

Land Reuse and Redevelopment Toolkit

A Community Planner'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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 - [HHS Web standards](#)

This Toolkit's Purpose

The *Land Reuse & Redevelopment Toolkit* provides Community Planners 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 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.¹

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.² As foreclosures and manufacturing downturns increase, so may the number of Brownfields.

There are other types of sites that qualify as Land Reuse Sites.

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

The Basics

Resource Conservation and Recovery Act (RCRA) Regulated 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.³

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

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.³

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.⁴

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 to develop Healthfields throughout his home state of Florida.⁵

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



Image of a Brownfield.
Source: GettyImages, 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 all the information you need to build Healthfields or other health-focused redevelopments in your community.

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 from the effects of exposure to hazardous substances in the environment.



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

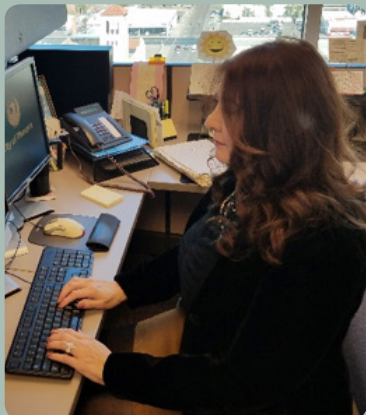
Are You a Community Planner?

If you live and work in a community where a Land Reuse Site is present, and you have the ability to coordinate, manage, and execute a Land Reuse Site redevelopment project, this toolkit is designed for you. Still unsure? Do you identify with the following questions?

If you answer “yes” to **any** of the following questions, you are a Community Planner:

- Would you like to be a community leader who people look to for answers?
- Are you detail-oriented and enjoy project management or coordination?
- Do you interact and coordinate with stakeholders to help ensure that your community lives a healthier life?
- Can you effectively communicate complex concepts in a simple manner?
- Are you a community member who is interested in zoning, the environment, and community development?
- Do you want to turn community ideas into a unified vision?
- Can you learn quickly about environmental and health concepts?
- Can you push through obstacles and difficulties to make your community healthier and stronger?

As a **Community** (or **City**) **Planner**, you can prepare short-term and long-term recommendations for how to best reuse the site in question. You’ll comply with city and state policies, and ensure that your suggestions follow the development goals and visions of your community.⁶



Roseann Albright

Environmental Programs Manager, City of Phoenix

“Step one should be about bringing your resources and partners together to understand what you have to offer. When you go to the community, you should be armed with the ability to answer questions about what you’re going to do and how you’re going to do it.”

Image of Roseann Albright, Community Planner.

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Are You a Community Planner?

Falling into Planning

Community Planners aren't always "planners" by trade. However, communities with fewer resources often nominate (or mandate) a respected individual to fulfill this role.

Does this sound like you? Don't worry! Several great resources exist to help you understand the technical nature of these projects and start your planning.

The U.S. Economic Development Administration (EDA) offers a [resource directory](#) that provides links to critical local resources, itemized by state and area of focus. Colleges and universities are also valuable, especially if they offer programs in:

- Urban Planning
- Community Planning
- Outreach Coordination
- Operations Planning
- Public Administration

Still Not Sure What a Planner Does?

Here is an outline of [typical responsibilities](#), skills, and knowledge a Planner has. There are even [different types of Planners](#), so you can identify the role that best fits the requirements of your project. When it comes to land reuse projects, a Community Planner may participate, monitor, and inform citizens about redevelopment phases, from start to finish.

