

# Land Reuse and Redevelopment Toolkit

A Community Champion's  
Guide to Creating Healthfields



Image of a Brownfield. Source: Lloyd DeGrane, 2014.



U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry

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Image of a Brownfield. Source: Lloyd DeGrane, 2014.

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### This Toolkit's Purpose

The *Land Reuse & Redevelopment Toolkit* provides Community Champions with the information, procedures, and resources needed to identify, cleanup, and redevelop Land Reuse Sites to positively impact a community's overall health. Let's start with the basics.

### The Basics

**Land Reuse Sites** are sites that are slated for redevelopment but may have chemical contamination. Land Reuse Sites include **Brownfields**, as well as other types of hazardous or potentially hazardous sites, such as landfills or Superfund sites. In essence, they are potentially contaminated sites that may be abandoned or underused industrial, commercial, or residential properties. A variety of Land Reuse Sites exist in the United States, including Brownfields.<sup>1</sup>

These types of sites qualify as a Land Reuse Site:

**Brownfields** are defined by the United States Congress through a 2002 amendment to CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) as real property — the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. There are some exclusions to the definition of "Brownfield site," including facilities that are listed or may be placed on the National Priorities List, or are subject to corrective action under the Solid Waste Disposal Act.

The Environmental Protection Agency (EPA) estimates that there are **more than 450,000 Brownfield sites in the United States making, them the most common** type of Land Reuse Site.<sup>2</sup> As foreclosures and manufacturing downturns increase, so may the number of Brownfields.

**Federal facilities** include lands and improvements to lands such as buildings, structures, and equipment that is owned by or leased to the federal government. Some of these sites may be contaminated. Federal facilities must comply with environmental regulations.<sup>3</sup>

## The Basics

**Resource Conservation and Recovery Act (RCRA) Regulated Sites** (RCRA corrective action sites) are regulated for the management of solid waste (e.g., construction debris or garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. Past and present activities at RCRA sites sometimes have resulted in the release of hazardous waste and hazardous substances into soil, groundwater, surface water, sediments, and air. The RCRA requires investigation and cleanup of these hazardous releases.<sup>3</sup>

**Superfund Sites** are sites that are uncontrolled or abandoned places that contain hazardous waste and potentially affect local ecosystems or populations. These sites may be noted on the government's [National Priorities List](#).<sup>3</sup>

**Underground Storage Tanks** refer to any underground storage tank and underground piping connected to the tank that has at least 10% of its combined volume underground. The EPA regulates tanks that contain petroleum or any hazardous substances.<sup>3</sup>

**Landfills** are sites that can receive solid waste from municipalities, industrial facilities, construction activities, and medical facilities. Landfills must be designed to comply with federal regulations to protect the environment from contaminants that may be present in the waste stream.<sup>4</sup>

For a holistic view of Land Reuse Sites across the country, the EPA provides [an interactive map](#), which allows you to identify different types of sites and understand quantities and locations of each by entering community information, such as an address, ZIP code, county, watershed, or other parameters.

## The Risks and Dangers of Land Reuse Sites

Land Reuse Sites can harm your community's health in many ways. The dangers include poor air quality, increased risk of disease, limited access to healthy foods, a lack of options for physical activity, poor housing quality, and environmental damage leading to toxic air, water, or soil. These sites can be redeveloped into healthier and safer environments, or "Healthfields." In addition to providing cleaner environments and health benefits, the redevelopment of Land Reuse Sites can stimulate the local economy by bringing in new businesses and creating jobs.

Miles Ballogg, a member of the Brownfields & Reuse Opportunity Working Network ([BROWN](#)), is one of the original supporters of the "Brownfields to Healthfields" concept. Ballogg has promoted and helped develop Healthfields throughout his home state of Florida.<sup>5</sup>

**Healthfields** are redevelopment projects that address community needs such as access to healthcare, fresh food, community centers, and parks.

Image of people meeting.  
Source: Getty Images, 2017



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## Redevelopment Benefits

Cleaning up and investing in Land Reuse Sites:

- Protects the health of communities
- Removes development pressures off undeveloped land
- Optimizes the use/reuse of existing infrastructure
- Facilitates job growth
- Increases local tax bases
- Transforms environments into healthy and safe places

The ultimate goal is to enhance community health by reducing potentially harmful exposure to hazardous substances. If you redevelop a site with the health of your community in mind, you can help residents live a healthier overall lifestyle.

This toolkit will give you the information you need to improve the environment and create a healthy community or Healthfield.

## Who We Are

The **Agency for Toxic Substances and Disease Registry (ATSDR)** is a federal public health agency headquartered in Atlanta, Georgia. ATSDR is responsible for evaluating and protecting community health by preventing effects from harmful exposures and diseases related to toxic substances.

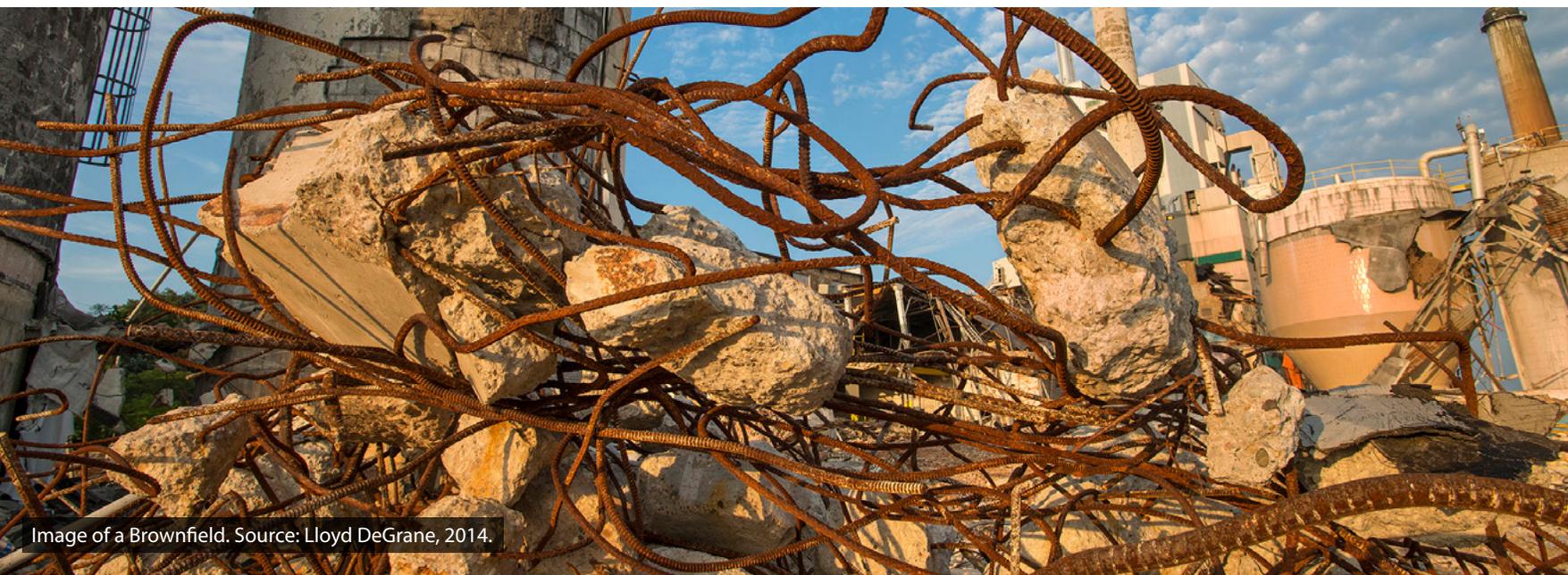


Image of a Brownfield. Source: Lloyd DeGrane, 2014.

