

Understanding Environmental Contaminants

Lessons Learned and Guidance
to Keep Your Rail-Trail Project on Track



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MISSION:

The purpose of Rails-to-Trails Conservancy is to enrich America's communities and countryside by creating a nationwide network of public trails from former rail lines and connecting corridors.

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to Keep Your Rail-Trail Project on Track*

October 2004

TRAILDART
TRAIL DEVELOPMENT ASSISTANCE RESPONSE TEAM

A Service of Rails-to-Trails Conservancy

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PREFACE



Commonwealth of Massachusetts

Mitt Romney, Governor ♦ Kerry Healey, Lt. Governor

OFFICE FOR COMMONWEALTH DEVELOPMENT

Douglas I. Foy, Secretary

October 5, 2004

Dear Rail Trail Supporters:

On behalf of Governor Romney, let me congratulate the efforts of the Rails-to-Trails Conservancy on completing this National Resource Guide. As we all know, environmental contamination has posed a significant barrier to the redevelopment of old industrial sites across the country, and the conversion of rail lines into pedestrian and bike trails offers no exception.

This guide provides valuable information that can help communities address contamination issues that have stalled projects in the past. Looking at real-life examples from across the country, it reinforces the need to go into these projects with your eyes wide open, ready to assess and manage environmental contamination whenever it is encountered. While contamination must be properly managed, it does not need to stand in the way of trail development.

Communities who are working to convert a rail to a trail need – and deserve – active support from all levels of government. These trails are part of a comprehensive smart growth strategy. They offer recreational opportunities to enhance healthy living and provide the transportation infrastructure necessary to serve more compact, bicycle and pedestrian friendly neighborhoods. For these reasons, state environmental, transportation and park agencies in Massachusetts worked with the Massachusetts Bicycle Coalition to establish best management practices on how and where to conduct soil testing along rail lines and how communities can safely, quickly and cost-effectively avoid exposure to contaminated soils during trail construction and use. These kinds of state efforts, along with the national effort represented in this Guide, will help us get and keep great rails to trails projects “on track.”

Once again, congratulations to the Rails-to-Trails Conservancy on the completion of this National Resource Guide and special thanks to the US Environmental Protection Agency for recognizing and supporting these important efforts.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Douglas I. Foy".

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INTRODUCTION: THE MAKING OF A MOVEMENT

Throughout Rails-to-Trails Conservancy's (RTC) 18 years of experience, contamination has generally not been an obstacle when developing rail-trails. Communities wishing to convert rail corridors into multi-use paths sometimes find themselves in the difficult position of dealing with known, potential or perceived contamination along a railbed. Questions arise during all phases of trail development, from land acquisition to management. Future trail users may ask about potential exposure at public meetings. Trail opponents may raise concerns about contamination as a means to impede or thwart trail development or property acquisition. Elected officials may fear contaminant clean-up could escalate project costs. Abutters may worry about dust kicked up during construction. Trail managers need answers to questions about contamination to keep projects on track, however no comprehensive source of information existed to aid trail developers in addressing these complex issues.

This report serves as a national resource guide to assist communities in utilizing new and existing brownfield programs to understand and address environmental clean-up issues that may inhibit the conversion of unused rail rights-of-way into multi-use trails. RTC's objective was to address brownfield concerns by researching appropriate legal, funding and construction issues related to rail-to-trail conversions. The findings of this research will assist local communities to resolve potentially complex contamination occurrences by employing successful strategies outlined in this report.

To address this problem and provide guidance to communities struggling to convert rail corridors into multi-use trails, this report seeks to answer the following questions:

- ◆ What potential contamination may be encountered along rail-lines?
- ◆ What steps need to be taken when contamination is found?
- ◆ How have other communities effectively addressed the legal, funding and construction issues of a contaminated site?
- ◆ What are the federal and state resources available to assist communities as they deal with legal, funding, testing, remediation and construction issues?

To answer these questions, the research team conducted a survey of trail managers to report the incidence of contamination and any remediation efforts, and case studies were chosen to analyze how other communities have addressed these issues. In the following pages you will also find a review of legal issues, funding sources and other state and federal resources available to trail developers. Finally, guidelines have been provided to the trail developer who must tackle the issue of remediation on a rail corridor.

This national resource guide has been created to aid communities where a potential hazard has been identified. Each rail corridor is unique and contamination may not exist or varies depending on uses of the corridor. However based on the survey conducted for this report — Lexis search on media over the past 20 years and contact with trail managers — Rails-to-Trails Conservancy has found that, overall, potential contamination along a corridor has not hindered the creation of rail-trails.

RAIL-TRAILS – A BACKGROUND

HISTORY OF THE RAIL-TRAIL MOVEMENT

It began in the mid-1960s, quietly, gradually, hesitatingly. There wasn't much fanfare. It was primarily a Midwestern phenomenon, barely noticed in places like Los Angeles, New York or Washington, D.C. People didn't say, "Is that the latest fad?" They said, "That's a really *smart* idea!"

The idea was to convert unused or abandoned rail corridors into public trails. A simple concept, unlike the complex railroad system that was crumbling physically and financially. It didn't require or even claim an inventor. Once the tracks were removed, people naturally started walking along the grades, socializing, exploring, discovering old railroad relics, and marveling at old industrial facilities such as bridges, tunnels, abandoned mills, sidings and switches. In the snows of winter the unconventional outdoor enthusiast skied or snowshoed on the corridor. In the days before even running and all-terrain bicycling were common pastimes, the predominant activity was walking. Of course, none of the corridors were paved or even graded. They were simply abandoned stretches of land.

"Rails-to-Trails" is what people started calling the movement, and the name was catchy and descriptive enough to give the concept a tiny niche in the fledgling environmental movement that was gathering momentum and bracing for huge battles shaping over clean air and water. However, it was destined to move into the mainstream of the conservation and environmental protection. After all, it had all the ingredients: recycling, land conservation, wildlife habitat and historical preservation, non-motorized transportation, physical fitness, recreation access for wheelchair users and numerous other benefits.

In 1965 few Americans understood the national importance of rail-trails. Rails-to-trails was still a highly localized movement. But gradually a realization emerged that America desperately needed a national trails system and that abandoned rail corridors were the perfect backbone for that network. Today, more than 35 years later, rail-trails have begun to make a significant mark, with 12,585 miles of rail-trails and approximately 100 million users per year.

THE VALUE OF RAIL-TRAILS

Rail-trails provide places for cyclists, hikers, walkers, runners, inline skaters, cross-country skiers, equestrians and physically challenged individuals to exercise and experience the many natural and cultural wonders of the nation's urban, suburban and rural environments. Rail-trails not only serve as independent community amenities, they also enhance existing recreation resources by linking neighborhoods and schools to parks, waterfronts, recreation centers and other facilities.

Multiple Recreation Opportunities. Rail corridors are flat or have gentle grades, making them perfect for multiple users, including walkers, inline skaters, bicyclists and people with disabilities. Trails are multimodal and versatile passageways.

Economic Renewal and Growth. Trail users spend money on products and services related to recreational activities. Bicycle and inline skate shops, food stores, hotels and tourist locations report an increase in business as a result of trails. Trail-related businesses spring up in communities with trail, spurring economic growth in the area.

Increased Property Values. Studies have shown that properties on land adjacent to trails and greenways often increase in value. People are willing to pay more money to have a multi-use trail in their

neighborhood. Trails have become an important amenity that homebuyers seek when choosing where to live.

Healthy Living. The U.S. Surgeon General estimates that 60 percent of American adults are not regularly active and 25 percent are not active at all. In communities across the country, people do not have access to trails, parks or other recreation areas close to their homes. Trails and greenways provide safe, inexpensive avenues for regular exercise.

Environmental Protection. Trails and greenways help improve air and water quality. Communities with trails provide enjoyable and safe options for clean transportation, which reduces air pollution. By protecting land along rivers and streams, greenways prevent soil erosion and filter pollution caused by agricultural and road runoff.

Connecting People and Communities. Trails serve as utilitarian transportation corridors between neighborhoods and workplaces. They connect congested urban areas with open space. By bringing people to greenways for their daily commutes, trails unite people and their natural surroundings.

Regional Systems. Bringing trails together to form networks dramatically increases the positive impact trails can have on their communities by creating threads of green linkages within and between communities. Regional trail systems increase the value of the whole by connecting the parts, forming a more cohesive transportation system allowing people to travel to other communities or to work and combine trail use with other forms of transit.

NATIONAL PERSPECTIVE: RAIL-TRAIL CONVERSIONS AND ENVIRONMENTAL CONTAMINATION

LEGACY OF THE RAILROADS

By the beginning of the 20th century railroad transportation was synonymous with industry and success. Having a railroad in town was considered a great status symbol and communities often bid against one another to entice the railroad to come to town. In the United States, railroads reached a peak in total mileage around World War I with approximately 270,000 miles of track. The system has since shrunk to the current total of about 105,000 miles. The collapse of the railroad industry can be generally attributed to the loss of cargo traffic to trucks in the 1950s and loss of passenger traffic to increased automobile travel.

In the early 1980s the rapid abandonment of corridors by railroads and the dismantling of this valuable network set off alarms, and Congress passed an amendment to the National Trails System Act in 1983. This law allowed unneeded rail lines to be "railbanked," or set aside for use in the future as a transportation corridor, while being used as a trail in the interim.