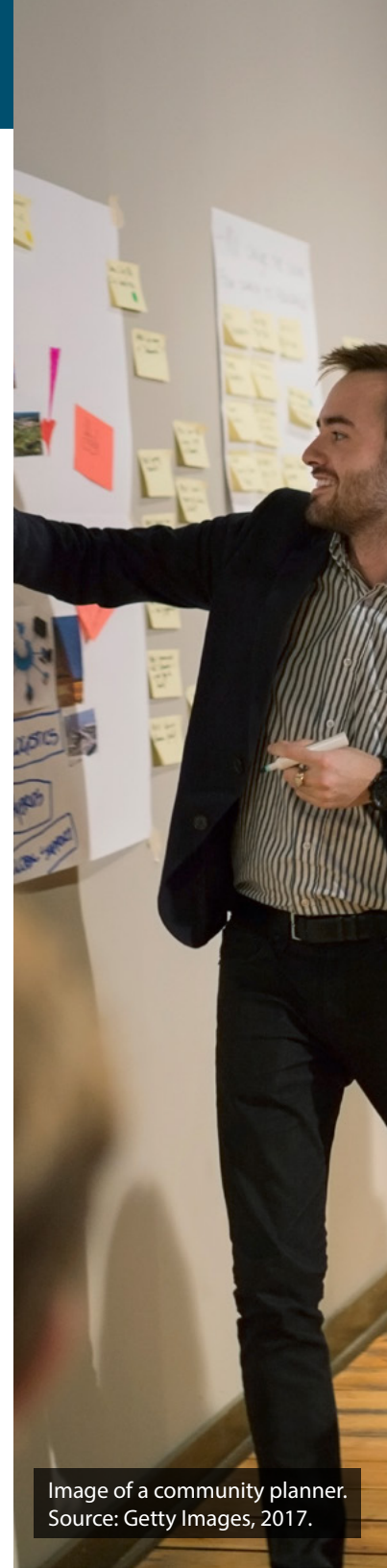


Image of a community planner.
Source: Getty Images, 2017.

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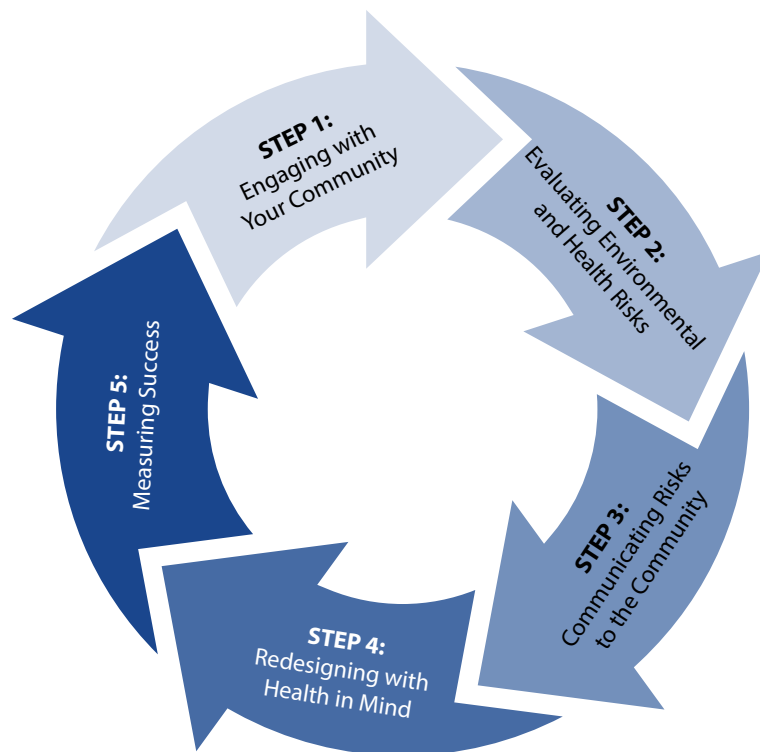
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Understanding How You'll Work within the 5-Step Land Reuse Model

The structure of this toolkit follows the comprehensive **ATSDR 5-Step Land Reuse Model** used by communities to transform potentially contaminated sites. As a Community Planner, you play a critical role in many of these steps.



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Step 1: Engaging with Your Community

First, get your community's support to address a Land Reuse Site and come together to establish a community vision, address your community needs, and define how you will spread information throughout the project. Make sure to create a broad "Development Community" – residents, nonprofits, Environmental or Health Professionals, and anyone who shares a vision for a cleaner environment and improved health.

Step 2: Evaluating Environmental and Health Risks

An Environmental or Health Professional may 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 or II is often referred to as a Phase 1 or Phase 2 Site Assessment.

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 any environmental and health impacts.

Step 4: Redesigning with Health in Mind

Once the community understands the ESA findings, you can discuss site cleanup and reassess the vision before you begin redevelopment. For example, the end result of a Healthfield redevelopment could include housing, produce markets, community gardens, health clinics, or parks.

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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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 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.⁷ 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 stakeholders accept and embrace changes in their operating environment.⁸

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 clinic or school 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 always **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. This will also reinforce the end goal of safely transforming a Land Reuse Site into a community asset.