### Are You a Community Champion?

This toolkit is designed for **Community Champions**: people who want to rally their community to begin the process of cleaning up and redeveloping a Land Reuse Site. A Community Champion commits time and skills to make positive change by helping others and strengthening their community. They can be citizens of all ages and backgrounds, who defend and support fellow residents' voices.

Still unsure? Do you identify with the following questions?

- Are you passionate and concerned about your community?
- Are you willing to take time to make your community healthier?
- Are you a trusted member of your community?
- Can you facilitate communication of citizen's frustrations, concerns, and fears?
- Can you turn community ideas into a unified vision?
- Can you work with an Environmental or Health Professional to simplify and explain complicated, challenging concepts?
- Can you learn quickly about environmental and health concepts?
- Can you push through obstacles and difficulties to make your community healthier and stronger?

If you answered "yes" to one or many of these questions, you're a Community Champion – and you can directly help your community by using this toolkit throughout all phases of your redevelopment project.



**Vanessa Frazier**  
First Lady of Howardville, MO

"With a solid foundation, and a dedicated team, these Brownfields can be redeveloped into a nice addition to the community. The benefits to any community are unlimited."

Image of Vanessa Frazier, Community Champion. Source: Robert Wood Johnson Foundation, 2016.

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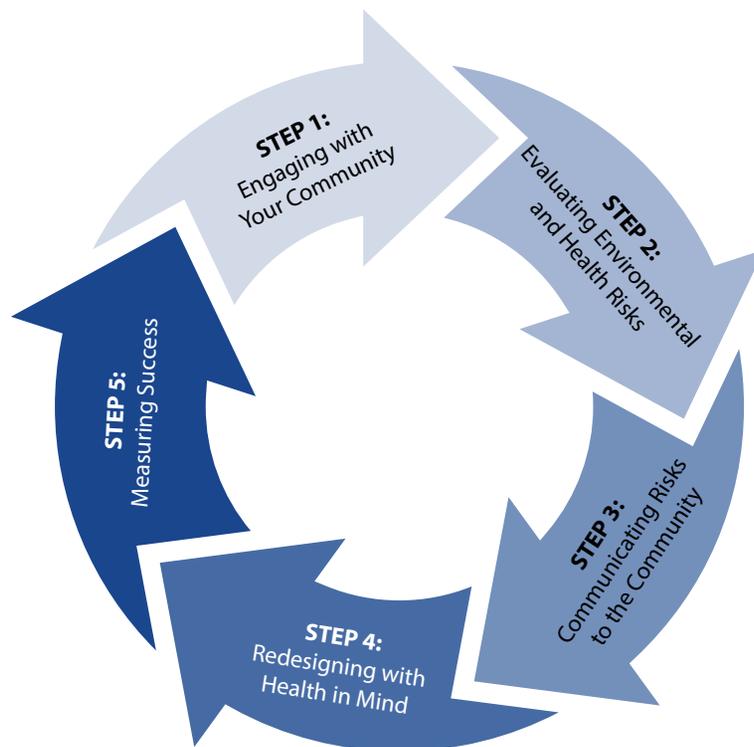
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## Understanding How You'll Work within the 5-Step Land Reuse Model

The structure of this toolkit follows the **ATSDR 5-Step Land Reuse Model** used by communities to safely reuse land and improve health. As a Community Champion, you play a critical role in all of these steps, as the community's liaison and "voice."



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### Step 1: Engaging with Your Community

Get your community's support to address a Brownfield/Land Reuse Site and broaden your group into your "Development Community" – residents, nonprofits, Environmental or Health Professionals, planners and anyone who shares a vision for a cleaner environment and improved health. Some members of your Development Community may be new to you, such as partners from local or regional health, environmental, or planning agencies. Together, you can establish a vision, address your community's needs, and define how to spread information throughout the project.

### Step 2: Evaluating Environmental and Health Risks

An Environmental or Health Professional will conduct an Environmental Site Assessment (ESA) to determine what, if any, contaminants and liabilities are associated with the Land Reuse Site. An ESA typically has one or two phases:

- For an ESA I, the professional collects basic information — including inspecting the site, interviewing former owners, and reviewing local records.
- If there are concerns about possible contamination, an ESA II might be necessary. This means collecting and analyzing environmental samples (such as soil or water) to determine exact contaminant levels at, or from, the site. Environmental or Health Professionals can review those contaminants to determine possible harmful exposures and recommend protective actions.
- *NOTE:* ESA I and II are often referred to as Phase 1 or Phase 2 Site Assessments.

### Step 3: Communicating Environmental or Health Risks

After the ESA report is finalized, you can help communicate the findings to your community. You can call on the environmental health professionals in your Development Community to translate the technical findings of the ESA report into

easy-to-understand language. They may even meet with the community to explain the findings.

### Step 4: Redesigning with Health in Mind

Once the community understands the ESA findings, the site needs to be cleaned up before redevelopment begins. For example, the end result of a Healthfield redevelopment could include housing, produce markets, community gardens, health clinics, or parks. Your ultimate land reuse options may be dependent on the degree of cleanup needed. In some cases, the site, once cleaned, can be used for nearly any purpose, such as a school or residence. In other cases, if contamination is left in place but capped to prevent exposing people to it, the Development Community may decide to opt for a recreational or commercial use.

### Step 5: Measuring Success

It is important to measure and communicate any successes of the project to your community throughout redevelopment. Even small milestones show the community that the site is progressing in the right direction.

Keep reading to learn about each step of the Land Reuse Model and expected activities.

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# Step One

## Engaging with Your Community

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Image of a public meeting. Source: ATSDR, 2009.

### Who is Affected by Land Reuse Sites?

First, it is critical to know who lives near the site in question and what, if any, negative effects they feel as a result of their proximity. It's especially important to understand who is at increased risk from exposure to toxic agents, often referred to as the **sensitive or special populations**, people who might be more sensitive or susceptible to exposure to hazardous substances because of factors such as age, occupation, sex, or behaviors (for example, cigarette smoking). Children, pregnant women, and older people are often considered special populations.<sup>6</sup> Sometimes, low income communities or communities of color are disproportionately impacted by Land Reuse Sites.

### Understanding Change Management

**Change Management** is an organizational process designed to help community members accept and embrace changes in their environment.<sup>7</sup>

#### What Does this Mean for Me?

Redeveloping a Land Reuse Site into a community asset like a Healthfield can take a long time, but it's invaluable to the long-term physical and economic well-being of a population. Even if a site may have a deed restriction, limiting its use to, let's say, a school or clinic but not a garden, there are still community health benefits to the property reuse. A deed restriction is an institutional control or usage measure that communicates not all uses are safe, such as not using groundwater for drinking water wells or car washing.

During the different phases of this project, the site can undergo many changes and your community may bring up concerns, fears, and frustrations. You can **set expectations during these changes** in order to **reinforce the necessity for each of the five steps** and ensure that everyone understands what each step will look like. Don't forget to celebrate the small wins: tiny steps can add up to one huge leap. This will also help communicate the end goal of transforming the site into something that will improve the community's overall health.

### Activating and Aligning the Community

The early steps of redeveloping a Land Reuse Site can be daunting — especially bringing the community together to raise awareness and establish a clear sustainable vision for health.

Community involvement requires earnest, respectful, and continued attention. To successfully create a collaborative environment, establish clear expectations, communicate effectively and always put your community first. ATSDR suggests you:

- Encourage early community involvement in decision making.
- Improve ways to talk about health and environmental risks.
- Promote relationships among agencies, partners, and communities.
- Promote a well-rounded, health-focused approach to redevelopment.
- Restore and revitalize communities in a way that is fair to all community groups.
- Measure and evaluate changes in community health.