The collapse of the railroad industry has left a network of linear transportation corridors, which if lost today would be difficult, if not impossible, to recreate. While no longer needed for rail use, these important corridors are being recycled and offer communities the opportunity to create multi-use trails. Today, in 2004, we are nearing 13,000 miles of open rail-trails that are used for a variety of purposes including physical activity, recreation and transportation.

RECYCLING RAILROAD CORRIDORS — CONTEXT AND ISSUES

In addition to leaving an intricate network of linear corridors, the railroad industry left contamination associated with its other activities. Discarded materials used by adjacent industries, contamination associated with regular railroad management and repair such as weed control, leaks from material transfers or accidents, loading practices and other instances of contamination may be found in varying degrees along rail corridors, depending on the railroad's management practices and type of industry along the corridor. The type and extent of contamination falls into two general categories, residual contamination that may be found along any stretch of corridor — urban, suburban or rural — and contamination associated with industrial uses along the corridor.

The most common contamination found along rail corridors is residual contamination from railroad operations. The most commonly reported contaminants along rail corridors include arsenic, which was used as an herbicide to control weeds, metals and constituents of oil or fuel (petroleum products), which likely dripped from the rail cars as they passed over the corridor. Other possible

THE GREENBUSH LINE CORRIDOR in Hingham, Mass., was tested for contamination in 2003 as part of a project to reconstruct and re-open this line for commuter rail use, which had previously operated for about 100 years, but was shut-down in 1959. The Massachusetts Bay Transportation Authority collected 622 soil samples along the corridor. A review of that data shows that 11 percent of the samples exceed the Massachusetts Department of Environmental Protection's standards that indicate the presence of an imminent hazard and that more than 20 percent exceed contaminant reporting levels for arsenic.

SOURCE: Massachusetts Department of Environmental Protection, *Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails*.

contaminants include creosote used to preserve wood ties, coal ash from engines, and polynuclear aromatic hydrocarbons (PAHs) from diesel exhaust. Data collected in Massachusetts during the development of a commuter rail serves as one example of the results of extensive testing for residual contamination. Trail development can often serve as the most practical method to deal with risks posed by residual contamination.

Industrial activities either in railyards or adjoining the rail also contribute contaminants. These areas are often associated with switching and rail yards, where higher levels of petroleum, metals, pesticides and other substances associated with repairs and general maintenance can be found. In addition, higher contamination levels have been found on sidings or in areas adjacent to industries where contaminants have spread onto the rail bed. These areas may warrant targeted investigations to identify if elevated or more hazardous levels of contamination require specific clean-ups are present. (See Case Study 1: Manhan Rail Trail.)

NATIONAL SURVEYS

In order to assess the degree to which the issue of contamination impacted rail-to-trail conversions, Rails-to-Trails Conservancy (RTC) conducted a national review of what was done on current rail-trails as well as a survey of coverage of this issue in the media.

SUMMARY OF RAIL-TRAIL MANAGER SURVEY RESULTS

In an effort to assess the actual efforts of rail-trail developers around the country to uncover traces of contaminated residue from past railroad operations, and any subsequent effort to mitigate any such substances found in the corridor being developed for trail use, RTC developed a questionnaire designed to elicit any actions or discoveries of consequence (See appendix A for questionnaire.)

This survey was e-mailed to 715 trail contacts. Of these, 112 returned the survey filled out either in whole or in part and 81 were discovered to be defunct e-mail addresses. Of the active e-mails, the survey received an 18 percent response rate. A summary of the responses is below and an itemization of responses to key questions is reproduced in Appendix B.

As shown below in the Summary of Responses, the survey shows that most rail-trail developers and managers followed due diligence procedures (including Phase I assessment and visual inspection), surveying the corridor, to one degree or another, and finding nothing, continued with development plans.

SUMMARY OF RESPONSES	
Trails indicating Phase I Assessment	20
Trails indicating Phase II Assessment	3
Trails indicating visual inspection	16
Trails indicating soil samples	10
Trails finding toxic residue	10
Trails finding "no evidence" of contamination	15

In addition to surveying trail managers on the trail corridor, they were asked about railroad sidings and operations years. RTC was curious as to whether these parcels of land were more likely to be contaminated. Only two respondents remarked on this situation and concluded that they tested and found no contamination of concern.

SUMMARY OF LEXIS SEARCH — MEDIA

Project managers may be concerned that public attention could unduly focus on the contamination and detract from efforts to promote trail development. One way to gauge potential public concern about contamination on rail corridors is to look at the news articles reported in the media. RTC conducted a search of newspaper articles on Lexis. Search criteria included major newspapers and were subject to Lexis search exclusions and rules. The search revealed that while there were more than 3,000 articles that mentioned rail-trails, few mentioned the most common residual contaminants; arsenic and creosote. Criteria for the search and exclusions can be found in Appendix D. The table below summarizes the number of articles found with each set of search criteria.

RESULTS OF LEXIS RESEARCH ON “RAIL TRAILS” AND “TOXINS”		
Terms	Hits	
	All News (English)	Major Newspapers
Rail trails	more than 3000	more than 3000
Rail trails, toxins	22	8
Rail trails, toxins, arsenic	4	0
Rail trails, toxins, arsenic, creosote	0	0
Rail trails, toxins, creosote	1	1
Rail trails, creosote	13	6
Rail trails, arsenic	19	3
Rail trails, arsenic, creosote	0	0

RISK MANAGEMENT STRATEGIES

When dealing with a corridor that may be contaminated, it is important that the trail developer employ a risk management strategy that includes planning, designing, constructing and maintaining the trail to reduce risks to construction workers, maintenance crews and trail users. This is also the best defense against liability. This section provides some steps that trail developers should take when building and managing a trail.

Why should a trail manager be concerned about hazardous materials in a rail corridor?

- ◆ Protect human health and the environment;
- ◆ Liability which may result in litigation;
- ◆ Funding sources or lending institutions may require investigation (due diligence);
- ◆ Regulatory requirements, and;
- ◆ Construction and maintenance considerations.

When should you be concerned about potential contamination?

PRE-PURCHASE

Prior to purchasing the corridor and after finalizing a preliminary agreement with the railroad representatives, the buyer should complete due diligence procedures and become familiar with federal and state regulations concerning liability. This process entails examining the state of the title, surveying the property, appraising the corridor's value, assessing the integrity of structures within the corridor and conducting an environmental assessment of the corridor. After these steps are complete, if the due diligence raises new issues or reveals contamination problems, the buyer should meet with the railroad representatives or landowner to renegotiate the terms of the agreement. Following this meeting, if the buyer is content with the new terms of the agreement then the acquisition of the corridor should be finalized.

POST-PURCHASE

For the following reasons, you will still want to be concerned about contamination even if you have acquired the property without following the ASTM requirements:

- ◆ People using the right-of-way prior to construction may be exposed to contaminants at unsafe levels;
- ◆ Construction contractors may need to test soil that looks contaminated in order to comply with Occupational Safety and Health Administration requirements for their workers;
- ◆ Any soil removed during construction may be subject to either federal and state hazardous waste disposal requirements;
- ◆ Identifying contaminated soil prior to construction allows you to properly manage and budget for handling of contaminants. You may even be able to relocate soils to other parts of your project area to avoid off-site disposal costs.

TYPICAL CONTAMINANTS — WHAT YOU MIGHT FIND

What constitutes a contaminant?

In general a contaminant is any physical, chemical, biological or radiological substance such as an element, compound, mixture, solution, etc., that can be found in any media (air, surface water, ground-water or soil) that may be harmful to human health or have adverse effects on the environment. In terms of federal regulations and statutes, a contaminant has been defined as a hazardous substance, hazardous waste or pollutant by various policies including the Comprehensive Environmental Response Compensation Liability Act (CERCLA), the Solid Waste Disposal Act, Clean Water Act and the Clean Air Act. In Section 40 CFR302 of the CERCLA, there are 717 substances listed as hazardous materials. CERCLA and state laws that were surveyed appear to exempt the normal applications of pesticide from clean-up laws. In some states this exemption also applies to herbicides and fertilizers.

What are the contaminants I should be aware of when acquiring a rail corridor?

- ◆ Railroad ties (wood-treating chemicals including creosote)
- ◆ Spilled or leaked liquids (oil, gasoline, diesel fuel, cleaning solvents and detergents)
- ◆ Herbicides
- ◆ Fossil fuel combustion products (PAHs)
- ◆ Roofing shingles (asbestos)
- ◆ Air Compressors (used in braking and for starting engines)
- ◆ Transformers and Capacitors (used in train controls and electric generation)
- ◆ Metals (arsenic — pesticides, wood preservatives, fossil fuel combustion; mercury — combustion products, leaking gauges)

DUE DILIGENCE

The term “due diligence” represents the process of evaluating the risks and value of a corridor that is to be purchased. To exercise due diligence a corridor buyer must implement a plan to identify possible hazards and carry out the appropriate corrective action to prevent acquisition of an environmentally contaminated area. Due diligence is important in legal matters as a buyer could face potential lawsuits pertaining to the health and safety of the corridor’s patrons.

The level of due diligence warranted will depend on the

BASIC PROCESS STEPS

- ◆ *Conduct due diligence, inventory potential hazards along the corridor;*
- ◆ *Analyze potential adverse health effects caused by hazardous substances released to human and ecological receptors;*
- ◆ *Determine what, if any, additional mitigation steps need to be taken;*
- ◆ *Examine both risks and benefits associated with various remedial alternatives;*
- ◆ *Provide information needed by regulators and the public;*
- ◆ *Design and locate the trail to avoid dangers. Warnings of potential hazards should be provided and hazards should be mitigated to the extent possible;*
- ◆ *Follow state and federal laws regarding construction in a contaminated area and removal of contaminated soils and other materials;*
- ◆ *Once the trail is open for use, a comprehensive management plan that includes risk management should be in place;*
- ◆ *A qualified person should regularly inspect the trail to identify potential hazards and maintenance problems, and;*
- ◆ *Signage and fencing should be posted to protect trail users when needed.*

situation and the state's regulations. As can be seen by the survey responses and the Lexis search, contamination has not been a hinderance to trail development. However starting with some basic due diligence will help the trail developer decide what levels of assessment are needed.