Collaborating with Community Stakeholders to Establish a Vision

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, you can establish clear expectations, communicate effectively and always put your community first. Because **it can be challenging to speak with every member of the community** and to ensure you are considering their community health concerns, you could **identify Community Stakeholders to strengthen your Development Community**.

Community Stakeholders are people, groups, organizations, or even businesses that express interest in and concern for the community. Stakeholders can affect, or be affected by, the community's actions, objectives, and policies. Stakeholders make up your Development Community.

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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How Do You Identify a Community Stakeholder?

Choose diverse stakeholders who have a vested interest in community redevelopment as a common goal. Answering the following questions can help you identify who to invite — which can then guide you in shaping your project’s approach, and assigning the appropriate resources to activities.

1. Does the stakeholder come from sectors typically interested in community redevelopment, such as local health agencies, nonprofits, community resident groups, public safety, healthcare, park district, or education?
2. Can you ensure that you are including any stakeholder with an interest in the redevelopment project, or revitalization in general?
3. Can you tap into the stakeholder’s resources and networks to grow your project?
4. Will the stakeholder help hold the project accountable to help meet goals?

Once you have identified your Development Community, you can begin to discuss issues related to the Land Reuse Site and redevelopment. Your stakeholders and members of the community will likely have a long list of things to address. If that’s the case, see if you can combine categories.⁹

Also, remember to keep this process open and inclusive. New stakeholders may want to get involved at later stages in the project. You can welcome their interest, because they can provide valuable resources and reenergize the project if your original group begins to feel “burned out.”

Helpful Exercise:

If there are too many issues submitted, have your Development Community vote on their “Top 10” needs. You can narrow down the list and stay focused on what you can reasonably accomplish.

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Identifying Community Needs and Unified Vision

It can be difficult to identify and understand all of your community's potential needs or visions, and even more challenging to get your community to align on unified goals. Nevertheless, establishing a unified **Community Vision** is essential to a successful Land Reuse Site redevelopment project.

It's also important to consider long-term sustainability. And 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.

Community Vision is the shared consensus of a population about what future its members want, as well as a group decision about what is necessary to achieve it.

Image of Community Engagement. Source: Lloyd DeGrane, 2014.

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Methods of Community Engagement

ATSDR's [Principles of Community Engagement](#) provides a thorough overview of effective methods for communicating with communities. It is a resource you can use to keep your Development Community involved and engaged throughout the redevelopment process. 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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The ATSDR Action Model Toolkit

The [ATSDR Action Model Toolkit](#) helps the wide range of members of the development process find ways to integrate health into the redevelopment. In addition to municipal agencies, Environmental or Health Professionals, and planners and developers, the community 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.

