurnKey certified inspectors at all abatement locations each working day. Over 1,200 air samples have been collected and analyzed to date without a single exceedance in the air quality standard for asbestos fibers.

The project has received a high level of compliance scrutiny from the DOL. TurnKey has worked closely with the contractor with strict adherence to approved abatement methods and work practices. Over 72,000 manhours of abatement work has been performed without a significant regulatory citation or lost-time accident.

The project is scheduled to be finished by early summer of 2006.