STATE REGULATIONS

Unless a rail-trail happens to run through a Federal National Priority List or "Superfund" site, the U.S. Environmental Protection Agency (EPA) will probably not have direct regulatory involvement in any clean-up actions. EPA policies and federal brownfield legislation often limit EPA regulatory involvement when a clean-up follows state requirements. Each state has different requirements. The American Society for Testing and Materials (ASTM) has developed inquiry standards that EPA has adopted, which may also be adopted by the state. The state's lead environmental agency will be the best place to find state contamination clean-up requirements. Most states now have a division that works on clean-up or remediation that is often found in the state environmental protection agency. A trail developer could also consult an environmental professional about state requirements for levels of investigation.

Many state programs have similar steps but differ in how involved state officials will be in each step. Generally the steps in the clean-up process are as follows:

- ◆ An initial assessment (the due diligence report should suffice for this step);
- ◆ A follow-up assessment that includes sampling areas of concern identified in the initial assessment;
- ◆ Determination of existing risks and target clean-up levels;
- ◆ Development of a remedial plan to cost-effectively achieve the clean-up levels;
- ◆ Implementation of the remedial plan, and;
- ◆ Post clean-up close-out.

The level of a state's involvement determines the pace of clean-up and can also affect overall costs. Some states will review and approve each assessment report and clean-up plan before a developer can proceed to the next step. A clean-up agreement with the state may need to be signed requiring the trail developer to pay the costs of state review. More and more states have developed programs allowing private parties to proceed with assessments and clean-ups supervised by licensed environmental professionals. In Massachusetts, for instance, most clean-ups proceed entirely under the direction of private clean-up professionals and do not require any approval by the state.

Determining the level of clean-up for a corridor fundamentally determines how much mitigation is necessary. Several approaches have been developed on determining how much clean-up is necessary. Initially most states developed site-specific standards based on a methodology of extrapolating health risks from contaminant levels known as "risk assessment." Risk assessment methods contain many variables and assumptions. As a result the development of site-specific standards can be time-consuming. Some states have developed generic clean-up levels based on the current and expected use of the site. These generic levels greatly simplify the clean-up decision-making process and create a "bright finish line."

States using generic clean-up standards require developers to file deed notices if contaminant levels remaining on-site will not protect people in all situations. The deed notice may include the following

information: (1) a plan indicating the location covered by the notice, (2) a description of the contaminants of concern, (3) a list of allowable and restricted uses, (4) a plan to maintain any cap or barrier and, 5) steps that must be taken when contaminated soils need to be excavated.

Once clean-up levels have been established, clean-up alternatives are reviewed, and costs and a clean-up plan are developed. Many states now allow asphalt and landscaping to serve as protective barriers for contaminated soils. An environmental consultant or state environmental agency should be able to recommend the thickness of asphalt and ground cover that has been found acceptable in other locations in the state. In some instances, half-a-foot to two feet of contaminated soil may need to be removed or treated. Any soil removed off-site must be transported to an appropriate location. For instance, Massachusetts prohibits contaminated soils from being transported to any location significantly less contaminated than the soil. This helps prevent circumstances where slightly contaminated soil ends up in the backyards of new residential developments.

The clean-up plan must be developed into a detailed scope of work to be included in the construction contract. The scope should be as detailed as possible and discuss how contamination will be addressed, including test protocols, quantities and types of contaminants to be cleaned-up.

Often the contractor that constructs the trail will also be responsible for removing railroad ties and contaminated soil. A contractor can make more money removing contaminated soil than clean soil.

EVOLUTION OF CLEAN-UP LAWS

IN 1970 THE CLEAN AIR AND CLEAN WATER ACTS banned many pollution discharges into air and water. Companies initially complied by capturing pollutants and storing them in drums, lagoons or dumping them in landfills. By the late 1970s those wastes had seeped into soil and groundwater, and harmed or threatened to harm people, plants and wildlife. In reaction to major waste sites such as Love Canal in Upstate New York, in 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. CERCLA authorized the EPA to undertake clean-ups and then sue polluters and property owners for those costs.

CERCLA had an important prospective impact—polluters became much more aware of where any hazardous wastes were going and began to seek facilities to destroy the wastes rather than dump them. Many industrial and commercial property purchasers began inspecting and testing properties for the presence of contamination to protect themselves from legal liability and clean-up costs.

In the early 1980s, many states enacted laws similar to

CERCLA to spur waste site clean-up. Agencies hired staff to oversee each step of work. Although enacted in reaction to “Love Canal,” EPA and state agencies began to find everyday practices of common businesses such as gas stations, repair shops, dry cleaners and manufacturers also resulted in releases of contamination. The list of locations that may have posed a risk to health and the environment grew at a rapid rate and quickly outstripped the federal and state government resources available to undertake clean-up or force polluters to do so.

New testing technologies allowed soil and water testing with accuracies in the parts per billion range. The accuracy of these tests stood in contrast to the knowledge of whether such levels of contamination posed a risk to either people’s health or the environment. Faced with this uncertainty agencies took the position that contaminants must be reduced to nondetectable limits, or to limits that would protect any foreseeable use. Many less contaminated properties began to linger on the federal and state lists. Prospective buyers started to avoid acquiring these properties to avoid regulatory delays and clean-up costs that were often uncertain.

HIRING AN ENVIRONMENTAL PROFESSIONAL

AN ENVIRONMENTAL PROFESSIONAL can quickly gather information from national and state databases and records sources, such as Sanborn Maps, speeding the understanding of what areas along the rail-trail are of most concern. Trail advocacy groups can assist with this effort by gathering historical information about industries along the line and property ownership.

Many states keep lists of environmental consultants, however, these lists will not provide much guidance on the right consultant for the project. Consult with staff within the trail organization or other government agencies that deal regularly with buying and redeveloping property, and who have hired environmental consultants in the past. Government agencies may also have to follow procurement requirements for hiring service professionals.

Here's a brief list of questions to ask any environmental professional:

- ◆ *Does the professional have licenses for and experience performing due diligence investigations for real estate transactions in the local area? Do they have experience with the American Society for Testing and Materials standards?*
- ◆ *Have they directed soil removal and other remedial actions, and understand the proper regulatory steps and costs for those actions?*
- ◆ *Is the firm familiar with sample collection of soil, ground water and surface water?*
- ◆ *Has the firm performed on-site testing of soil for pesticides and herbicides typically found on rail lines? Are they familiar with analytical requirements? What laboratory do they use for testing?*
- ◆ *Does the firm comply with Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response Standard certification and safety training requirements?*

Depending on the procurement requirements discuss general needs and obtain fixed price quotes from several firms on the due diligence investigation.

An engineer or consultant independent of the construction contractor can confirm the quantities of material the construction contractor removes and that the correct testing procedures have been followed. The construction contract should require the construction company to make reasonable efforts to minimize unwanted off-site disposal of contaminated soil.

LEVELS OF INVESTIGATION

Is the corridor a brownfield?

According to the (EPA), the word "brownfield" is used to describe areas of abandoned or underused land that is perceived to be, or in fact is, environmentally contaminated due to past industrial or commercial use. Railroad corridors, or sections of corridors, can be considered brownfields. If a corridor or an adjacent property is suspected to be a brownfield, the state natural resources or environmental protection agency should be contacted to determine if the property has been identified as a brownfield. If this is not the case, a Phase I, and possibly a Phase II environmental site assessment may be necessary.

ENVIRONMENTAL ASSESSMENT

If there is a possibility that a trail corridor may be contaminated, an environmental expert should be enlisted to conduct an environmental assessment, especially before negotiations for or a purchase of the property. The nature of the assessment will depend on the property and the potential for contamination, but should include, at a minimum, the equivalent of a Phase I assessment.

A Phase I assessment combines research into the property's history with a visual inspection. Courthouse records, title abstracts, historic aerial photographs and newspaper accounts offering background on the past uses of the site might provide some insight into the property's history. Interviews with local gov-

ernment representatives, adjacent landowners, and state and federal officials may also uncover historical events about which the current railroad knows nothing. Phase I assessments are not regulated by the federal government, but may be by the state. The scope of work for the Phase I may include (from Massachusetts Department of Environmental Protection, *Best Management Practices for Controlling Exposure to Soil During Development of Rail Trails*):

- ◆ Investigate the rail line history and locate old stations, crossings, spurs and rail yards. The railroad's valuation plans and historical aerial photographs for the properties abutting the rail line can provide much of this information;
- ◆ Investigate site use, identify commercial and industrial stretches, and conduct historical research of adjacent properties. The valuation plans and Sanborn Insurance maps can provide much of the information for the snapshot in time when they were developed. Local historical societies may have information on leading local industrialists and their businesses;
- ◆ Review the existing federal and state lists of known or suspected disposal sites to see if any are located along the right-of-way;
- ◆ Inquire with neighbors, fire department personnel or the local historical society for further information on train crashes, accidents and other incidents that may have released chemicals;
- ◆ Conduct a thorough, visual inspection of the right-of-way, looking for:
 - ❖ Contaminated soil as evidenced by discoloration, odors, differences in soil properties, pipes or buried debris;
 - ❖ Signs of illegal dumping of waste from businesses or industry (not simply household trash);
 - ❖ Stressed vegetation or "dead zones";
 - ❖ Areas of soil run-off, both away from the right-of-way and toward the right-of-way;
 - ❖ Signs of wind erosion sufficient to create dust inhalation exposure, and;
 - ❖ Signs of public use of the existing right-of-way (condoned or trespassing), such as dirt-bike trails, play forts, beverage cans and fire pits.
- ◆ Prepare a list of locations that warrant further investigation including sampling techniques, assessment costs and, if possible at this stage, an estimate of potential clean-up costs.