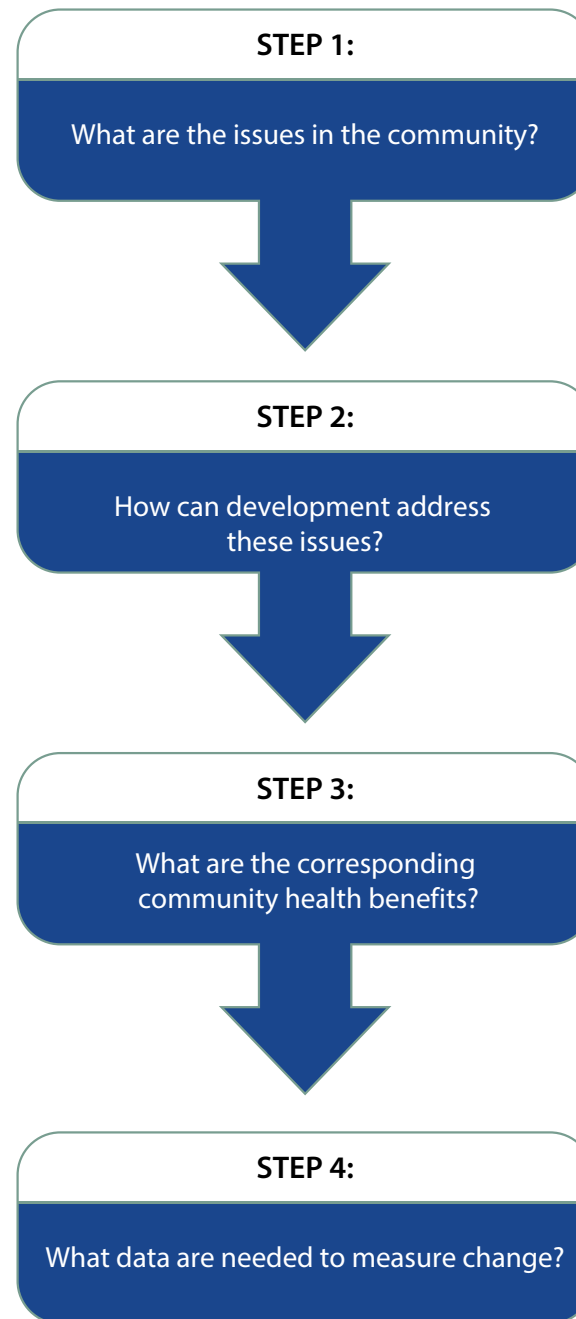
Guiding Community Conversations



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.¹⁰

Begin by inviting people to a collaborative setting, where they'll **visually depict their own image of what they would notice in their community if the changes they sought became true.**

You can provide markers, blank rolls of white paper, or planning maps to draw on. Ask specifically for images because they carry a lot of information very succinctly. 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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Developing an Engagement and Outreach Plan

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.

Once you establish your means of communication, you can develop and implement a plan to strategically communicate and engage with your community. Below is an outline of an Outreach Plan:

1. Define your Goals and Communication Objectives
 - A goal is a desired outcome that you envision, plan, and commit to achieving.
 - An objective is a more specific and measurable outcome that helps track your goals.
2. Identify your Target Audience Members
 - Who do you want to reach?
3. Create Your Message
 - What message do you want to communicate?
4. Design your Message
 - What is the best way to shape your message so that it is understood by your target audience?
5. Distribute Your Message
 - Use the agreed-upon communication channels to get your message to the target audience.

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Image of a planner engaging with community.
Source: Getty Images, 2017.



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

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Key Roles Within the Model

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Step	Roles	Activities
Step 1: Engaging with Your Community		Work with the Community Champion to engage and activate the community towards a unified vision for healthy land reuse.
		Work with your Municipal Agency to identify logistical and resource needs and develop plans for a successful redevelopment project.
Step 2: Evaluating Environmental and Health Risks		Work with the Environmental or Health Professional who is conducting the site assessment and identifying contamination.
Step 3: Communicating Environmental and Health Risks		Work with the Environmental or Health Professional to translate the results into plain language and understand potential risks.
	 	Work with your Community Champion and Municipal Agency to share results of the site assessment with the community and assess if any initial redevelopment plans might be impacted.
Step 4: Redesigning with Health in Mind	 	Work with the Community Champion and Developer to ensure the intended development is addressing the community's health needs and will benefit them.
Step 5: Measuring Success		Work with the Environmental or Health Professional to quantify the health benefits from the healthy land reuse.
		Work with the Municipal Agency to quantify the economic benefits from the healthy land reuse.

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Get Started Now

If your community is aware of the issues and desires to address the site, you're ready to begin. Contact ATSDR at:

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 ATSDR.LandReuse@cdc.gov



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.”

The two primary phases of the ESA process are designed to increase the level of understanding of the site condition.

1. ESA Phase I is sometimes referred to as “due diligence” or “all appropriate inquiry.” It 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

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.¹¹ **The American Society for Testing and Materials** (ASTM) International is a worldwide standards organization, which has strict [guidelines for both ESA I and II](#).

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.



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

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Understanding Community Health Assessments

To understand community health assessments, start with the basic health profile of your community. The data in this profile will provide a snapshot of your community's overall health, such as:

- Income and social status
- Social support networks
- Education
- Employment/working conditions
- Social environments
- Physical environments
- Personal health practices
- Coping skills
- Healthy child development
- Gender
- Culture

All of these factors need to be taken into consideration when you evaluate the health of your community and begin to communicate it to your members.

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. ATSDR has [more information](#) available about obtaining a Public Health Assessment.

There are several frameworks you and your community may use for a community health assessment. Here are three commonly used methods:

- The aforementioned **ATSDR Action Model**
- **Health Impact Assessment**
- **Protocol for Assessing Community Excellence in Environmental Health**



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

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Understanding Site and Health Assessments

Resident viewing Brownfield site. Source: Getty Images, 2017.

