EPA Region 8 Brownfields Program

EPA Brownfields Program and Triad Approach Lead to Poudre River Cleanup and Development of a LEED Gold Certified Community Center in Fort Collins, Colorado

Through use of its EPA Brownfields Assessment grant, the City of Fort Collins, Colorado found unexpectedly high contamination levels on properties that were key to the city's downtown river corridor redevelopment strategy. Further environmental investigations enabled through EPA's Targeted Brownfields Assessment Program, utilizing the Agency's Triad approach, revealed that contamination was migrating into the adjacent Cache La Poudre River. With assistance from these and other resources, including EPA's Emergency Response Program, the area was efficiently characterized and cleaned up and is now home to a LEED Gold certified community center.

Brownfields Assessment Reveals Unexpected Contamination

As part of its Downtown River Corridor Implementation Program, which focuses on environmental restoration and economic revitalization of a 352-acre area along the Cache La Poudre River, the City of Fort Collins, Colorado used a $250,000 EPA Brownfields Assessment Pilot Grant awarded in 2000 to identify properties with significant environmental concerns. Of the approximately 120 separate parcels and 65 landowners within the study site, the city owns nearly a third of the land area (107 acres). One of the city's key goals as part of the Corridor Program was to relocate and expand the Northside Aztlan Community Center, which had been sited on a portion of a former municipal landfill and was continuing to settle, damaging the structure's foundation and rendering the center unusable.

The new Leed® Gold certified Northside Aztlan Community Center opened its doors in November 2007.

Key Accomplishments

- Decreased characterization costs and time by using the Triad approach
- Coordinated with the PRP and completed an $8.8 million Removal Action
- Enabled expansion of the Northside Aztlan Community Center, to LEED Gold certification standards
- Improved water quality and habitat within and adjacent to the Poudre River

In 2001, an environmental site assessment funded through the EPA grant indicated that environmental conditions at the 12-acre former landfill and an adjacent site once home to a gas plant and a gasoline supply station would need to be addressed due to fuel-related groundwater contamination and the presence of coal tar. Coal tar is a viscous, oily, odorous liquid that is a by-product from the former gas plant's conversion of coal into fuel for home heating and city lights. The gas plant operated from 1904 to 1927, and a gasoline distribution company used a portion of the property in later years.

Triad Approach Leads to Efficient Characterization and Planning

EPA Region 8's Brownfields Program provided contractual support through a Targeted Brownfields Assessment (TBA) to conduct further environmental characterizations of the site. It also engaged EPA's Brownfields and Land Revitalization Technology Support Center (BTSC) to help develop field work plans using the Agency's Triad approach. Designed to produce decision quality data as efficiently and cost-effectively as possible, the Triad approach augments traditional methods of site characterization by using real time measurement technologies and dynamic, strategies that can be quickly modified based on site conditions.

BTSC coordinated with stakeholders to continually refine a conceptual site model (CSM), select appropriate investigative technologies, and sequence data collection efforts to improve project efficiency. The entire site characterization took approximately one-year to complete. It is estimated that use of the Triad approach resulted in 30 percent cost savings when compared with traditional characterization methods, while increasing the amount and quality of the resulting data.

Environmental characterizations indicated that an approximately 700-foot stretch along the southwest bank of the river was being adversely impacted by coal tar. Chemicals from other sources, such as gasoline and other petroleum-related by-products from leaking underground storage tanks, were also detected in water and soil samples in the area.

Extensive Cleanup Completed Quickly

The site was referred to EPA's Emergency Response Program in October 2003 and the Triad process continued to facilitate the design and application of measures to capture the coal tar and eliminate its flow to the river. The remedy was implemented by the potentially responsible party (PRP) under a CERCLA consent order less than two years after the start of the TBA. Throughout the cleanup process, the Colorado Department of Public Health and Environment was involved. The city entered into the state's Voluntary Cleanup Program, which provides technical support to facilitate cleanups and provide assurances against regulatory enforcement. This ensured that any remaining issues related to the former landfill site were addressed to the state's satisfaction.