If the Phase I study identifies problem areas, a Phase II assessment may be required. The Phase II assessment can be avoided if the Phase I does not find an area of significant contamination and the corridor owner assumes responsibility for clean-up costs should problem areas need attention. A Phase II assessment involves more thorough testing of water, air and soil samples, as well as a more thorough investigation of the site. If contamination is found, a Phase III assessment will review clean-up alternatives, clean-up costs and recommend a remediation plan for clean-up.

While the techniques for identifying environmental contamination have become increasingly sophisticated, the cost and responsibility for clean-up and restoration are less clear. Federal law targets past and present owners, operators, transporters and generators of hazardous substances. Assigning responsibility and collecting money for clean-up is complicated by the history of contamination and the likelihood that the original contaminators may no longer be traceable, or if they still exist, do not have the

financial capacity to pay for clean-up. Although the railroad has certain responsibilities as the property owner, do not be surprised if the railroad's representative wants to include clean-up costs as a negotiating point.

Overall, an environmental assessment can cost anywhere from a few thousand dollars to more than \$20,000 if extensive soil and water samples are taken over a broad area. The assessment and its results can quickly become a critical issue in negotiations to acquire the property. Before taking title to the property, make sure the purchase contract clearly states who will pay for any environmental problems that have been discovered. Seek warranties and representations from the railroad indicating there is no known contamination, or if that is not the case, disclosing the actual situation and plans for remediation.

REMEDICATION ALTERNATIVES

Once it is determined that remediation is needed, the environmental consultant should prepare an estimate of the approximate costs of alternatives to address the identified contaminants. This cost estimate may be used in negotiations to reduce acquisition costs. If the trail developer owns the land or will be accepting it for a nominal charge, they will want to include the clean-up plan in any construction contract for the project.

Railroad Ties

Generally, salvaging of track and ties prior to construction can be profitable, depending on the market. However, if high levels of contamination are found, this may not be the case. An environmental consultant can help identify licensed facilities that will accept old railroad ties for disposal. In order to avoid liability for illegal disposal, do not reuse the ties on existing properties or allow the public to take them away. On-site burial may be possible if your project includes a large area such as a parking lot. The Massachusetts Department of Conservation and Recreation disposed of ties and contaminated soil under a parking lot built while creating a park on a former municipal dump along the Neponset River near Boston. Ballast can be used to serve as a sub-base for the new trail.

Trail Construction

Communities can take several actions to address residual and industrial contamination on rail corridors. Taking care of remediation during trail construction can be the most effective means to address contamination. The following is a list of the most common methods for addressing residual contamination on a rail corridor. Combining these methods can be an effective way to address residual contamination and site-specific contamination associated with industry. The Massachusetts Department of Environmental Protection has developed Best Management Practices that promote capping in areas with residual contamination.

The most common methods for addressing residual contamination on a rail corridor include:

- ◆ **Cut and Fill** — Soil containing high contamination is removed, replaced by clean soil to fill the corridor. Regrading of the site may require fill to be placed in certain areas. See if the design engineer and construction company can use contaminated soil where fill is needed, or for another use such as roadway subgrade, or disposed of in an appropriate manner as outlined by the state's environmental laws. If your corridor is wide enough, you may be able to create vegetated berms on the edges of the trail to contain the contaminated soil. Contaminated soils should never be relocated to areas with high human contact, such as playgrounds, schools or residential yards. (See Case Study 3: Doyle Street Greenway.)

- ◆ Capping the Surface — Hard surfaces, such as asphalt and cement, may be used to “cap” or cover and isolate contaminated soil along the corridor. Likewise the use of crushed stone with appropriate depth may also be used. Your consultant or state agency should be able to provide you with guidance on these issues. (See Case Study 2: Betsie Valley Trail.)
- ◆ Exclusions — In cases where contamination is, or is perceived to be, higher due to due diligence research, a trail developer may choose to exclude a portion of the corridor from purchase and use a separate route alternative to avoid human contact with the contaminated site. This may also be employed as a temporary alternative until a contaminated site may be remediated. (See Case Study 1: Manhan Rail Trail.)
- ◆ Signage and Fencing — Signage and fencing are used to keep trail users on the trail and protect them from specific contaminated sites. (See Case Study 4: Trail of the Coeur d’Alenes.)
- ◆ Phytoremediation — The process of cleaning contaminated soil and water with plants. Phytoremediation is best used for contamination in the top layers of soil, where the roots of the plants reach. It may be employed in combination with other techniques.

RECOVERING CLEAN-UP COSTS FROM THE POLLUTER

If the organization involved in trail development and remediation did not cause the pollution, recovering the costs to clean-up the contamination may be an option if the polluter can be identified. Involve polluters as soon as possible so they can be involved and possibly fund investigations and clean-up planning. Document that the plan follows clean-up laws to ensure your organization can seek cost recovery. In order to do so any soil samples collected and tested must have a documented “chain-of-custody” and records must have been adequately kept on how samples were collected and handled.

Pursuing polluters can be cost prohibitive and time consuming. If the railroad is the major polluter the best way to handle these costs is during the negotiations of the land transfer. An agency or local environmental attorney can help negotiate conditions regarding environmental clean-up as part of the land transfer.

MANAGEMENT AND MAINTENANCE

Managing risks associated with a contaminated corridor does not stop after construction ends. If contaminated soil is removed, then the problem is eliminated. However if the area with elevated contamination was simply capped with a hard surface it will be important for the trail manager to stay on top of maintenance to ensure the trail user is sufficiently protected. Regular maintenance, as well as reconstruction of a trail surface at the end of its life (7–15 years for asphalt, 20 plus years for concrete and 7–10 years for crushed stone) will be important. In addition, if needed, trail signage and fencing should be maintained. (See Case Study 4: Trail of the Coeur d’Alenes.) More information about trail maintenance can be found in Rails-to-Trails Conservancy’s “Trails for the Twenty-First Century, Planning, Design, and Management Manual for Multi-Use Trails,” by Charles Flink, Kristina Olka and Robert Searns.

CASE STUDIES

SUMMARY

The case studies serve as examples of ways communities have addressed contamination. An environmental professional and agency contacts can help you evaluate the best approach to your situation. In an effort to gain a more thorough understanding of the impact of discovering contaminants on a corridor, we have selected four rail-trail projects which did encounter some level of contamination and developed in-depth case studies exploring the mitigation measures taken.

These case studies provide examples of:

- ◆ Cleaning contamination on a rail corridor caused by adjacent industrial uses;
- ◆ Community involvement in trail development and clean-up efforts;
- ◆ Common solutions to dealing with contamination;
- ◆ Partnership efforts between government agencies to develop corridors;
- ◆ Funding challenges;
- ◆ Lessons learned.

CASE STUDY I: MANHAN RAIL TRAIL, EASTHAMPTON, MASSACHUSETTS

BACKGROUND

The Manhan Rail Trail provides a good example of the barriers that communities must surmount in order to convert an old rail corridor into a multi-use community trail. When complete, this eight-mile trail will run from Easthampton to Northampton, Mass. Four of the five miles of the trail in Easthampton opened in June 2004. The remaining one-mile contaminated section of corridor in Easthampton is currently not open to the public.

Typical of many New England communities, Easthampton, Mass., was a manufacturing city serving the textile, chemical household cleaner and insulation industries. It was also served by a railroad that thrived until the mid-1970s when much of the industrial activity ceased. The Manhan Rail Trail follows the former New Haven Railroad's Canal Division corridor, which paralleled the Farmington canal running from New Haven, Conn., to Northampton, Mass.

By the late 1970s changes in the environmental laws and relocation of businesses to places like North and South Carolina, brought about a shift that made the mill buildings largely dormant. By 1991 the Pioneer Valley Railroad (PVRR) – which had taken over all the trackage in the city – instituted a freight surcharge because of poor track conditions. The surcharge drove the last customer using the railroad, the W.R. Grace & Co.'s Zonolite plant, to close. The railroad filed for abandonment of the approximately five miles of corridor in Easthampton in 1992.

The Friends of the Manhan Rail Trail formed in 1996 to advocate for the trail. The city of Easthampton approved the purchase of the corridor, and by 1999 the PVRR removed the track and the city acquired the corridor.

CONTAMINANTS AND REMEDIATION

The primary concern over contamination along the Manhan Rail Trail was at the site of the former W.R. Grace & Co., plant, where raw materials (semi-processed vermiculite ore containing tremolite asbestos, a suspected carcinogen) were converted to insulation. The Massachusetts Department of Environmental Protection (MDEP) and the U.S. Environmental Protection Agency

(EPA) began testing the soil along the corridor in 2000. W.R. Grace & Co., agreed to conduct further testing, which showed asbestos contamination extending about 700 feet north and 200 feet south of Wemelco Way along the abandoned rail bed. At around this time, W.R. Grace & Co., entered into Chapter 11 bankruptcy because of the number of asbestos-related lawsuits filed against it.