The **Health Impact Assessment** (HIA) can help you understand how a Land Reuse Site redevelopment plan can affect your community's health, as well as what options are most effective when evaluating proposals for a new health initiative. An HIA uses scientific data, professional expertise, and stakeholder input to identify and evaluate the public health consequences of proposals **before** they are implemented. It also suggests actions that can minimize adverse health impacts and bolster beneficial health impacts.¹² An HIA consists of six steps:

1. **Screening** – Determines the need and value of an HIA
2. **Scoping** – Determines which health impacts to evaluate, the methods for analysis, and the work plan for completing the assessment
3. **Assessment** – Develops a health profile of the community, including baseline conditions for various health conditions, literature reviews, and quantitative methods to assess likely effects of the proposed project
4. **Recommendations** – Provides strategies to manage identified adverse health impacts
5. **Reporting** – Develops the HIA report and communicates findings and recommendations
6. **Monitoring** – Tracks impacts of the HIA on decision-making processes and the decision, as well as impacts of the decision on health determinants

The **Protocol for Assessing Community Excellence in Environmental Health** (PACE EH) was developed by the CDC's National Center for Environmental Health and the National Association for County and City Health Officials to provide [guidelines for local health officials](#). This methodology guides communities and local health officials in conducting community-centered environmental health assessments, by relying on community collaboration to involve stakeholders in:

- Identifying local environmental health issues
- Setting priorities for action
- Targeting populations most at risk
- Addressing identified issues



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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.

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 understand the grants that might be available to you. You can also learn about compelling grant-writing. Here are some good resources for getting started:

- The Environmental Protection Agency (EPA) [funds 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](#), featuring Grants.gov.
- Finally, eCivis has worked with various states and major cities across the country on [best practices](#) to be “grant-ready”.

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.

ATSDR and partners have completed over 2700 health assessments at Land Reuse Sites across the country, of which 274 were Brownfields. ATSDR discovered health hazards at 42% of these Brownfields sites.¹³



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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.¹⁴

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 found to be contaminated with toxic materials—lead paint, methamphetamine, and suspected asbestos. Cleanup and redevelopment **turned the church into a hub 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.

Get Started Now

Ready to get your ESA or Community Health Assessment or have questions about the process? Contact ATSDR to learn how and where Environmental or Health Professionals can help you.



www.atsdr.cdc.gov/sites/brownfields



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

Translating the Environmental and Health Reports

After a successful ESA and/or Community Health Assessment has been conducted, you may need to communicate the findings and results to all community stakeholders. ESA reports are robust and complex. The findings of the Community Health Assessment may also be quite involved — and may continue to grow during the course of redevelopment (such as by tracking indicators created using the ATSDR Action Model).

This means you may need to simplify your message to the community so that they can understand the full risks and findings. Translating and synthesizing the documents into plain language will help your message reach the community, but make sure to also **consult your Environmental and/or Health Professional for assistance**. They are experts in environmental and health assessment, including communicating the risks of exposure from Land Reuse Site contaminants.

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](#)



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.¹⁴

The EPA originally developed the **Seven Cardinal Rules of Risk Communication** in 1988, which has been [adapted and updated](#) to evolve with our times. However, the rules themselves are the same — and what’s presented below will 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.

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, can be structured in a way that resonates with your audience. ATSDR and several of their APPLETREE and local health partners use message maps to assist with communication. Below is an example of message mapping, using a real-life example from a previous Land Reuse 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

<p>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</p>	<p>Key Message Children attending the daycare will not have direct contact with the residual arsenic contamination in the soil</p>	<p>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</p>
<p>Supporting information 1-1 Limited soil removal will take place in areas with highest arsenic levels</p>	<p>Supporting information 2-1 The playground has a layer of woodchips covering the soil</p>	<p>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</p>
<p>Supporting information 1-2 Cleanup plan will likely include placing additional layers across the entire playground</p>	<p>Supporting information 2-2 Owner plans to add additional layers of covering such as heavy landscaping fabric, crushed limestone, and woodchips</p>	<p>Supporting information 3-2</p>
<p>Supporting information 1-3 After additional layers added, children will not be able to come into contact with the soil</p>	<p>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</p>	<p>Supporting information 3-3</p>

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. Community Planners can use social media as a channel to share information with community stakeholders and identify opportunities for redevelopment of Land Reuse Sites.

Below are some best practices, to help you begin thinking of ways to integrate social tools into your communication efforts.

