Land Revitalization Fact Sheet

Improving Demolition Practices

Demolition of abandoned and dilapidated homes is increasing in urban areas across the country as communities struggle with an increase in home foreclosures and abandonment. While necessary for the revitalization of communities, demolition of structures, and in particular, demolition of large portions of a single neighborhood, raises multiple safety and environmental concerns related to land, water, and air pollution and the safety of workers and members of the public. In response, many communities are enacting local ordinances to ensure that demolition practices are safer and more environmentally friendly. Such ordinances may require erosion and sediment controls, deconstruction and reuse of materials generated during demolition, recycling of demolition debris to reduce landfilling, soil stabilization through plant covers, dust suppression, and other measures to reduce the environmental impact of demolition. These measures directly benefit residents of affected neighborhoods.

EPA is taking another step forward to improve demolition practices by investigating the impact of demolition on soil conditions that affect the potential to sustainably reuse properties. In cooperation with state, federal, and local partners, EPA's Region 5 and the Office of Research and Development, National Risk Management Research Laboratory, are conducting a study in Cleveland, Ohio, on the effect of demolition practices on urban soil conditions.

Prior to 1996, Cleveland allowed contractors to demolish a building and bulldoze the debris into the basement of the structure. A thin layer of, often poor-quality, topsoil was then spread over the affected area, compacted, and an attempt made to establish a grassy cover. These sites can be identified by the characteristic depression of the land surface in the area where the structure originally stood. This slumping of the land surface is due to the settling of loose debris and soils within what was once the basement.

In 1996, Cleveland changed its demolition requirements. The basement walls and floors now must be removed, all rubble and debris hauled away, and a grassy cover established. The thoroughness of contractor demolition practices vary in meeting these new requirements, however.

EPA researchers conducted exploratory field assessments in 2010 at sites where homes were demolished. Researchers found significant amounts of demolition debris in surface soils, even in post-1996 demolitions. In areas affected by demolitions, over 70 percent of

Debris left behind after demolition makes site restoration much more difficult.

New Environmental Solutions

EPA's land revitalization initiatives are producing significant environmental benefits and helping to transform communities into more sustainable and livable places. The strategy of encouraging market-driven redevelopment of brownfields and other contaminated sites for economic reuse is proving to be a successful approach at many sites. However, challenging real estate markets and economic realities can leave some formerly contaminated properties unused, possibly for a long time. New approaches are needed to revitalize these sites and protect human health and the environment.

EPA's Land Revitalization Team is working with communities, states, other federal agencies, academic institutions, nonprofit organizations, and the private sector to develop and test new approaches that recognize valuable reuse alternatives for formerly contaminated properties. Building green infrastructure to help manage stormwater runoff and floods, promoting safe soil management to support urban agriculture, and siting renewable energy on contaminated sites can bring environmental, ecological, and social benefits to communities. Unlocking the potential value of these underused properties often requires creativity and close collaboration with many public and private partners. These projects can help stabilize communities and spur economic development.

attempts to force a rod into the ground could not penetrate the soil for more than a few inches. Reuse of these properties sometimes requires removing significant amounts of debris.

In addition, demolition of urban structures involves the operation of heavy equipment in a relatively small area. This activity compacts the soil. Compacted soils are less able to absorb stormwater runoff and contain less oxygen, water, organic materials, and microbiological activity than natural soils. Researchers found that, for the most part, lawn areas that were not compacted or otherwise disturbed by heavy equipment had better drainage characteristics and higher soil fertility due to long-term yard maintenance.

This study shows that typical demolition practices do not leave soils in a condition suitable for sustainable reuse. Soils are left in a condition that requires significant additional work before restoration can begin. Communities may want to consider new requirements for removing and recycling all demolition debris, minimizing soil compaction, restricting the types and quality of fill that can be used, and preparing surface soils more carefully to establish vegetation. Environmentally sound demolition practices should be a significant part of the planning process for communities interested in fostering the long-term productive reuse of vacant properties.

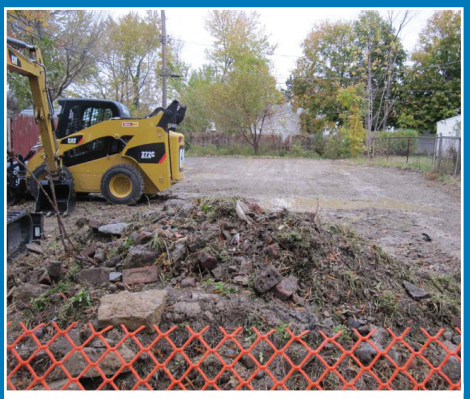
Cleveland Green Infrastructure Project

In 2010, the Bellaire Puritas Development Corporation constructed green infrastructure at a vacant parcel located at West 131st Street in Cleveland, Ohio. Green infrastructure is considered a beneficial reuse at this location because retaining and infiltrating stormwater will reduce the volume of water in a nearby stream and its associated adverse water quality impacts. The home and driveway previously on this site was demolished. As a result of the demolition activity, EPA's Office of Research and Development found soils compacted and poorly suited for infiltrating stormwater or growing plants.

The planned reuse of this site required restoring soils to conditions that support healthy plant growth. Restoration activities included physically loosening the soil, removing a large amount of debris, grading to create a swale, excavation to create a rain garden, and amending the surface soils with a mix of compost, sand, and topsoil. The rain garden and swale will retain runoff from the drainage area and reduce localized flooding in the area. The soil amendments will allow planting of the rain garden and swale with native plants and broadcast seeding of the remaining portions of the site using native grasses and flowering plants.

A private contractor did the restoration work at a cost of about $13,500. Signage was installed with information on the history and importance of the Chevy Branch waterway and the role of native plants and green infrastructure in the restoration of this vacant lot. This formerly vacant parcel soon will be a productive and educational green space that helps to protect the surrounding residential area from flooding.

Partners in this project are community members, Neighborhood Progress Inc. (NPI), ParkWorks, Inc., Cuyahoga County Soil and Water Conservation District (SWCD), Ohio State University, the Northeast Ohio Regional Sewer District (NEORSD) and U.S. EPA's Region 5 and Office of Research and Development. Funding for this project was provided by NEORSD and NPI.



Large amount of demolition debris removed from soils at this site highlights the importance of planning ahead for solid waste removal and recycling.

More Information:

Visit EPA's Land Revitalization program website at http://www.epa.gov/landrevitalization/

United States Environmental Protection Agency

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