The city of Easthampton hired Tighe & Bond, an environmental engineering company, to assess the degree of contamination and recommend a remediation treatment. Tighe & Bond estimated it would cost approximately \$260,000 primarily in disposal costs to clean up the contamination along nearly 1,000 feet (40 feet wide) of the planned bike path route.

The city of Easthampton is still waiting for funding to clean up the site. The proposed method of remediation is to replace one foot (deep) of contaminated material with clean soil and pave the trail. Simply paving the trail was discounted because the railroad ties are still in place and the city is interested in installing a parallel sewer line. The trail will be fenced and signed in order to keep the users on the trail.

FUNDING

Initial testing of the corridor was conducted as part of a larger project to test W.R. Grace sites by the MDEP and the EPA. Tighe & Bond, the environmental engineering company that assessed the degree of contamination and recommended clean-up, donated their time to the project, thus reducing costs to the city.

Identifying funding sources for remediation of the corridor was difficult. In 2003 and 2004 the City of Easthampton submitted grant applications to the EPA's Brownfields Clean Up program but did not receive funding. However, U.S. Representative John Olver (D-Mass.) announced the inclusion of \$750,000 in the new transportation bill to remediate the asbestos and construct the rail-trail, which is still pending.

Additionally, in early 2003, the city of Easthampton filed a claim against W.R. Grace & Co., for its failure to clean up asbestos-contaminated soils at the site of its former manufacturing plant on Wemelco Way. The case is still pending.

LESSONS LEARNED

The first hurdle was convincing the responsible parties that the asbestos should be cleaned up, rather than the alternative of not building a trail and thus not needing to clean the contaminated land.

The second major challenge with this project was finding a funding source for the cleanup. Project planners found that the EPA Brownfields Assessment and Cleanup program was a good potential source of funding. However, the project is being funded through the next transportation legislation before Congress at the time of this report.

The final lesson learned in this project was that better communication between the state agencies would have been beneficial, especially between the state highway and environmental protection departments.

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CASE STUDY 2: BETSIE VALLEY TRAIL, BENZIE, MICHIGAN

BACKGROUND

The 22-mile Betsie Valley Trail is located in Benzie County, Mich., along the shores of Lake Michigan between the communities of Thompsonville, Beulah, Elberta and Frankfort. Rail use began on this line in the 1880's, first to bring wood to Elberta, Mich., to fire metal refining ovens and later to carry passengers between the Thompsonville depot and Frankfort. In the 1930s rail car ferry service began from Elberta, allowing rail cars to be shipped across Lake Michigan. In 1980 the Michigan Department of Transportation (MDOT) purchased the bankrupt Ann Arbor Railroad company. In 1982 the last rail car was transported by ferry and in 1985 the train made its last trip through Benzie County.

Twenty-two miles of the Betsie Valley Trail are open for use and another two miles are still under development. The Michigan Department of Natural Resources (MDNR) owns the majority of the line and has a formal agreement with Benzie County to partner during construction and act as a local manager of the trail. The last two sections, one mile each, are owned by the village of Elberta and the city of Frankfort. Seven miles of the Betsie Valley Trail are surfaced with asphalt, three with crushed limestone (in the Crystal Lake Area), and an additional 12 miles are currently unimproved and are open to snowmobiles.

Concerns over arsenic contamination in the soils of the rail corridor were raised by adjacent property owners opposed to trail development on the Crystal Lake beach area near their homes. Beginning in 1988 and ending with a settlement in 1996, adjacent property owners sued MDOT for ownership of the rail corridor along a three-mile stretch of beach front on Crystal Lake. The settlement allowed for adjacent owners to purchase the beach/rail property adjacent to their homes provided they agreed to a lifetime rail, utility and trail easement. The trail location could be relocated provided that 1) it was at the property owner's expense; 2) it would be continuous; 3) have a safe curve radius; and 4) meet general safe trail design standards. Once the relocation was approved by the MDNR, a land survey was taken to create the easement language for each property deed. This is being completed now.



CONTAMINANTS AND REMEDIATION

In May 1999 six soil samples were collected from the middle of the railroad corridor, approximately four to six inches below grade. Analysis of the samples showed levels of arsenic ranging from 8.4 parts per million (ppm) to 72 ppm. This is elevated above Michigan Department of Environmental



Quality's (MDEQ) standards for residential direct contact. In June 1999 additional samples were taken from the shallow ground water beneath the railroad bed. Results showed that contaminants decreased rapidly as you moved out from the center of the tracks.

Additional testing was performed in July 2001 and May 2002. This testing revealed arsenic (8.4–72 ppm) and benzopyrene (0–9ppm) (a Poly Aromatic Hydrocarbon or

PAH). The conclusion from these tests was that the three miles along Crystal Lake were contaminated, though there is reason to believe that the entire 22-mile corridor in Benzie County is contaminated at a similar level.

Seven miles of the corridor is capped by the trail surface. In the Crystal Lake area, the contaminants were removed, replaced with clean fill and a crushed limestone surface was applied. This eliminated direct contact as well as fit with the court settlement requirements. The process of capping the trail surface did not require additional time to complete during the construction process. The contractor was required to follow guidelines on working with contaminated soil, such as ensuring soils did not become airborne during construction.

Along the Crystal Lake segment of the trail, all contaminated soil was removed. This was done because of the proximity of the contaminants to homes in this section. The depth of the contaminants varied due to previous and variable movement of the contaminants by adjacent property owners. Homeowners in this section were insistent that the state clean the contaminants out. Excavation of the contaminated soil began in October 2002 and was completed in June 2003 by MacKenzie Environmental.



For removal of contaminated soils in the Crystal Lake segment, the involved agencies were MDEQ, MDNR, Michigan Department of Community Health, MDOT, Crystal Lake Property Rights Association and MacKenzie Environmental.

The surface work in other sections of the trail to cap the contaminants involved MDNR, MDEQ, Betsie Valley Trail Management Council (Benzie County), Johnson Hill Land Ethics (landscape architect), Gourdie Fraser and Assoc., (engineering firm), Elmer's Crane and Dozer, and Kramer Contracting.

FUNDING

Excavation and surface costs for the Crystal Lake section of the trail was \$750,000. MDEQ, MDNR and MDOT contributed funding to the project. Some local match funds (\$14,000) provided by the Friends of the Betsie Valley Trail were used, but not intentionally. Construction costs for the trail outside the Crystal Lake segment did not require significant additional expenses. The cost and process to surface the trail is essentially the same with or without contaminants, if the contaminants are not removed but capped in place by the trail surface. Funding consisted of state and federal grants, and foundation and local funds were used to match the grants.

LESSONS LEARNED

Due to the court settlement for the Crystal Lake segment, adjacent property owners were allowed to relocate the trail. Many property owners did this by moving the railroad ballast stones off the corridor and onto a new location. This spread the contaminants over a much greater area. This required more testing, additional on-site monitoring of the soil removal process and more costs. The other sections of the trail created no major challenges.

Because of the potential health impacts adjacent landowners can be particularly concerned about contamination near their homes. Efforts to educate people in the communities with the facts will be time well spent. Most people will read the information and realize the best course of action is to cap the contaminated earth. The public agency is then responsible for developing and presenting a plan to cap the contaminated soil.

CONTACT INFORMATION

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A CASE STUDY 3: DOYLE STREET GREENWAY, ALAMEDA, CALIFORNIA

BACKGROUND

The Doyle Street Greenway is located in Emeryville, Calif., a small community of less than 10,000 people across the bay from the San Francisco. The trail project is part of a larger city-wide renaissance to transform itself from an old industrial landscape with many brownfield projects to a livable community with vibrant high tech and commercial industries. The 0.4-mile rail-trail follows a Santa Fe Railroad spur line that once serviced Emeryville, Calif., and Berkeley, Calif. It will be extended by an additional 0.4 miles in order to connect it to other trails.



CONTAMINANTS AND REMEDIATION

Testing of the corridor began before the city of Emeryville purchased the rail corridor from Union Pacific. Both soil and groundwater testing were undertaken to determine the nature and extent of contamination. The soil sample tests showed higher levels of arsenic (up to 689 mg/kg), lead (up to 3,227 mg/kg), and petroleum hydrocarbons (TPH as diesel at concentrations up to 11,300 mg/kg). It was determined that the entire 2,200-foot rail-trail was contaminated.

To clean up the site, approximately 2.5 feet across the entire site of contaminated soil was excavated and disposed of, off-site. It was replaced by a layer of clean fill and a combination of hard-surface and greenscape was chosen as the surface material. This method was chosen because it offered the most thorough level of protection of the public's health and minimized long-term maintenance and liability issues.

The remediation process involved the cooperation of the city of Emeryville, the U.S. Environmental Protection Agency's (EPA) Department of Toxic Substances Control, the California Environmental Protection Agency's Regional Water Quality Control Board and Union Pacific Railroad.

FUNDING

The project cost approximately \$1 million and was funded in part by EPA's Brownfields Assessment Demonstration Pilot Program as well as by the city of Emeryville, California State Park and Bicycle Bond Funds, Union Pacific Railroad and Pulte Homes, which paid for improvements adjacent to their developments.



LESSONS LEARNED

A major challenge to this project was developing accurate cost estimates for use in negotiations with the railroad. Estimates are difficult to nail down because there are so many different components to such a project that impact the costs, such as acquisition and sampling schedule, and shifting costs of improvements to the private sector through development and design negotiations.