**Toxic agents** are chemical or physical agents that, under certain circumstances of exposure, can harm humans, animals, or other living organisms.

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## Establishing Effective Lines of Communication

The channels you use to reach your community will probably vary based on the size of your community. Social media and town hall community meetings are good places to start. Regardless of the method, you can establish lines of communication early and maintain them throughout the redevelopment process.

## Identifying Community Needs and Establishing a Unified Vision

There are a variety of ways you can engage your community. You may already have some tried-and-true methods that work well. But if you are new to being a Community Champion, there are some effective tools that might help, such as Community Visioning, the ATSDR Action Model Toolkit, or using photographs to tell a story.

It can be difficult to identify and understand all of your community's potential strengths, needs and visions, and even more challenging to get your community to align on goals. Nevertheless, establishing a unified **Community Vision** is essential to a successful redevelopment project. You can present your vision of land reuse and redevelopment and ask for input. Or, you can brainstorm with your community about *their* vision, finding ways to vote on common themes and adapt the plan to suit everyone.

It's also important to consider long-term sustainability of the community vision. Because long-term sustainability typically involves discussing complex issues, it can be a challenge for any community or municipality to tackle. The following resources provide helpful approaches and questions to facilitate these conversations.

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Community receiving grant.  
Source: Lloyd DeGrane, 2014

**Community Vision** is the outcome of developing consensus about what future the community wants and deciding what is necessary to achieve it.



## The ATSDR Action Model Toolkit

The [ATSDR Action Model Toolkit](#) helps the wide range of members of the Development Community find ways to integrate health into the redevelopment. Communities can also use the Action Model to identify common goals or visions and ensure they're incorporated in strategic planning.

The [Action Model](#) consists of four steps, using questions to help identify community needs and empower groups to align on unified visions and goals.

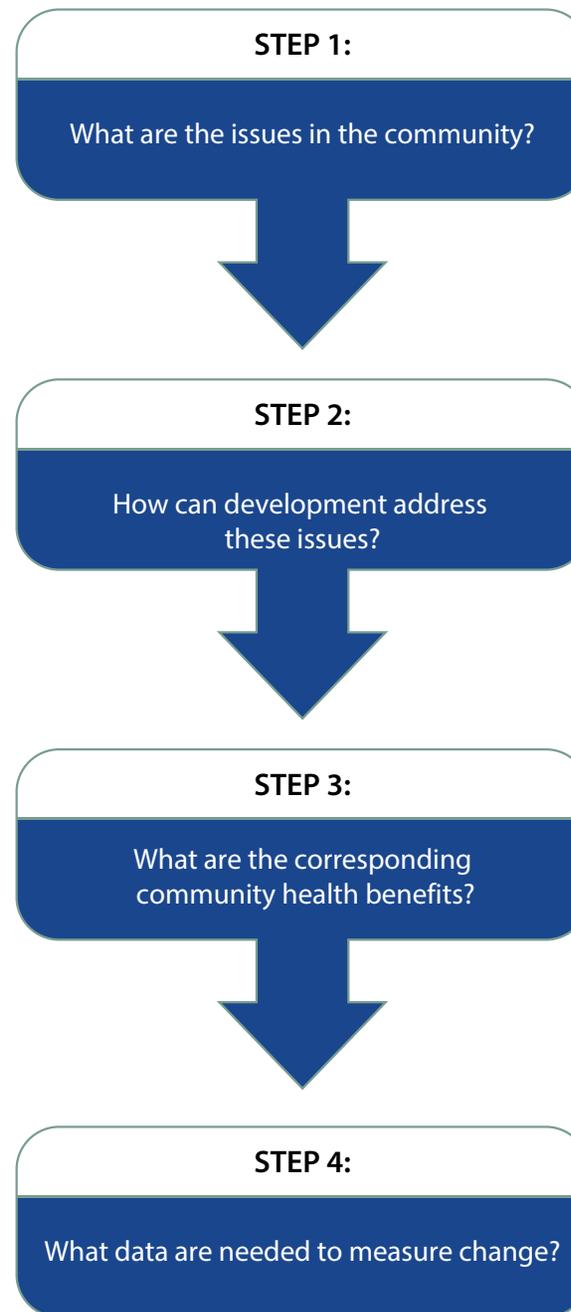
## Guiding Community Conversations



Image of Ken Meter. Source: Crossroads Resource Center, N.D.

According to Ken Meter, a BROWN member from Crossroads Resource Center, these three questions serve as great thought-starters, but also provide guidance to keep the community and facilitators grounded throughout the process

1. How do we create an inclusive process?
2. How can we set a guiding vision for sustainability for our community?
3. How do we measure progress toward that vision?



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### The Visioning Technique

The Visioning Technique helps individuals arrive at a shared community vision by getting them to talk about what their ideal environment would look like.<sup>8</sup>

Begin by inviting community members to a collaborative setting, where they'll **visually depict their own image of what one would notice in their community if the changes they sought became true**. It can be as simple as covering tables with large posters of plans or even blank sheets of white paper and providing colored markers. Ask specifically for images, because they succinctly carry a lot of information. Ask them to describe what your community might look like in the future, using all of the bodily senses:

- What would I see?
- What would I hear?
- What would I feel, taste, or smell?

A visioning session performed for Minneapolis, Minnesota, demonstrated the value of a sustainability project. One participant expressed that, if the city were more sustainable, "I [would] be able to walk safely with my grandchild from my house to the train station, so we can visit our relatives in Chicago."

Notice the many elements contained in that one sentence: "I would feel safe; I would feel connected to my family; I would be able to walk rather than drive; I would have access to a train; I would have a sense of peace and possibility that I do not have today." These are precise, rich, relatable sentiments. Indeed, they helped inform the conclusion that the most significant step Minneapolis could take would be to create a walkable city.

### A Picture is Worth a Thousand Words

Many health educators and community organizations use photographs to tell a story about conditions in their communities. They use the power of pictures and community participation to spur critical thinking and change. Some people use a technique called [Photovoice](#) which uses pictures to lead social change and awareness.

Your community members can take pictures of things they wish to change and provide a short caption or narrative to explain each photo. For example, a community member may take a picture of an abandoned school and write: "We have no safe place to get together, play basketball, or watch movies. I wish we could repurpose this old school into a community center."

Pictures can raise awareness, evoke emotion, and, in turn, create action. **Telling a community story with pictures taken by community members can unify them.** It helps bring attention to the perspectives of people who live differently from those usually responsible for depicting the world during policy-making processes.

**"We need an upgrade ... benches, tables, or garbage cans."**



Image of a community park used in a Photovoice project. Source: New York State Department of Health, 2012.

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## Methods of Community Engagement

The [ATSDR Communication Toolkit](#) provides an array of tools and strategies for effective methods of communicating with communities and keeping them involved throughout the redevelopment process.

Another useful resource is ATSDR's [Principles of Community Engagement](#). A summarized version is provided below.

- 1 Be clear about the goals of the project and the populations involved.
- 2 Understand the community's culture, economic conditions, social networks, and support programs, such as local healthcare providers or park districts. Learn about how your community perceives those initiating the community engagement activities.
- 3 Build trust and establish relationships within the community, and connect with local leaders. Urge community organizations and leaders to create processes for mobilizing the community.
- 4 The power to create change lies within the community, and not necessarily with external programs and organizers.
- 5 All outside organizations may not share your interest. That's okay. They may have a different focus. Continue to reach out for assistance and partners, on local, state and national levels.
- 6 Community organizers must recognize and respect the diversity of the community. Awareness of the various cultures and values of a community must be paramount in planning, designing, and implementing approaches to engaging a community.
- 7 Community engagement can only be sustained by identifying and mobilizing community assets and strengths, and by increasing the community's ability to make decisions and take action.
- 8 Experienced professionals, organizations, and residents can work together, sharing knowledge, resources, and contacts, while staying flexible to meet the demands of change.
- 9 Community collaboration requires long-term commitment from the organization and its partners.