1. **'Social' isn't just a channel or a platform, it's a behavior.**

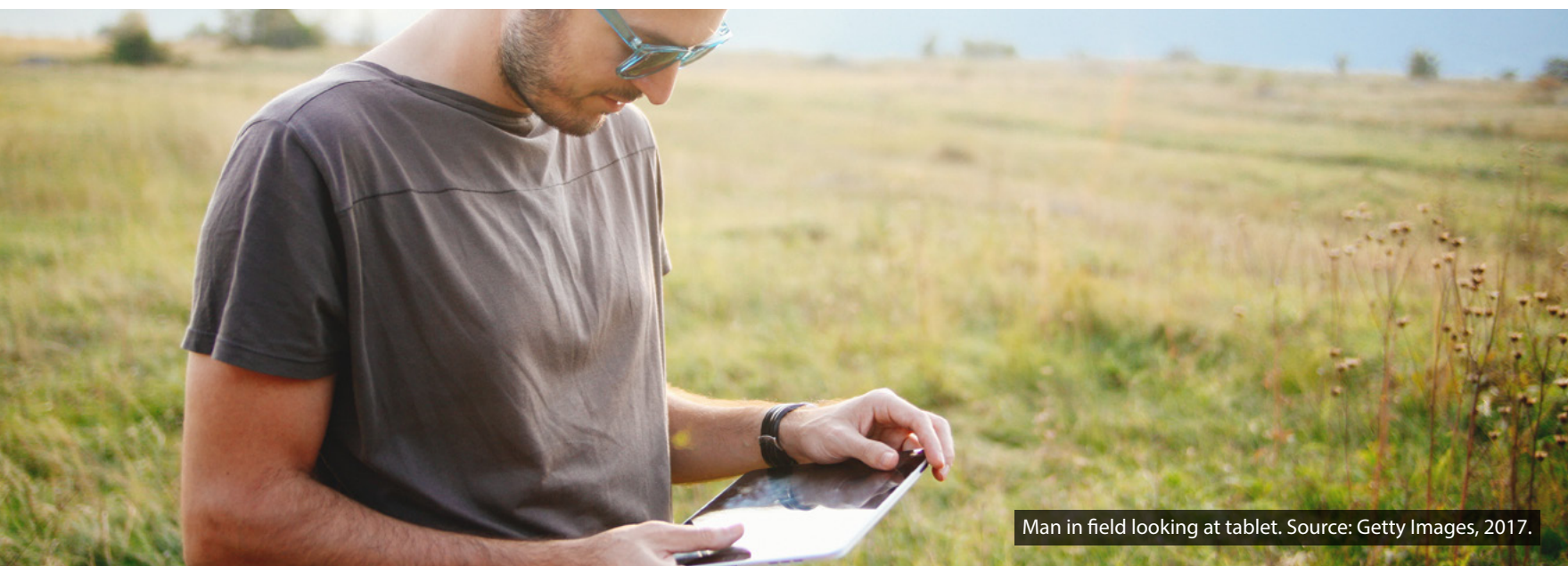
Social media should not be viewed as solely a message dissemination vehicle. Rather, it's an environment where millions of people connect to contribute in virtual dialogue. This is why social media practitioners should listen as much as they speak. For example, you can use social media to:

- a. Engage with or start a conversation with community members in your city who share concerns about contaminated sites or are interested in the outcomes of redevelopment projects

- b. Post specific details of upcoming meetings or events regarding the site(s)
- c. Host a live video chat to have some "face-time" with citizens, answer their questions, and listen to their concerns

2. **If you can't measure something, it didn't happen.**

It's essential to develop quality social media metrics. Those metrics can 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.



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

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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 work aligns with the purpose of each platform.

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

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 neighborhood.
- Please share this post to spread awareness of the risk of asbestos inhalation near contaminated sites.
- Comment below if you would like more information on Land Reuse Site rehabilitation programs in our neighborhood.
- Watch this time-lapse video to see the community garden being built.

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



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Focusing on the Community Vision

Emphasizing Health with Redevelopment

The Land Reuse Site in your city can be transformed into a site that benefits the health of your citizens. That's why it's 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 they **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.



Coordinating with Community and Project Stakeholders

As a Community Planner, your role is to serve as the central manager of the Land Reuse Site project. This includes coordinating with Environmental or Health Professionals who evaluate the site cleanup, while also coordinating with a developer who can transform the site after the contamination is removed.

As a leader during the project, you will also **provide the latest information to your Community Champion and the Municipal Agency Employees involved**. The ultimate goal is to keep everyone well-informed.

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.

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.