In putting the project together, staff from the city of Emeryville found it useful to engage the various regulatory agencies early in the process in order to avoid surprises during negotiations or after property had been purchased. Much to their advantage, the city of Emeryville can serve as a regulatory agency for less complicated projects, such as this one. The city is very familiar with the redevelopment of railroad spurs because of the large number of them within the city, and therefore is familiar with the special issues surrounding these projects.

Project staff also found it useful to have sufficient funding for the project, allowing them to work through various problems that developed during the course of the project. For example, it is difficult to completely characterize the contaminants in the soil and so having flexibility as the project progressed permitting project managers to react to new information as it became available.

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U.S. EPA Region 9 Brownfields Team
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www.epa.gov/region09/waste/brown/index.html
www.epa.gov/brownfields/

CASE STUDY 4: TRAIL OF THE COEUR D'ALENES, KOOTENAI, SHOSHONE AND BENEWAY COUNTIES, IDAHO

BACKGROUND

The Trail of the Coeur d'Alenes is a 10-foot-wide, 73-mile-long asphalt trail. It stretches west from the mountain mining town of Mullen, Idaho on the Montana border, along the Coeur d'Alene River in Idaho's Silver Valley to Plummer, Idaho in the prairie lands near the Washington border. As a former Superfund site, this rail-trail presents an extreme case of contamination.

Construction for the rail corridor began in 1886 when silver was discovered and the railroad was used to transport ore and other concentrates. Mine waste was used as fill material in constructing the corridor and further contamination occurred when flooding carried mine waste from non-railroad source points to other parts of the railroad corridor. Union Pacific (UP) proposed abandoning the corridor in the 1990s and the State of Idaho and the Coeur d'Alenes tribe jointly filed for railbanking. In 1996, the Justice Department filed a lawsuit against UP, in which the railroad agreed to pay \$30 million to clean up the contaminated corridor. Construction took place between 2001 and 2004.

CONTAMINANTS AND REMEDIATION

A level 1, complete human health risk assessment, was conducted to determine if trail contamination would cause health risks. Hundreds of sample cores at various depths along the entire length of the right-of-way were taken. Contaminants such as lead, arsenic and other heavy metals were found all along the corridor. Contamination levels varied but tests indicated contamination greater than 30,000 part per million in some places.

According to the Environmental Protection Agency (EPA), an engineering evaluation/cost analysis determined that the best option for remediation of the heavy metal contamination was to remove and dispose of some contaminated material, lay vegetative barriers and cap the corridor with asphalt. Contaminated soil was removed and replaced by noncontaminated materials on the section of the corridor near Chatcolet Lake on the Coeur d'Alene Tribe Reservation. A total of 175,000 cubic yards of contaminated materials were removed and remediated, approximately 200,000 cubic yards of barrier material were utilized, and 65 miles of 10-foot-wide asphalt capped the surface.

Ties were removed, decontaminated and salvaged, and tie dump areas from the railroad operations were cleaned up. Lastly, vegetative, asphalt and gravel barriers were used to control trail user exposure to lead.

Trail signage and outreach materials are in use to educate and protect the trail user. A brochure can be found at each trail head recommending removing dirt from clothes, toys, pets, shoes and equipment before leaving the area.



The brochure also warns not to let children play near shore lines or off the trail, and for trail users to carry water for drinking and washing.

The agencies involved in the mitigation process included: Idaho Department of Parks and Recreation, Coeur d' Alenes Tribe, Department of Justice, EPA, Idaho Department of Environmental Quality, U.S. Fish and Wildlife Service, Panhandle Health, Army Corp of Engineers, Union Pacific Railroad, counties and cities, Idaho Attorney General's Office and the Idaho Department of Transportation.

FUNDING

The entire trail, except for one short section of trail between Mullan and Kellogg which was paved with a \$1 million Transportation Enhancements grant, was funded and built by UP under a consent decree that UP entered into with the federal government, the State of Idaho and the Coeur d'Alene Tribe. UP's estimated costs are \$30 to \$40 million dollars.



UP is still responsible for long-term flood damage to the trail, soil and asphalt barriers and bridges. They keep track of these costs so in the future the government and UP can negotiate a trust fund to cover these long-term costs.

LESSONS LEARNED

Trail advocates, including government agencies, faced a long process with many barriers to build a multi-use trail through a superfund site. At the time there were no similar examples to refer to, which would have made the process easier. There were many opponents to the project and it was difficult to coordinate the many agencies and entities involved in negotiating the deal with Union Pacific.

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www.idahoparks.org/pdf/TrailCDAweb.pdf

FUNDING AND OTHER RESOURCES

This section provides additional resources for federal and state assistance and funding sources.

FEDERAL AND STATE RESOURCES

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The EPA maintains an extensive Web site on Superfund information. Pertinent information includes the section on "Laws, Policies & Guidelines" and the section on "Human Health & Ecological Risk." The "Exposure to contaminants" heading under "Human Health & Ecological Risk" is extremely useful.

www.epa.gov/superfund/index.htm

The EPA also maintains information on brownfields. www.epa.gov/brownfields/ and www.epa.gov/brownfields/liab.htm

SAMPLE STATE PROGRAMS:

COMMONWEALTH OF MASSACHUSETTS, DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WASTE SITE CLEANUP

The bureau has developed detailed "Best Management Practices for Rail Trail Conversion." www.mass.gov/dep/bwsc/files/railtrail.doc

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION: BROWNFIELD INFORMATION

The Web site offers information about brownfields in New York with links to the Brownfield Cleanup Program, the Environmental Restoration Program and State Superfund Program.

www.dec.state.ny.us/website/der/bfield/

TEXAS BROWNFIELDS REDEVELOPMENT INITIATIVE

In close partnership with EPA and other federal, state and local redevelopment agencies, and stakeholders, Texas is facilitating clean-up, transferability, and revitalization of brownfields. The Web site provides in-depth information about federal tax incentives and property tax incentives.

www.tnrcc.state.tx.us/permitting/remed/vcp/brownfields.html

WISCONSIN DEPARTMENT OF NATURAL RESOURCES (DNR): BROWNFIELD INFORMATION

The DNR's Web site provides a wide range of information on financial and liability tools in order to assist local governments, businesses, lenders and others to clean up and redevelop brownfields in Wisconsin.

dnr.wi.gov/org/aw/rr/rbrownfields/

WASHINGTON STATE DEPARTMENT OF ECOLOGY: TOXICS CLEANUP PROGRAM

This is a good example of what states are doing to promote environmental remedial actions.

The Web site provides specific information regarding statewide policies on toxic substances.

www.ecy.wa.gov/programs/tcp/cleanup.html

FUNDING SOURCES

ENVIRONMENTAL PROTECTION AGENCY (EPA)

BROWNFIELDS ASSESSMENT GRANTS

These grants fund activities to inventory, characterize, assess and conduct planning and community involvement related to brownfield sites. The performance period is two years. Different levels of funding are available for assessment related to various contaminants, with a total application cap of \$700,000. For more information see www.epa.gov/brownfields/pilot.htm.

REVOLVING LOAN FUND GRANTS (RLF)

These grants provide funding for grant recipients to capitalize a revolving loan fund and provide subgrants to carry out cleanup activities at brownfield sites. Revolving loan funds generally are used to provide no- or low-interest loans for brownfields cleanup. Grants are available up to \$1 million and require a 20 percent match by the applicant. Performance period for these grants is five years. For more information see www.epa.gov/brownfields/pilot.htm.

CLEAN-UP GRANTS

These grants fund actual clean-up activities at brownfields sites. Funds are available up to \$200,000 per site, with a limit of five sites per applicant. It requires a 20 percent match by applicant, and the applicant must own property that will be cleaned. A minimum of a Phase I site assessment must be completed prior to a proposal submission. The performance period for these grants is two years. For more information see www.epa.gov/brownfields/pilot.htm.

HEALTHY URBAN COMMUNITIES GRANT PROGRAM (NEW ENGLAND ONLY)

The 2003 grants program integrated nine New England programs dealing with toxics, schools, urban environment and more. Projects funded targeted communities at risk, sensitive populations (i.e. elderly and children), assessed and understood environmental and human health risks, increased collaboration through community-based projects, built institutional and community capacity to understand and solve environmental and health problems, and achieved measurable benefits. Green and open space projects have been funded, but no grants were awarded in 2003 for testing or remediation along rail corridors being converted to rail-trails. The grants program may change for 2004.

Check the Web site for details at www.epa.gov/region01/eco/uep/grants.html.

U.S. DEPARTMENT OF TRANSPORTATION

TRANSPORTATION ENHANCEMENTS (TE)

Environmental testing and remediation along a rail corridor may be eligible for TE funds if the project qualifies under the TE category of "Conversion of Abandoned Railway Corridors to Trails." However not every state utilizes TE money for these purposes and the project sponsor should check with the state TE coordinator first. Visit www.enhancements.org for more information about TE and state contact information.

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG)

CDBG grants may be used for a wide variety of projects that improve communities. Assessment and clean up of rail corridors that are being converted into multi-use community trails may qualify under these funds. U.S. Housing and Urban Development administers these grants for designated entitlement communities. Each state administers the funds for nonentitlement communities. For more information about these funds see www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm.

MASSACHUSETTS STATE AND LOCAL FUNDING SOURCES

COMMUNITY PRESERVATION ACT FUNDS (CPA)

CPA allows towns and cities to approve a referendum allowing them to levy a community-wide property tax surcharge of up to three percent for the purpose of creating a local Community Preservation Fund and qualifying for state matching funds. Funds raised through the CPA may be used for acquisition, creation, preservation, rehabilitation and restoration of open space. Testing and remediation would qualify for funding under this program. For more information, contact the Trust for Public Land at www.tpl.org.