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## Understanding Roles Involved Throughout the Process

It's important to understand the process of redeveloping a Land Reuse Site holistically. The following chart details the primary types of personnel you can expect to work with during each stage of the project.

Roles	Who are they?	What's their role?	Who do they work with?	What key steps are they involved in?
 <b>Community Champion</b>	A person living in the community who is passionate about their community's health.	<ul style="list-style-type: none"> <li>• Activate the community to make them aware of the site.</li> <li>• Convey all potential risks to the Community and convince them to invest time and resources into redevelopment.</li> <li>• Share all relevant information with the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Community Planners</li> <li>• Municipal Agencies</li> <li>• Environmental or Health Professionals</li> </ul>	<ul style="list-style-type: none"> <li>• Engages the Community</li> <li>• Communicates Risks</li> <li>• Measures Success</li> </ul>
 <b>Community Planner</b>	A person who plans the logistics of a redevelopment project.	<ul style="list-style-type: none"> <li>• Engage community members to understand their needs for redevelopment.</li> <li>• Create project plans to ensure site assessment, remediation, and redevelopment are on time and on budget.</li> </ul>	The Community Planner works with <b>everyone</b> in the process.	Involved at <b>all</b> steps
 <b>Municipal Agency</b>	A person who works for a local municipality.	<ul style="list-style-type: none"> <li>• Bridge the capabilities of local, state, and/or federal government to the community project.</li> <li>• Provide network of resources, including community outreach, grant writing, staffing, etc.</li> </ul>	The Municipal Agency works with <b>everyone</b> in the process.	Involved at <b>all</b> steps
 <b>Environmental or Health Professional</b>	A person who is qualified to provide environmental and health services for a community.	<ul style="list-style-type: none"> <li>• Conduct site assessment.</li> <li>• Conduct environmental cleanup of site.</li> <li>• Conduct community health analysis.</li> </ul>	<ul style="list-style-type: none"> <li>• Community Planners</li> <li>• Municipal Agency</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluates the Environmental and Health Risks</li> <li>• Communicates the Risks</li> </ul>
 <b>Developer</b>	A person in charge of the development aspects of the project.	<ul style="list-style-type: none"> <li>• Provide practical redevelopment options that address community needs.</li> <li>• Execute the redevelopment of land into functioning real estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Community Planners</li> <li>• Municipal Agency</li> </ul>	Involved at <b>all</b> steps but their primary role is redesign

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## Key Roles Within the Model

Step	Roles	Activities
<b>Step 1:</b> Engaging with Your Community	 Work with the <b>Community Planner</b> to understand the community's needs and vision for healthy Land Reuse.	
	 Work with your local <b>Municipal Agency</b> to collect information about the site and activate public resources and funding.	
<b>Step 2:</b> Evaluating Environmental and Health Risks	 Work with the <b>Environmental or Health Professional</b> who is conducting the site assessment and identifying contamination.	
<b>Step 3:</b> Communicating Environmental and Health Risks	 Work with the <b>Environmental or Health Professional</b> to translate the results into plain language and understand potential risks.	
	  Work with your <b>Community Planner</b> and <b>Municipal Agency</b> to share results of the site assessment with the community and assess if any initial redevelopment plans might be impacted.	
<b>Step 4:</b> Redesigning with Health in Mind	  Work with the <b>Community Planner</b> and <b>Developer</b> to ensure the intended development is addressing the community's health and needs will benefit them.	
<b>Step 5:</b> Measuring Success	 Work with the <b>Environmental or Health Professional</b> to quantify the health benefits from the healthy land reuse.	
	 Work with the <b>Municipal Agency</b> to quantify the economic benefits from the healthy land reuse.	

## Get Started Now

If you're ready to begin engaging with your community, contact ATSDR at:

 [www.atsdr.cdc.gov/sites/brownfields](http://www.atsdr.cdc.gov/sites/brownfields)

 [ATSDR.LandReuse@cdc.gov](mailto:ATSDR.LandReuse@cdc.gov)

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# Step Two

## Evaluating Environmental and Health Risks



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## Understanding a Site Assessment

Before the redevelopment of Land Reuse Sites begins, your site(s) may need an Environmental Site Assessment to assess the potential for contamination. In addition, you may need to determine the health risks associated with exposure to potential contamination to protect the health of people who live near or access the Land Reuse Sites.

An **Environmental Site Assessment** (ESA) is the process of identifying the presence or likely presence of hazardous materials on a property. This could include identifying a release or threatened release of hazardous materials into structures on the property, into air, or into soil and groundwater or surface water on or near the property. The ESA is sometimes referred to as “due diligence” or “all appropriate inquiry.”

These assessments gather information about the site to help determine the potential for, or extent of, negative impacts to the surrounding area from hazardous substances. The two primary phases of this process are designed to increase the level of understanding of the site condition.

1. ESA Phase I identifies potential environmental concerns by conducting:

- Historic record searches
- Interviews with property owners
- Reviews of local, state, and federal databases
- A site visit

2. ESA Phase II identifies actual contaminants through laboratory testing of samples, including:

- Soil samples
- Groundwater samples
- Ambient air samples
- Asbestos containing material
- Lead based paint samples

Phase II of the ESA can be very technical, but there are plenty of environmental and health resources to assist you. Besides the aforementioned ATSDR and EPA, there are [state, tribal, and even local environmental and health agencies](#) that can also provide support. For additional information, please refer to pages 22 - 25 of the Environmental or Health Professional Toolkit.

The Environmental Protection Agency (EPA) has established standards for conducting all appropriate inquiry— the requirements for assessing the environmental conditions of a property prior to its acquisition. For properties purchased after May 31, 1997, the law requires the use of procedures developed by the American Society for Testing Materials (ASTM), as they meet the “all appropriate inquiry” requirement for site characterizations and assessments.<sup>9</sup> **The American Society for Testing and Materials** (ASTM) International is a worldwide standards organization, which has strict [guidelines for both ESA I and II](#).



Image of a Brownfield. Source: Lloyd DeGrane, 2014.

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### Obtaining a Site Assessment

A developer may take on the responsibility of cleaning up and redeveloping a site. In some instances, a state environmental agency may help with initial site assessment or remediation advice. Many communities may need to hire an Environmental or Health Professional to execute a site assessment. However, federal and state grants are available to help fund these projects. The EPA [offers assessment grants](#) up to \$200,000, which could fund the full-site assessment process.

The costs of ESA Phase I and II site assessments vary and can be estimated based on Internet searches. Typically, these costs will be linked to private companies that do site assessment work. An ESA Phase II is only required if “Recognized Environmental Conditions” appear in the ESA I report, which require further investigation.

To **obtain funding** for this process, you can:

- Apply for a grant.
- Get funds from your local municipal or state agency.
- Ask your state if they can perform a free ESA.
- Set up a crowdfunding campaign (e.g. Kickstarter, GoFundMe).



Image of a Brownfield. Source: Lloyd DeGrane, 2014.

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### Funding Vehicles

It's no secret that money is the most crucial resource of all. Without funding for the actual redevelopment, it's nearly impossible to execute these projects. Therefore, it's critical to be aware of the grants that might be available to you. You can also learn about compelling grantwriting. Here are some good resources for getting started:

- Contact your local reference librarian or local community college, university, or university extension to learn about potential funding or grant writing assistance.
- Learn about [site eligibility for funding](#) opportunities from the Environmental Protection Agency (EPA) for assessment, cleanup, and other redevelopment activities.
- Learn about federal grants at [Grants.gov](#).
- Most states and tribes have voluntary cleanup program funding.
- The University of North Carolina's Environmental Finance Center provides a great [tool for grant writing tips and obtaining grants](#), also citing Grants.gov.
- Finally, eCivis has worked with various states and major cities across the country on [best practices](#) to be "grant-ready".