However, once your community is aware of the existing potential negative impacts of a Land Reuse Site, they may be able to face the fear of change with a more positive outlook. As you progress with your project, you may need to **be prepared to have some difficult conversations, because they will be incredibly important to getting community approval** for the Land Reuse Site redevelopment.

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Communicating the Value of Change

As a Community Planner, your job is to tell the story of the Land Reuse Site project in a positive and constructive way. So when you hear the frustrations and concerns of your community members, you can **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, or that it is simply neglected and could be redesigned to better serve your community. Your positive communication helps everyone understand the health benefits a Land Reuse Site redevelopment can offer.



Image of a planner engaging with community. Source: Getty Images, 2017.

Get Started Now

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



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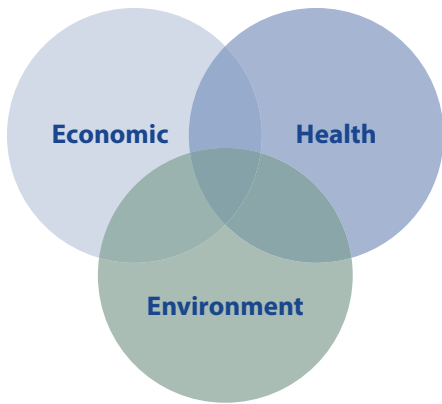
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The Importance of Measuring Impact

At the beginning of the project, it is important to define some metrics so you can gauge your progress. With this data, you can prove quantitatively that your work has created real economic, health, and environmental impacts. The goal is to **connect your measurements to the issues and needs that your community has identified.**

Applying Metrics to Measure Outcomes (Quantitative)

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



Economic: Jobs created, sales and revenue generated, new business entities created

Health: Health monitoring data, public safety qualitative community surveys

Environment: Data about air, water, or soil quality to understand exposure pathways

Here are a few examples:

Issue	Measurements
Community-wide employment and business issues	<ul style="list-style-type: none"> • Number of college-educated residents • Workforce statistics • Number of people shopping and dining
Access to recreation and amenities	<ul style="list-style-type: none"> • Trail expansion projects • Number of citizens using recreational trails • Number and usage of parks • Amount of green space per person • Number of grocery stores and medical clinics within walking distance of residential areas
Contaminated and blighted properties	<ul style="list-style-type: none"> • Site inventories • Overview of contaminants at sites and associated health effects • Site maps

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Identifying Health Impacts and Outcomes (Quantitative)

Because the purpose of this toolkit is to create positive health impacts in your community, the success of the project depends on tracking and evaluating the community's overall health. So, you may need to identify the most important health impacts and outcomes your community wants to achieve. For example: If you add more community gardens, the impact is "access to healthy foods." If you build a health clinic, the outcome is "access to health care." Track these exact health impacts and outcomes of the project and communicate them to all community stakeholders. The following case study gives a few examples of impacts and associated outcomes.

Applying Methods to Measure Public Sentiment (Qualitative)

Throughout the project, you can assess the **Public Sentiment** to track the success of the project. You can do so by creating surveys, speaking at community gatherings, and leading focus groups with individuals who are involved with the project or live near the site in question. It is important to account for your community's thoughts, feelings, concerns, questions and input about the redevelopment project. A few ways to measure Public Sentiment include:

- Community Pride and Satisfaction surveys
- Access to Healthy Food surveys
- Access to Open Space surveys (uncommon, but possible)



Assessing project results. Source: Getty Images, 2017.

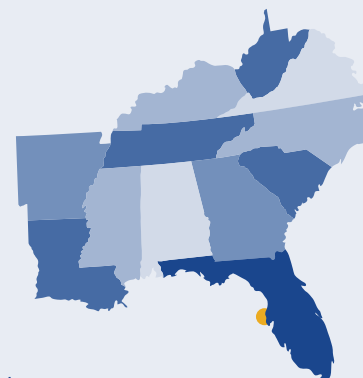
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Abandoned building. ATSDR Case Study, 2017