MASSACHUSETTS BROWNFIELDS REDEVELOPMENT FUNDS

These grants fund testing and remediation on brownfield sites, but are currently restricted to redevelopment for economic development (housing, business, etc.). Though cleaning open space does improve communities, thus increasing the property values and inspiring local investment and business, these activities do not currently qualify for this funding. However this funding could potentially be used for testing and remediation of former railroad yards for redevelopment.

APPENDIX A: SURVEY FORM TO TRAIL MANAGERS — ATTEMPT 1 AND ATTEMPT 2

Name of trail:

Open for use or still under development, or both:

If open, surface type:

Miles of open trail:

Miles of trail under development:

County(ies) and state:

Please answer the following questions in as much detail as possible:

- ◆ A brief history of rail use on the corridor and when it stopped.
- ◆ Any other background that may be useful, relevant, or interesting.
- ◆ Type of testing done.
- ◆ Type of toxin(s) found and levels.
- ◆ Length of trail contaminated.
- ◆ Method of mitigation and why that method was chosen.
- ◆ Who was involved in mitigation process (list all government and private entities).
- ◆ Cost of mitigation.
- ◆ How long did the mitigation process take.
- ◆ Funding sources (various local, state, federal assistance programs, and any private monies used).
- ◆ Major challenges to remediation project.
- ◆ Suggestions to others to others in same situation / words of advice.
- ◆ Having gone through this, what would have made this process easier for you, resources that would have made the project easier (more, bigger, easier access to funding sources, clearer regulations, information).
- ◆ Impact of past contamination and remediation on ongoing maintenance (cost and otherwise).
- ◆ Contact information (name, organization, address, phone, e-mail, web site).
- ◆ Please send photos if you have them (before, during clean up, after).

APPENDIX B: TRAIL MANAGER SURVEY RESPONSES

TRAIL MANAGER SURVEY

CHIEF LADIGA TRAIL, AL

Extent of testing: Phase I.

Test results: Found no contaminants.

Comments: Ties taken up by railroad.

OLD RAIL ROAD BED, AL

Extent of testing: Unknown, railroad went into bankruptcy in late 1880s.

Test results: NA

Comments: NA

TBD, AL

Extent of testing: Trail still under development but not concerned as railroad was used to haul lumber. Inspection will probably happen during engineering yet to come.

Test results: NA

Comments: NA

TBD, AR

Extent of testing: Trail still under development and no testing has been done as of yet.

Test results: NA

Comments: NA

MOHAVE AND MILLTOWN RAILROAD TRAIL, AZ

Extent of testing: Did not survey or test because 1) not aware that it could be a problem because 2) the railroad was in service only a short time and the ties were removed 50 years ago.

Test results: NA

Comments: NA

OHLONE GREENWAY BICYCLE TRAIL, CA

Extent of testing: Not aware of any testing, but all city staff who were involved in project are gone.

Test results: NA

Comments: City recently purchased a siding from the railroad for a park next to the trail. The city did soil testing but no contamination was found.

UNION PACIFIC TRAIL, CA

Extent of testing: Phase II test.

Test results: NA

Comments: NA

UPPER TAMPA TRAIL, FL

Extent of testing: No testing done as part of trail project, but land was acquired five years prior and some testing may have been done then.

Test results: NA

Comments: NA

ARABIA MOUNTAIN TRAIL, GA

Extent of testing: Level 1 test.

Test results: NA

Comments: Corridor abandoned in 1936, not concerned.

NW ATLANTA GREENWAY TRAIL, GA

Extent of testing: No testing.

Test results: NA

Comments: Ties removed by salvage company for resale.

SILVER COMET TRAIL, GA

Extent of testing: No testing.

Test results: NA

Comments: Ties removed by salvage company for resale.

TRAIL OF THE COEUR D'ALENES, ID

Extent of testing: Extensive soil testing every few feet and Comprehensive Environmental Response, Compensation and Liability Act. The entire 72-mile trail was built on a contaminated area.

Test results: Heavy metal contamination found along entire corridor. Soil was removed and corridor was capped. Process cost \$20 million to \$30 million. Union Pacific paid all expenses. Took four to six years.

Comments: NA

TUNNEL HILL STATE TRAIL, IL

Extent of testing: One area tested for fuel contamination.

Test results: Contamination found. Earth removed and monitoring well installed using funds from Leaking Underground Storage Tank program. Cost was approximately \$87,000.

Comments: NA

HASKELL RAIL TRAIL, KS

Extent of testing: Visual inspection did not prompt concern.

Test results: NA

Comments: Ties removed by salvage company.

PATUXENT BRANCH TRAIL, MD

Extent of testing: No testing was done. Train ceased operation in 1928 and had served a granite quarry.

Test results: NA

Comments: NA

THREE NOTCH TRAIL, MD

Extent of testing: NA

Test results: NA

Comments: Twenty-eight-mile trail appears to be informally open. Respondent indicated that no contamination issues are expected as they move forward with development but no reason given as to why not except that the railroad took up the ties when they abandoned the line.

FIND NAME, ME

Extent of testing: No testing.

Test results: There was some concern, but no indication of contaminants have been found.

Comments: Railroad stopped operation in 1952. Ties were removed at that time. Sounds as though trail is not open yet (perhaps that is why it has no name).

FRED MEIJER HEARTLAND TRAIL, MI

Extent of testing: Checked county records for corridor use. Visual inspection conducted during acquisition stage.

Test results: NA

Comments: NA

SKEGEMOG SWAMP PATHWAY, MI

Extent of testing: No testing, were not concerned.

Test results: NA

Comments: NA

CENTRAL LAKES TRAIL, MN

Extent of testing: Did not test. Trailside vegetation indicates that contamination is not a problem.

Test results: NA

Comments: NA

LAKE WOBEGONE TRAIL, MN

Extent of testing: Did a field survey and contacted the Minnesota Pollution Control Agency for a listing of any known contamination on the corridor.

Test results: No contamination found.

Comments: NA

FRISCO HIGHLINE TRAIL, MO

Extent of testing: Phase 1, concerned about spills from derailments.

Test results: Investigation found two underground fuel tanks which were removed. Results were reported to board (this trail is under private management). Remediation cost was \$15,000 and was split by Burlington, Northern, Santa Fe and Ozark Greenways. Delayed project 11 months.

Comments: NA

GRANT'S TRAIL, MO

Extent of testing: Phase 1.

Test results: Asbestos tiles from old building or from dumping were found. Results reported to railroad and they had them removed. No delay in trail project, no increase in cost of liability insurance.

Comments: NA

LONGLEAF TRACE TRAIL, MS

Extent of testing: Visual inspection and local knowledge.

Test results: No remediation required.

Comments: Ties removed by railroad prior to transfer of corridor.

SOMERS TRAIL, MT

Extent of testing: Some sort of testing, apparently.

Test results: Mostly creosote. Environmental Protection Agency cleaned up.

Comments: NA

AMERICAN TOBACCO TRAIL, NC

Extent of testing: No testing, not an issue.

Test results: NA

Comments: Ties removed by railroad.

HOMESTEAD, NE

Extent of testing: Phase 1.

Test results: No indication of contamination. No delay of project.

Comments: Ties removed prior to acquisition.

MOPAC EAST, NE

Extent of testing: Visual inspection.

Test results: NA

Comments: Ties salvaged prior to National Resources District taking ownership.

OAK CREEK TRAIL, NE

Extent of testing: Visual inspection and checked spill records.

Test results: NA

Comments: Ties salvaged before National Resources District took ownership. National Resources District feels trail users have little to no exposure to any contaminants that may be there.

PAULINSKILL VALLEY TRAIL, NJ

Extent of testing: New Jersey Green Acres surveys all property before acquisition.

Test results: No contamination was found.

Comments: NA

SUSSEX BRANCH TRAIL, NJ

Extent of testing: New Jersey Green Acres surveys all property for hazardous waste prior to acquisition.

Test results: No contamination was found.

Comments: NA

ASSABET RIVER RAIL TRAIL, NY

Extent of testing: Level 1.

Test results: Old oil drums had been dumped, but not necessarily by railroad.

Comments: Put \$200,000 in development fund to cover cost of any needed remediation. Felt that with asphalt surface, a capping would protect against any potential contamination. Did not do any soil testing.

CAYUGA-SENECA CANALWAY TRAIL, NY

Extent of testing: Not started State Environmental Quality Review Act yet.

Test results: NA

Comments: NA

CLARKE RAIL TRAIL, NY

Extent of testing: Phase 1 at time of acquisition.

Test results: No major problems found.

Comments: Corridor had been abandoned for decades and tracks and ties were removed.

GENESEE VALLEY GREENWAY TRAIL, NY

Extent of testing: Literature search.

Test results: Not concerned because railroad abandoned operations 25 years ago.

Comments: Ties gone when Department of Environmental Conservation bought corridor from a utility.

GROVELAND SECONDARY TRAIL, NY

Extent of testing: Don't know.

Test results: NA

Comments: NA

LAKE PLACID TO SARANAC LAKE RECREATION PATHWAY, NY

Extent of testing: Trail still under development, design stage, no testing as of yet.

Test results: NA

Comments: NA

REMSEN TO LAKE PLACID TRAVEL CORRIDOR, NY

Extent of testing: Soil and water samples. Creosote was considered non-mobile and bound to soil immediately adjacent to ties and therefore not in contact with trail user.