### Assessing Potential Contamination - Public Health Assessment

If a Land Reuse Site has been evaluated for contamination, either through an ESA II or by a state or federal regulatory agency, your community members may have concerns about exposure to contamination. Through the [ATSDR Partnership to Promote Local Efforts to Reduce Environmental Exposure](#) (APPLETREE), ATSDR can fund a variety of state, county, city/township, special district, and tribal governments or organizations to conduct activities at Land Reuse Sites. In 2017, for example, ATSDR funded 25 State Health Agencies to investigate and respond to harmful exposures in communities and educate the public on exposure protection. APPLETREE partners investigate and respond to harmful exposures in communities and educate the public on exposure protection.

During the [health assessment](#) process, either ATSDR or an APPLETREE partner may review environmental data to determine potential adverse health effects on people who may live near or access a Land Reuse Site. Often, your state health partners can provide a rapid, shorter assessment which can alleviate concerns you or your Development Community may have.

**ATSDR** and partners have completed over 2,700 health assessments at Land Reuse Sites across the country, of which 274 were Brownfields. ATSDR discovered health hazards at 42% of these brownfields sites.<sup>10</sup>

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### From Risks to Reward

Each site has unique challenges, contaminants, and liabilities. The following examples illustrate some specific site risks — and how the communities overcame them.<sup>11</sup>

In Kenosha, Wisconsin, a 29-acre piece of land was once home to America's largest brass company. Once closed, it left a multitude of environmental contaminants, including polychlorinated biphenyls (PCBs), metals, and oil in the soil. The land was cleaned up and successfully **redeveloped into an affordable housing neighborhood** with a grocery store and a new school.

In Jefferson County, Alabama, Five Mile Creek was a source of coal mining and steel manufacturing. By the early 20th century, acid mine drainage and other industrial contaminants had made Five Mile Creek—dubbed “Creosote Creek” because of its chemical odor and slick sheen—one of the most polluted waterways in Alabama. The waterway was broken into different sections and evaluated for each contaminant present. It was then cleaned up, and **the area was turned into public parks, sidewalks, and open space to promote physical activity** in the region.

In Boise, Idaho, an abandoned church had become a haven for methamphetamine (meth) use and production. Further, the church was also found to be contaminated with toxic materials—lead paint, methamphetamine, and suspected asbestos. Cleanup and redevelopment **turned the church into an art center for children's learning**, well-being, and artistic growth.

These stories are proof that you and your community can create anything with the right resources and motivation.

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### Get Started Now

Ready to get your ESA or have questions about the process? Are you concerned about potential contamination at Land Reuse Sites that may harm your community members' health? Contact ATSDR to learn how Environmental or Health Professionals can assist.

🖥️ [www.atsdr.cdc.gov/sites/brownfields](http://www.atsdr.cdc.gov/sites/brownfields)

✉️ [ATSDR.LandReuse@cdc.gov](mailto:ATSDR.LandReuse@cdc.gov)



# Step Three

## Communicating Environmental and Health Risks

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Image of a Brownfield. Source: Lloyd DeGrane, 2014.

### Understanding the Environmental Site Assessment Report

Understanding and communicating the ESA reports can be difficult. The reports are very technical in nature, and have the potential to return more than 250 toxicological results – or environmental contaminations – between ESA I and II.

This toolkit provides resources to help you comprehend and translate results into plain language for your community. There are also strategies for spreading this information, so people can understand the findings and what they mean to the community's overall well-being.

You may want to conduct Internet searches to familiarize yourself with a sample ESA I or ESA II report or **you can rely on your Environmental or Health Professional(s)** for communication help. They are subject matter experts and have been in similar situations before. You can also rely on state or local health agencies or APPLETREE partners.

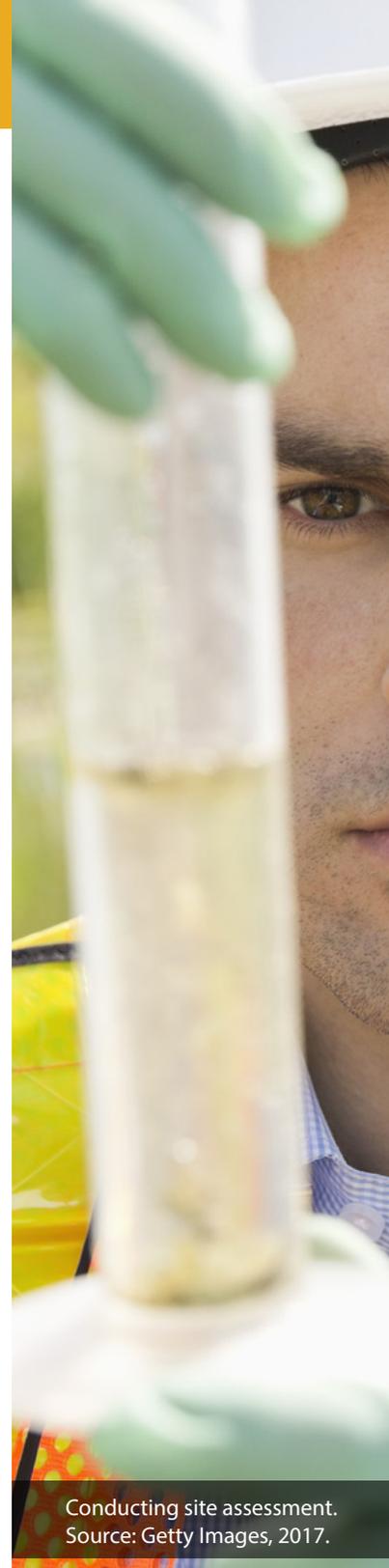
Local health agencies often have employees who can help communities understand risks of exposure to contamination. They may even employ health educators, who are uniquely qualified to communicate risks and engage communities in discussions about environmental concerns.

Several organizations offer free technical assistance to communities and other stakeholders conducting a Land Reuse Site redevelopment. Examples include ATSDR and the EPA-funded Technical Assistance to Brownfields (TAB) programs. There are three TAB centers, each of which serves several states:

- Kansas State University's [TAB Program](#)
- New Jersey Institute of Technology's (NJIT) [TAB Program](#)
- Center for Creative Land Recycling [resources](#)

Once you understand all of the potential risks, you can clearly communicate them to your community. You've most likely already established several lines of communication, but make sure to convey these findings on a platform that supports a two-way conversation. Bring in Environmental or Health Professionals from your Development Community network to help you discuss risks with your community.

People may have questions and concerns about the redevelopment. Ensure this conversation is an open forum rather than a presentation. During this step, you can rely on your Environmental or Health Professional and other members of your Development Community to accurately address the community and build trust.



Conducting site assessment.  
Source: Getty Images, 2017.

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### Communicating Risks to the Community

You may need to work with your Environmental or Health Professional to help them explain to your community any risks associated with contamination at land reuse sites. **Risk communication** is the process of informing people about potential hazards to their person, property, or community.<sup>11</sup>

The EPA originally developed the **Seven Cardinal Rules of Risk Communication** in 1988, which have been [adapted and updated](#) to evolve with our times. However, the rules themselves are the same — and what’s presented below can help you, along with the support of your Environmental or Health Professionals, communicate any risks your community may face:

1. Accept and involve the public as a legitimate partner.
2. Listen to the audience.
3. Be honest, frank, and open.
4. Coordinate and collaborate with other credible sources.
5. Meet the needs of the media.
6. Speak clearly and with compassion.
7. Plan carefully and evaluate performance.