In all, the cleanup of the coal tar cost the PRP $8.8 million. It involved removing and disposing of approximately 30,000 cubic yards of contaminated sediment and bedrock over a 400 to 600-foot area of the Poudre River, to a depth of about 14 feet. A permanent vertical barrier wall was then installed that measures 700 feet in length along the river bank and extends to 30 feet below the original ground surface. The top of this wall has been covered with soil and is not visible. Ground water control wells and sump pumps were constructed to keep contaminants from migrating around the wall. An on-site water treatment system was also put in place to remove coal tar and other dissolved contaminants from the groundwater along the barrier wall, before discharging it into the river. Operation of this system will continue for many years to stop coal tar from migrating to the Poudre River.

Environmental assessments revealed groundwater contamination.

Leveraged Resources

- $250,000 from an EPA Brownfields Assessment Demonstration Pilot

Technical Assistance

- $135,000 in contractual support from an EPA Region 8 Targeted Brownfields Assessment
- Colorado Department of Public Health and Environment (CDPHE) Voluntary Cleanup Program
- EPA Brownfields and Land Revitalization Technology Support Center
- EPA Region 8 Site Assessment Program
- EPA Region 8 Emergency Response Program
- EPA Region 8 Office of Communications and Public Involvement
- EPA Region 8 Legal Enforcement Program
- EPA Region 8 Laboratory

Redevelopment Strategy Comes Full Circle with a LEED Gold Certified Community Center

Over time, the river is being restored to its natural condition as trees and grasses planted in the Spring of 2005 continue to grow. The Fort Collins community was and continues to be involved in the restoration planning for the riverbank.

The city's goal of expanding the Northside Aztlan Center has also been realized, by developing a new community center on the parking lot of the original building (which was demolished). In order to prevent future damage to the foundation, the new building was constructed onto 300 supports placed into the site's bedrock. An active venting system was also designed. On November 30, 2007, the new $8.625 million, 48,000-square-foot multipurpose recreation facility (more than three times its original size) opened its doors to the public. The center is home to a wide variety of classes, sports and events, with amenities such as a triple gymnasium, workout facilities, lounge, game room, computer lab, classrooms and connections to the Poudre River Trail. In November 2008, the site's beloved skate park, which had been closed since the removal action began in 2004, was finally reopened. This redevelopment was funded through a City of Fort Collins sales tax used to finance such projects.

The Cache La Poudre River now has improved water quality.

Triad Approach Components

Systematic Planning:
Identifies key decisions to be made and develops a conceptual site model (CSM) that includes approaches to evaluate decisions and manage uncertainty.

Dynamic Work Strategies:
Incorporates flexibility to change or adapt to information generated by real-time measurement technologies. As information is gathered it is used to make decisions about what activities will best resolve remaining data and decision uncertainties, and/or meet cleanup goals.

Real-Time Measurement Technologies:
Utilizes data generation mechanisms that support real-time decision-making by returning results quickly enough to influence the progress of data collection and field activities.

Beyond its value as a community asset, the new Northside Aztlan Community Center has the distinct honor of being recognized as the first Leadership in Energy and Environmental Design (LEED) Gold certified community center in the United States. It is estimated that the facility's green components will save the City of Fort Collins over $20,000 per year. These green components include: an energy-efficient building shell, HVAC and lighting systems that will contribute to annual energy savings of more than 30 percent, efficient plumbing fixtures that contribute to indoor water savings of 44 percent (720,700 gallons per year), native and adapted plant species and high-efficiency irrigation systems that contribute to outdoor water savings of 52 percent, and heat-reflective roofing to reduce cooling costs.

This project highlights how city revitalization efforts, EPA funding, and use of the Agency's Triad approach can help to clean up and reuse contaminated property. Not only does Fort Collins now have improved water quality and habitat within and along the banks of the Poudre River, but the city has also been able to reach its goal of expanding the Northside Aztlan Community Center, and doing so in a sustainable way.

For additional information, please contact:

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