Test results: No herbicide residue found. No delays.

Comments: NA

ADENA RECREATION TRAIL, OH

Extent of testing: No need to investigate; Ohio Environmental Protection Agency tracks toxic spills and none were found in corridor.

Test results: NA

Comments: NA

BLACKHAND TRAIL, OH

Extent of testing: Not known. Trail opened in 1980 and records concerning acquisition and development are no longer available.

Test results: NA

Comments: NA

HUFFMAN PRAIRIE OVERLOOK TRAIL, OH

Extent of testing: Visual examination.

Test results: Little, if any, contamination, remediation not required.

Comments: This is a rail-with-trail and trail is a good distance from active rail line so no contamination was expected.

LOWER SCIOTO TRAIL, OH

Extent of testing: No environmental issues.

Test results: NA

Comments: Rails and ties removed long before they took possession, perhaps 35 years ago.

SPRINGFIELD BRANCH TRAIL, OH

Extent of testing: Trail just getting to planning stage. An environmental assessment will be conducted by the design consultant and will be reviewed by Ohio Department of Transportation.

Test results: NA

Comments: Railroad removed ties before abandoning corridor.

WRIGHT BROTHERS HUFFMAN PRAIRIE BIKEWAY (KAUFFMAN AVENUE BIKEWAY), OH

Extent of testing: Visual inspection and soil samples.

Test results: Finding of no significant impact.

Comments: Investigation took about three months. This is a rail-with-trail and the trail is 20 to 30 yards from active line.

SPRINGWATER ON THE WILLAMETTE, OR

Extent of testing: Phase 1 conducted before purchase.

Test results: Result: No cause for concern, capping would provide any needed protection.

Comments: NA

ALLEGHENY RIVER TRAIL, PA

Extent of testing: Site issued Categorical Exclusion by Pennsylvania Department of Transportation.

Test results: No contamination found.

Comments: Railroad history provided no reason to be concern.

CLARION-LITTLE TOBY RAIL TRAIL, PA

Extent of testing: Not aware of testing, issue not raised.

Test results: NA

Comments: NA

ERNST TRAIL, PA

Extent of testing: Did not test. Issues were discussed but were not a concern. No obvious problems.

Test results: NA

Comments: Railroad abandoned about 30 years ago.

GREATER HAZLETON RAILS TO TRAILS, PA

Extent of testing: Trail not open yet. Phase 1 test. Were concerned because area is a superfund site.

Test results: No major toxics found. Capping, berming, phytoremediation, soil recycling, soil disposal all used on broader site. It cost \$15 million to clean up entire site but trail is only very small portion and not actually in the superfund area.

Comments: NA

MONTOUR TRAIL, PA

Extent of testing: Soil testing.

Test results: No sign of contamination found.

Comments: Most ties were gone when they took possession of corridor. Those that were left were put into landfills, some were recycled, a few were burned until they learned that they should not do that.

SANDY CREEK TRAIL, PA

Extent of testing: Site was issued a categorical exclusion by Pennsylvania Department of Transportation because there was no reason to believe that contaminants were present in any significant amount.

Test results: NA

Comments: Railroad hauled coal from 1906 until 1980's. No evidence of dumping or contamination other than occasional coal car accident.

HISTORIC UNION PACIFIC RAIL TRAIL STATE PARK, UT

Extent of testing: Tested air, soil and water for the first 3.5 miles out of Park City of the 28-mile trail.

Test results: Specific findings considered privileged, but generally found traces of heavy metals from mining and processing of ore.

Comments: Remediation effort was capping of trail. Delayed project 1.5 to two years. Findings did not impact liability insurance.

W&OD TRAIL, VA

Extent of testing: Soil testing for arsenic. Photo shows spraying.

Test results: No trace of arsenic found.

Comments: NA

D&H RAIL TRAIL, VT

Extent of testing: No testing. Plant growth on corridor was robust.

Test results: NA

Comments: Issue was of no concern to developing agency until eight years after trail was built when a citizen asked about the issue of contamination. Vermont Agency of Transportation was no concerned, no investigation.

TBD, WA

Extent of testing: Corridor in city ownership for at least 11 years. Respondent unsure of history, as far as she knows, no testing was conducted.

Test results: NA

Comments: NA

400 STATE TRAIL, WI

Extent of testing: Phase 1.

Test results: NA

Comments: Ties sold for salvage.

BADGER STATE TRAIL, WI

Extent of testing: No testing; no sign of contamination.

Test results: NA

Comments: Ties removed by contractor and resold.

ELROY-SPARTA TRAIL, WI

Extent of testing: Phase 1

Test results: NA

Comments: Ties sold for salvage.

LA CROSSE RIVER STATE TRAIL, WI

Extent of testing: Phase 1.

Test results: NA

Comments: Some ties were sold, some buried, some left on site.

SOUTHWEST BIKE PATH, WI

Extent of testing: Phase 1 and Phase 2.

Test results: Found arsenic and chromium above regulatory limits in all 10 borings, plus lead in one boring. Results reported to Wisconsin Department of Natural Resources and Wisconsin Department of Transportation. No material was removed from site, rather all soil would be covered with either asphalt or topsoil and vegetation. This solution added little, if any, extra cost. Fees were covered by a Transportation Enhancements grant that was awarded to build the trail. This process of testing and remediation did not result in any project delay because these findings were foreseen and thus the time to deal with them were included in the original project schedule.

Comments: Ties were disposed of at licensed landfill.

SUGAR RIVER STATE PARK TRAIL, WI

Extent of testing: No testing, trail developed in 1973.

Test results: NA

Comments: Ties were piled and rotted.

TBD, WI

Extent of testing: No contamination encountered.

Test results: NA

Comments: NA

MEDICINE BOW TRAIL, WY

Extent of testing: Environmental assessment ongoing.

Test results: NA

Comments: NA

APPENDIX C: CASE STUDY SURVEY FORM

Name of trail:

Open for use or still under development, or both:

If open, surface type:

Miles of open trail:

Miles of trail under development:

County(ies) and state:

Please answer the following questions in as much detail as possible:

- ◆ A brief history of rail use on the corridor and when it stopped.
- ◆ Any other background that may be useful, relevant, or interesting.
- ◆ Type of testing done.
- ◆ Type of toxin(s) found and levels.
- ◆ Length of trail contaminated.
- ◆ Method of mitigation and why that method was chosen.
- ◆ Who was involved in mitigation process (list all government and private entities).
- ◆ Cost of mitigation.
- ◆ How long did the mitigation process take.
- ◆ Funding sources (various local, state, federal assistance programs, and any private monies used).
- ◆ Major challenges to remediation project.
- ◆ Suggestions to others to others in same situation/words of advice.
- ◆ Having gone through this, what would have made this process easier for you, resources that would have made the project easier (more, bigger, easier access to funding sources, clearer regulations, information).
- ◆ Impact of past contamination and remediation on ongoing maintenance (cost and otherwise).
- ◆ Contact information (name, organization, address, phone, e-mail, web site).
- ◆ Please send photos if you have them (before, during clean up, after).

APPENDIX D: LEXIS SEARCH CRITERIA AND EXCLUSIONS

Access to certain freelance articles and other features within this publication (i.e. photographs, classifieds, etc...) may not be available. U.S. newspapers must be listed in the top 50 circulation in Editor & Publisher Year Book. Newspapers published outside the United States must be in English language and listed as a national newspaper in Benn's World Media Directory or one of the top 5 percent in circulation for the country.

EXCLUSIONS

EIU publications are excluded from all subscriptions.

DPA (English language file) (file: DPA)

The Straits Times (file: STRAIT)

Business Times Singapore (file: BUSTMS)

Business Monitor News (file: BMINWS)

Due to vendor restrictions the following sources have been excluded from group files in web products.

Aerometric Information Reporting System; AIRS

Annals of Neurology; ANN

Annals of Plastic Surgery; ANPS

Comprehensive Env. Response Compensation & Liability Info. System; CERCLS

Dimensions in Health Care; DHC

DM News; DMNEWS

Emergency Response Notification System; ERNS

EPA Civil Enforcement Docket; EPADKT

Facility Index System; FINDS

FIFRA & TSCA Tracking System; FTTS

Hospitals and Health Networks; HOSP

IDD Merger and Acquisition Reports – Archival; IDDMA

IDD Mergers and Acquisition Database – Canada – Archival; IDDCAN

IDD Mergers and Acquisition Database – European Reports – Archival; IDDEUR

IDD Mergers and Acquisition Database – US Reports – Archival; IDBUS

IDD Mergers and Acquisitions Database – UK Reports – Archival; IDDUK

Institutional Investor Publications; IIALL

Leaking Underground Storage Tanks (LUST) Site Records; LUST

National Pollutant Discharge Elimination System Facility Information; NPDESF

National Priority List Descriptions of Hazardous Waste Sites; NPLIST

National Priority List of Hazardous Waste Sites; NPLDSC

No Further Remedial Action Planned; NFRAP

Potentially Responsible Parties (PRP) Superfund Enforcement Tracking System; PRP

RCRA Corrective Action Record; CORACT

Resource Conservation & Recovery Information System; RCRIS

Solid Waste Site Records; SWS

State Priority Lists; SPL

Surgery, Gynecology and Obstetrics; SGO

Toxic Chemical Release Inventory; TRIS

Underground/Aboveground Storage Tank Site Records; USTAST

World Financial Markets; WLDFIN

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