It is important to understand that people may perceive risk on a scale of “outrage”. In the 1980s, risk communication expert Peter Sandman, coined the term “[outrage factors](#)”, such as trust, control, or dread, to describe how people perceive risk. The EPA can provide [more information on risk communication](#) along with best practices and strategies for communicating with your audience.

Community Champions often become empowered in land reuse Development Communities. In this role, you can help shape messages that your Environmental or Health Professional may suggest for communicating hazards or risks to your community. The actual messages, whether written or verbal, should be structured in a way that resonates with your audience. ATSDR and several of their APPLETREE and local health partners use a **message map** to assist with communication. The following example of message mapping and best practices draws on real-life examples from a previous Brownfield redevelopment project. In this example, people (including children) were exposed to arsenic from the soil previously contaminated by an old plastic factory.



A **Message Map** is a detailed, visual description of organized answers to anticipated questions and concerns from key community stakeholders.

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## My School Daycare: Avoiding Arsenic Exposure

**Background:** Sinco, Inc., a former plastic safety net manufacturing facility based in Connecticut, was redeveloped into a daycare center. The site's soil has historically contained high levels of [arsenic](#), a naturally occurring element that is used primarily in wood preservation or pesticides, as well as other contaminants.

**Risk(s):** Although much of the site had been cleaned up, the soil in the playground was never sampled to determine whether it contained levels of arsenic harmful to children who attended the daycare.

**Outcome:** In February 2008, the Connecticut State Department of Public Health worked with the daycare property owner to successfully test the soil. It was determined that while the playground surface and subsurface soil was contaminated with arsenic, a remedial plan was possible to prevent exposure.

**Results:** The state worked with the property owner to ensure arsenic in the soil would be covered with wood chips to prevent exposure. The state developed a fact sheet and held a public meeting to address parent and community concerns. During the meeting, the state confirmed that children had likely not been exposed prior to the cleanup and were not at risk of direct contact in the future.

### Daycare Center Message Map

#### Key Message

Connecticut Department of Public Health has worked with the owner and operator to ensure arsenic in the soil will be covered with wood chips to prevent exposures

#### Key Message

Children attending the daycare will not have direct contact with the residual arsenic contamination in the soil

#### Key Message

Children were not likely exposed as the daycare center has been open less than a year and during winter children were not using the playground

#### Supporting information 1-1

Limited soil removal will take place in areas with highest arsenic levels

#### Supporting information 2-1

The playground has a layer of woodchips covering the soil

#### Supporting information 3-1

A child would need to play directly in the soil on a daily basis, for several years to be harmed by arsenic

#### Supporting information 1-2

Cleanup plan will likely include placing additional layers across the entire playground

#### Supporting information 2-2

Owner plans to add additional layers of covering such as heavy landscaping fabric, crushed limestone, and woodchips

#### Supporting information 3-2

#### Supporting information 1-3

After additional layers added, children will not be able to come into contact with the soil

#### Supporting information 2-3

One would need to play directly in the soil on a daily basis, for several years to be harmed by arsenic

#### Supporting information 3-3

ATSDR has communication and messaging information, as well as a [message map template](#) that can be used to structure your communication.

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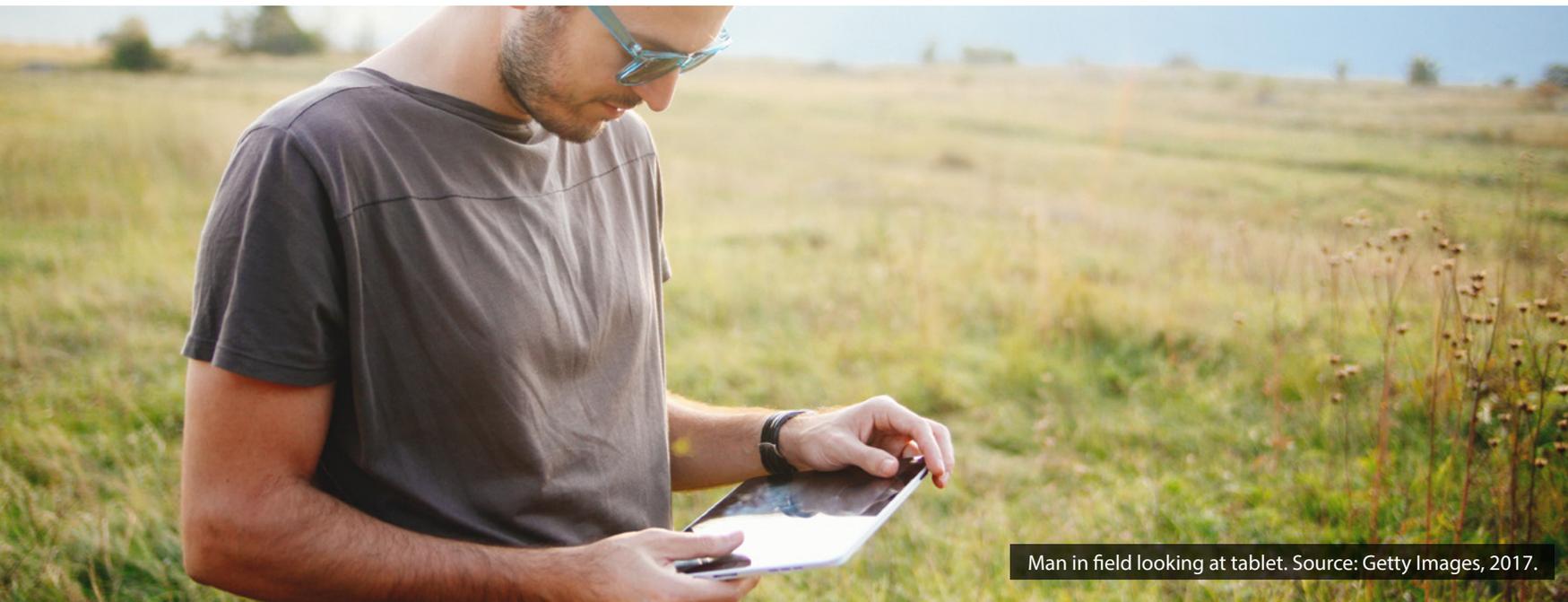
### Social Media Best Practices

Social media is one of the most cost-effective and efficient ways to communicate with a large group of people. Below are some best practices, to help you begin thinking of ways to integrate social media tools into your communication efforts around environmental and health risks.

1. **‘Social’ isn’t just a channel or a platform, it’s a behavior.**  
Social media should not be viewed as solely a message dissemination vehicle. Rather, it’s an environment where millions of people connect to contribute in virtual dialogue. This is why social media practitioners must listen as much as they speak. For example, you can use social media to:
  - Engage with or start a conversation with those in your city who share concerns about contaminated sites or are interested in the outcomes of redevelopment projects
  - Post specific details of upcoming meetings or events regarding sites in your area

2. **If you can’t measure something, it didn’t happen.**  
It’s essential to develop quality metrics for your social media efforts to serve as Key Performance Indicators (KPIs), which comprise quantitative and qualitative data sets. The right metrics will help you determine if your social media efforts are reaching your intended audience — and whether your messages are translating into action. You can change your tactics as you go and refine your target audience.
3. **Just because you CAN, doesn’t mean you SHOULD.**  
Social media platforms (e.g. Twitter, Facebook, Instagram) are constantly evolving and providing users with new features to enhance the overall user experience. While some of these features appear to be new and exciting, you may not necessarily need to use them. Whenever possible, be sure that your social media efforts align with the purpose of each platform.

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Man in field looking at tablet. Source: Getty Images, 2017.

