United States Environmental Protection Agency

Sustainable Housing and Stormwater Infrastructure on a Former Gas Station and Supermarket

Sustainability Pilot Background

EPA's Brownfields Sustainability Pilots provide technical assistance to assist communities in achieving greener, more sustainable results when redeveloping brownfields. These pilots also provide models for other communities across the country.

EPA provided the City of Greenville, South Carolina with technical assistance for the sustainable redevelopment of a one acre property with a former service station and adjacent supermarket. EPA helped analyze the redevelopment plans to incorporate green and sustainable features into a conceptual site plan. More specifically, the technical assistance looked closely at stormwater management strategies for the site that will promote sustainable redevelopment opportunities elsewhere in the community.

Green Avenue Sites Background

The former service station (0.46 acres) and supermarket (0.54 acres) make up the designated land for the redevelopment project. Both businesses began operating in the 1960s and operated until 2002. In November 2002, the City of Greenville conducted a Phase I assessment; subsequent soil and ground water sampling occurred in December 2006 and February 2007. The results of these assessments revealed that the properties were contaminated with benzene, toluene, ethylbenzene, and xylenes, methyl-tert-butyl ether, ethylene dibromide, and naphthalene. In 2002, nine underground storage tanks and one above ground storage tank were removed from the site, and in 2009 the structures on the site were demolished.

The city plans to redevelop the site into workforce housing and supplement the city's stormwater infrastructure by creating a dedicated dry pond to channel and contain excess runoff.

Project Highlights

EPA's technical assistance to the City of Greenville included the development of conceptual design considerations, including stormwater management principles, for the development of the site. Essential components of the design considerations included infrastructure improvements, development goals and zoning requirements, and ground water monitoring requirements. The design considerations for the site include:

- Six detached, single family homes
- Community gardens
- Passive park with a plaza and native landscaping
- Rain gardens
- Bioswale
- Infiltration trenches
- Filter strips
- Pervious paving
- Rain barrels
- Solar panels

As a result of the design considerations, a site redevelopment plan was developed for the property. The plan includes single family homes overlooking greenspace. This design provides sustainable features for the site and an environmentally friendly property for living.

The city expects to implement the redevelopment plan once it identifies a developer to undertake the small scale residential development plan.

Challenges and Lessons Learned

Ensuring the Preservation of Monitoring Wells

The city uses 18 wells in the 0.64 acre property for the monitored natural attenuation of ground water. Since the housing development must not disturb these wells, the consultant developed a site plan that would account for continued access.

Artist's rendering of the future Green Avenue site.

Working with Local Ordinances and Stormwater Authorities

Local ordinances and inexperienced stormwater management authorities can present obstacles when designing for and installing sustainable stormwater management features such as bioswales and rain gardens. Communities undertaking sustainable redevelopment activities should be prepared to deal with regulatory and information hurdles.

Sources for Additional Information

For more information on this project, please see the full Greenville Workforce Housing project technical assistance report at: http://www.epa.gov/brownfields/sustain_plts/reports/GreenAvenueSites_TechMemo_08_09.pdf

Regional Contact Information

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