New Willa Carson Health and Wellness Center. 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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STEP	KEY DATE	ACTIVITY	ACCOMPLISHMENT
Step 1: 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
Step 2: Evaluating Environmental and Health Risks	2000	Site identification, assessment, and cleanup	Prepared the abandoned gas station for redevelopment into health clinic
Step 3: 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
Step 4: 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
Step 5: 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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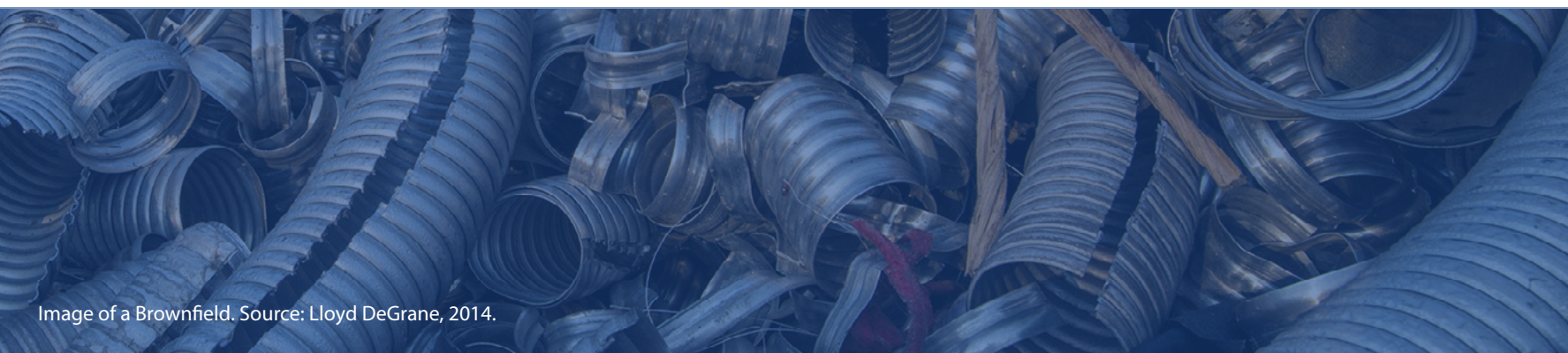


Image of a Brownfield. Source: Lloyd DeGrane, 2014.

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 provides 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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Get Started Now

Contact ATSDR to learn how you can begin the process of healthy land reuse.

 www.atsdr.cdc.gov/sites/brownfields

 ATSDR.LandReuse@cdc.gov

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National Priorities List	Introduction	Information about EPA's Superfund program
BROWN	Introduction	Information about the Brownfields & Reuse Opportunity Working Network (BROWN)
resource directory	Introduction	U.S. Economic Development Administration's Economic Development Directory
typical responsibilities	Introduction	Job description for Planner I / Assistant Planner via the American Planning Association
different types of Planners	Introduction	Summaries of typical job descriptions for seven common planning classifications, via the American Planning Association
Principles of Community Engagement	Step 1	ATSDR's principles on community engagement
ATSDR Action Model Toolkit	Step 1	The ATSDR Action Model Toolkit
Action Model	Step 1	Information on the ATSDR Action Model
Photovoice	Step 1	Information about PhotoVoice
guidelines for both ESA I and II	Step 2	The American Society for Testing and Materials (ASTM) International
state, tribal, and even local environmental and health agencies	Step 2	Health and Environmental Agencies of U.S. States and Territories
More information	Step 2	The ATSDR Petition Process
ATSDR Partnership to Promote Local Efforts to Reduce Environmental Exposure	Step 2	Information on APPLETREE state cooperative program
health assessment	Step 2	Public health assessments & health consultations reports
Health Impact Assessment	Step 2	Information on health impact assessments
guidelines for local health officials	Step 2	Protocol for Assessing Community Excellence in Environmental Health (PACE-EH) Guidebook
offers assessment grants	Step 2	EPA's list of Types of Brownfields Grant Funding
funds assessment	Step 2	EPA's list of Types of Brownfields Grant Funding
Grants.gov	Step 2	Grants.gov website
tool for grant writing tips and obtaining grants	Step 2	Presentation on how to write a grant application via UNC.edu

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best practices	Step 2	Best Practices to Be Grant-Ready
TAB program	Step 3	TAB program at Kansas State University website
TAB program resources	Step 3	TAB program at New Jersey Institute of Technology website
resources	Step 3	TAB program at Center for Creative Land Recycling website
adapted and updated	Step 3	EPA's Seven Cardinal Rules of Risk Communication
outrage factors	Step 3	Dr. Peter M. Sandman on Outrage Management
more information on risk communication	Step 3	Information about risk communication via EPA
arsenic	Step 3	Information about arsenic via ATSDR's Toxic Substance Portal
message map template	Step 3	ATSDR's Message Mapping Template, Worksheet, and Checklist

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