### 4. If you want your audience to do something, just ask!

If there is an action that you want to be completed, ask your audience. Having an explicit call to action may seem obvious, but it really does work! Here are a few examples:

- Click here to find out more information about our next town hall meeting
- Like our page to receive updates on the redevelopment project in our city
- Please share this post to spread awareness of the risk of asbestos inhalation near Land Reuse Sites
- Comment below if you would like more information on the Land Reuse Site rehabilitation program in our city

### 5. “If you build it, they will come” only works in movies.

If you want to generate interest, establish an audience, or increase perception about anything related to Land Reuse Sites, you must do more than publish content to a channel. In short, if you plan, target, build, create, track, and optimize, they will come. But they will also stay and engage with your profile.

### 6. Create a group or digital space for you and other community members to have open discussion and address concerns, frustrations, or fears.

### 7. Optimize your social media presence.

Humanization is key. Social media is about connecting with people and building trusting relationships. Use a high-quality, bright profile photo and create a bio that is inviting and informative, yet straight to the point.

## Get Started Now

Need to communicate ESA results or health risks, but not sure how to begin? ATSDR can help you identify resources and personnel.



[www.atsdr.cdc.gov/sites/brownfields](http://www.atsdr.cdc.gov/sites/brownfields)



[ATSDR.LandReuse@cdc.gov](mailto:ATSDR.LandReuse@cdc.gov)

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# Step Four

## Redesigning with Health in Mind



Community garden. Source: Getty Images, 2017.

### Emphasizing Health with Redevelopment

The Land Reuse Site in your city can be transformed to benefit the health of your citizens. That's why it is important to establish a community vision at the start of the project in Step 1 (Engaging with Your Community). This vision may guide all the decisions for the future site. If the project lacks a vision for a healthier community, it may never happen. When developers and other groups pitch ideas to develop the land, it is important to **understand the community's needs and integrate those into the central design of the site**. If they don't, you may consider finding other partners.



The U.S. Economic Development Administration (EDA) [resource directory](#) is a great tool, offering a reliable network to critical resources, from the local to regional level, identified by state.

### Applying Change Management

Those who have gone through the 5-Step Land Reuse process stress that **Change Management** is an important part of the process. In this instance, Change Management means helping a community transition from its current state to a healthier state through the redevelopment of one or more Land Reuse Sites.

You can address fears and concerns by communicating the value of change to your community. Specifically, you can show how the redevelopment has the potential to produce sustainable community amenities that can improve the overall health of your community.

It is natural to fear the unknown, so people may be skeptical about the ability to accomplish a project. They may also be wary of change. For example, many people do not want to see parts of their town get torn down — even if they know that it will be made into something better.

Assessing project results. Source: Getty Images, 2017.

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## Communicating the Value of Change

As a Community Champion, your job is to tell the story of the site redevelopment project in a positive and constructive way. So when you hear frustrations and concerns from the community, **be the voice of reason and reassure your neighbors and friends that this change is valuable.**

Remind them that the site poses significant health and environmental risks and could be redesigned to better serve your community. **Once they understand the challenges, they're more likely to have a positive point of view about the change.** As the project evolves, be prepared to have some of these difficult conversations. They're crucial for getting community approval for the redevelopment project.



Presenting redevelopment project at group meeting. Source: Getty Images, 2017.

### Get Started Now

Breaking ground on a site cleanup is a major milestone. Once you're ready to begin, contact ATSDR to learn about your next steps.



[www.atsdr.cdc.gov/sites/brownfields](http://www.atsdr.cdc.gov/sites/brownfields)



[ATSDR.LandReuse@cdc.gov](mailto:ATSDR.LandReuse@cdc.gov)

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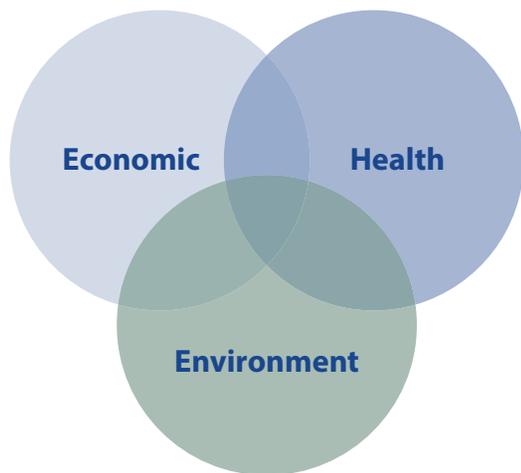
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### The Importance of Measuring Impact

It's critical to track the progress of a Land Reuse Site so that all stakeholders can quantitatively understand the project's impact. With this data, you can also **prove that the project is having positive health impacts** on your community.

There are three overarching categories you can measure during your redevelopment project:



### Communicating Small Wins

Land reuse and redevelopment projects can be daunting. They may take a long time, causing community members to lose hope if they can't see the light at the end of the tunnel. So it is critical to communicate even small victories, such as the opening of a new park or obtaining a small grant. **This gives the project momentum and reassures citizens that you're making progress.** Social media is a great way to communicate these milestones.

### Using the Power of Success Stories

As a Community Champion, you can demonstrate change using a simple and powerful technique: Before-and-after pictures. They provide a visceral way to communicate change. The first, easiest thing you can do is to take pictures of the site and show them to stakeholders, so they can see the negative visual aspects of the site. This helps raise awareness of the problem. Oftentimes, this frustrates a community, which spurs action.

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Reevaluating site, after cleanup.  
Source: Getty Images, 2017.





Abandoned building. Source: ATSDR Case Study, 2017.



New Willa Carson Health and Wellness Center. Source: ATSDR Case Study, 2017.



The Willa Carson Health and Wellness Clinic is located in the Clearwater Brownfields Area (CBA), in the North Greenwood community on Florida’s west coast.

In 1995, Willa Carson, a retired nurse, began running a community health center out of two refurbished apartments, with medical services donated by nurses and doctors. Her mission was to provide free, quality health care to the uninsured and underserved residents of the community.

## What were the contaminants and risks?

Many local businesses had closed, leaving a negative environmental legacy. There were many potentially contaminated sites, including abandoned and underutilized commercial and industrial properties such as auto repair facilities, service stations, bulk fuel facilities, railroad lines, transformer stations, junk yards, municipal waste and solid waste facilities. In the center of North Greenwood, an abandoned gas station had left behind petroleum-contaminated soils and physical hazards and served as a “hot spot” for crime.

## What did the Development Community do?

In 1996, Clearwater’s Environmental Specialist and Brownfields Coordinator Miles Ballogg worked with Ms. Carson, other

Community Champions, residents and city officials to create a plan that provided the framework for redeveloping contaminated properties.

Ballogg obtained support from the International City/County Management Association (ICMA), including a \$35,000 EPA-funded technical assistance grant. A research team, consisting of a variety of individuals from participating universities, neighborhood groups, and local Municipal Agencies collected input for an Environmental Justice Plan and Action Agenda (the “Action Agenda”).

The Action Agenda resulted in a permanent location for Ms. Carson’s clinic, transforming the old gas station into a community health center. Now, 3,500 residents a year receive free bilingual health care including immunizations, tests and screenings, flu shots, and counseling for topics like lead screening, breast cancer exams, nutrition, diabetes management, and more.

Ms. Carson was the inspiration for one of the nation’s first Healthfields projects. Her idea helped remove contamination from the heart of her community and replace it with increased healthcare access for locals. Community Champions like Ms. Carson have helped pave the way for local agencies and federal legislation to encourage Healthfields redevelopment.

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<b>Step 1:</b> Engaging with the Community	January 10, 1999 to September 11, 1999	Identified 42 community health concerns, including the need for a trusted health clinic in an underserved area	Created an Action Agenda to address contamination and disparities Prepared the abandoned gas station for redevelopment into health clinic
<b>Step 2:</b> Evaluating Environmental and Health Risks	2000	Site identification, assessment, and cleanup	Prepared the abandoned gas station for redevelopment into health clinic
<b>Step 3:</b> Communicating Environmental and Health Risks	2000	Held Greenwood Neighborhood community forums with key community stakeholders	Educated the community on potential environmental risks and ways to reduce exposures
<b>Step 4:</b> Redesigning with Health in Mind	January 2001	Finalized location for the Willa Carson Community Health and Wellness Resource Center	Transformed the 3,200 sq. ft. abandoned gas station into health clinic, capable of providing care to 3,500 citizens annually
<b>Step 5:</b> Measuring Success	September 2000	Clearwater City Council approved the Action Agenda	Became the first environmental justice plan in the nation to be approved by a city government
	June 30, 2008	Florida House Bill 527 passes	State tax credit incentive encouraged the construction of clinics and other healthcare facilities on Brownfield sites
	2000 to 2017	Disseminated this Healthfields Model for other communities to follow and redevelop Brownfield sites	Developed more than 13 new health facilities in Florida and 9 additional health facilities nationwide

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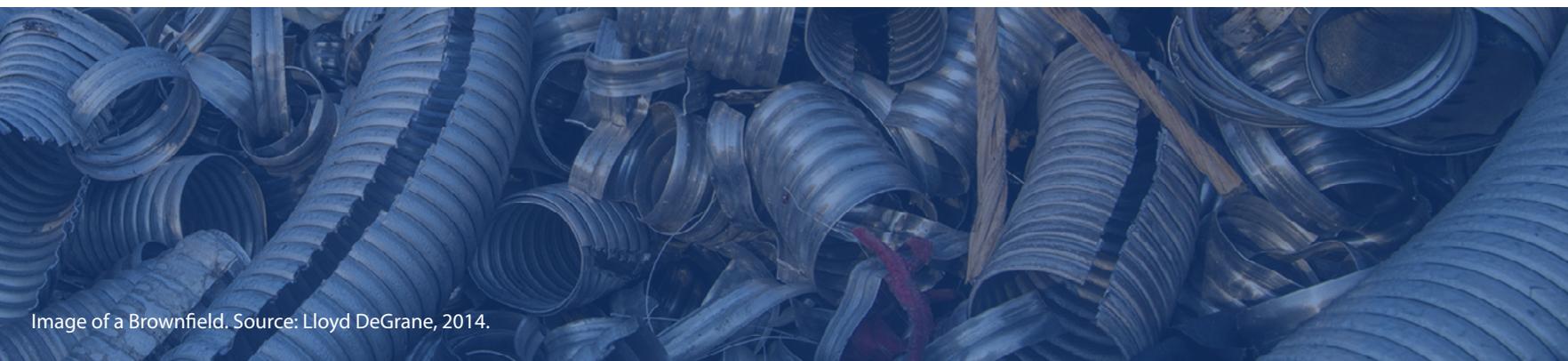


Image of a Brownfield. Source: Lloyd DeGrane, 2014.

List of Impacts and Return on Investment:

OUTCOMES	IMPACTS
Pioneered and proposed the “Environmental Justice and Action Plan”	Clearwater City Council approved the “Action Agenda,” making it the first environmental justice plan in the nation approved by a city government.
Cleaned up environmental contaminants at the Land Reuse Site, creating a safer/healthier community	Approximately 450 tons of petroleum-contaminated soil were extracted, reducing exposure for 3,500 community residents. The crime rate associated with this location decreased from when it was an abandoned gas station.
Created health facility in medically underserved, low-income community	The facility provided free bilingual health care to 3,500 community residents annually.
Created state tax credit (House Bill 527) incentive to encourage the construction of clinics and other healthcare facilities on Brownfields to serve the needs of local communities	Two entities received credit in 2017.
Pioneered a model to redevelop Brownfields into health facilities	More than 13 Brownfields have been redeveloped into health facilities in Florida. Nationally, more than 25 Brownfields have been redeveloped into health facilities.
Leveraged initial investments	The initial \$100,000 EPA grant has generated more than \$2.6 million in EPA Brownfields grant funding and \$6.7 million from other federal and state sources.
Stimulated additional investment and development	70 private sector projects and 17 community projects have created more than 1,000 new jobs and generated more than \$350 million in capital investment.

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Image of a Brownfield. Source: Lloyd DeGrane, 2014.

### Calling All Community Champions

You are the mover, the pusher, the one with the vision for a brighter future. You have the ability to create a better life for your family, your community, and future generations. Your spirit and **your passion can drive a positive change forever, and your energy is essential to the success of any project** in your community. Thank you for being bold, for moving forward, and making a difference. We know you're ready for the challenge, and we can't wait to see what's next!



United community at town hall meeting. Source: Getty Images, 2017.

### Get Started Now



[www.atsdr.cdc.gov/sites/brownfields](http://www.atsdr.cdc.gov/sites/brownfields)



[ATSDR.LandReuse@cdc.gov](mailto:ATSDR.LandReuse@cdc.gov)

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<a href="#">National Priorities List</a>	Introduction	Information about EPA's Superfund program
<a href="#">an interactive map</a>	Introduction	EPA's 'Cleanups in My Community' Map
<a href="#">BROWN</a>	Introduction	Information about the Brownfields & Reuse Opportunity Working Network (BROWN)
<a href="#">ATSDR Action Model Toolkit</a>	Step 1	The ATSDR Action Model Toolkit
<a href="#">Action Model</a>	Step 1	Information on the ATSDR Action Model
<a href="#">Photovoice</a>	Step 1	Information about PhotoVoice
<a href="#">Principles of Community Engagement</a>	Step 1	ATSDR's principles on community engagement
<a href="#">ATSDR Communication Toolkit</a>	Step 1	The ATSDR Communication Toolkit (ACT)
<a href="#">state, tribal, and even local environmental and health agencies</a>	Step 2	Health and Environmental Agencies of U.S. States and Territories
<a href="#">guidelines for both ESA I and II</a>	Step 2	The American Society for Testing and Materials (ASTM) International
<a href="#">offers assessment grants</a>	Step 2	EPA's list of Types of Brownfields Grant Funding
<a href="#">site eligibility for funding</a>	Step 2	EPA's list of Types of Brownfields Grant Funding
<a href="#">Grants.gov</a>	Step 2	Grants.gov website
<a href="#">tool for grant writing tips and obtaining grants</a>	Step 2	Presentation on how to write a grant application via UNC.edu
<a href="#">best practices</a>	Step 2	Best Practices to Be Grant-Ready
<a href="#">ATSDR Partnership to Promote Local Efforts to Reduce Environmental Exposure</a>	Step 2	Information on APPLETREE state cooperative program
<a href="#">health assessment</a>	Step 2	Public health assessments & health consultations reports
<a href="#">TAB program</a>	Step 3	TAB program at Kansas State University website
<a href="#">TAB program</a>	Step 3	TAB program at New Jersey Institute of Technology website
<a href="#">resources</a>	Step 3	TAB program at Center for Creative Land Recycling website
<a href="#">adapted and updated</a>	Step 3	EPA's Seven Cardinal Rules of Risk Communication

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<a href="#">outrage factors</a>	Step 3	Dr. Peter M. Sandman on Outrage Management
<a href="#">more information on risk communication</a>	Step 3	Information about risk communication via EPA
<a href="#">arsenic</a>	Step 3	Information about arsenic via ATSDR's Toxic Substance Portal
<a href="#">message map template</a>	Step 3	ATSDR's Message Mapping Template, Worksheet, and Checklist
<a href="#">resource directory</a>	Step 4	EDA Economic Development Directory

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