United States Environmental Protection Agency

Colorado Department of Public Health and Environment

Region 8
1595 Wynkoop St.
Denver, CO 80202

Colorado, Montana
North Dakota, South Dakota
Utah, Wyoming

Fact Sheet for Twins Inn Site

Invitation to Comment on the Fact Sheet for the Twins Inn Site

Mark Your Calendar

Public Comment Opportunity

Public Comment Period:

May 7, 2007 to June 5, 2007

Public Meeting:

6:30 p.m. May 21, 2007

Arvada Waste Water Treatment Plant
5555 W 56th Ave.
Arvada, CO

Send Written Comments to:

Erna Waterman, EPA-SR

U.S. EPA

1595 Wynkoop St.

Denver, CO 80202

Email: waterman.erna@epa.gov

FAX: 303.312.6897

This fact sheet will describe:

- the conditions at the Twins Inn site that led EPA to decide that action was needed to reduce potential risks from contaminated soil and groundwater;
- the potential risks posed by the contamination;
- the alternatives EPA considered for reducing risks at the site;
- EPA's Preferred Alternative to clean up the site.

We have carefully studied the site and now believe that the following actions are the best way to protect human health and the environment.

- Remove, treat, and dispose of contaminated soil.
- Use Monitored Natural Attenuation (MNA) to address groundwater contamination.

Information Repositories and Key Contacts:

The Feasibility Study and other documents in the Administrative Record are available at the following locations:

EPA Superfund Records Center
1595 Wynkoop St.
Denver, CO 80202
303.312.6473

Arvada Library
7525 W. 57th Ave.
Arvada, CO 80002
303.403.5386

If you have questions about the information contained in this Fact Sheet, please contact either of the following two people:

Erna Waterman
EPA Project Manager
303.312.6762
Toll free 1.800.227.8917 x312.6762
Waterman.erna@epa.gov

Martin O'Grady
CDPHE Project Manager
1.888.569.1831 ext. 3366
Martin.ogrady@state.co.us

Public Involvement Process

EPA and the Colorado Department of Public Health and Environment (CDPHE) encourage residents and other interested parties to read and comment on this Fact Sheet. Detailed information is contained in the following reports:

- ***Remedial Investigation (RI)*** report that summarizes where contamination was found; and
- ***Feasibility Study (FS)*** report that explains the cleanup alternatives considered.

The ***Administrative Record*** contains the above documents and other information that EPA will use to make its final remedy (cleanup) selection. The Administrative Record is available at the Information Repositories listed on the first page of this document.

The process for the Site remedy selection is:

- Citizens and interested parties review and comment on identified alternatives.
- Verbal and written comments may be submitted at the public meeting, or written comments may be sent to the EPA Project Manager (see address on 1st page), postmarked no later than **June 5th, 2007**.
- EPA considers comments.
- EPA, working with CDPHE will select an appropriate removal action.
- The selected cleanup is chosen.

Site Background

Location:

The Twins Inn Site is defined as the area affected by a contaminant plume in groundwater originating near West 58th Avenue and Nolan Street in the City of Arvada in Jefferson County (**see map, page 7).** It extends east-southeastward almost to Sheridan Blvd. The affected groundwater is present below residences and commercial/industrial businesses which use municipal water supplies. One private groundwater well serving the Twins Inn Tavern and 2 residences is still in use. However, EPA installed a water treatment system to ensure that the residents and tavern patrons who use the well are not being exposed to unsafe levels of contaminants.

Historical Operations:

In May, 1995, EPA discovered groundwater contamination in samples taken from a domestic water well. The primary contaminants of concern are chlorinated solvents such as Trichloroethene (TCE), Tetrachloroethene (PCE); 1,1-Dichloroethene (1,1-DCE); 1,1,1-Trichloroethane (TCA); 1,2-Dichloroethane (DCA). All were detected at concentrations above EPA's standard for safe drinking water. The highest concentrations were found in groundwater samples collected on and near the Thoro Products facility located at 6611 West 58th Place. The chemical management practices at the Thoro facility resulted in the release of chemicals into the environment. These chemicals seeped into the soil and dissolved into the groundwater forming a plume of groundwater contamination nearly one mile long.

EPA conducted field investigations, and numerous site sampling efforts to understand the extent of the groundwater contamination and the source of the contamination.

More information on these investigations is contained in the Remedial Investigation Report.

Summary of Site Risk

EPA performed a Baseline Human Health Risk Assessment in September 1999 to evaluate potential risks from exposure to chemical concentrations in soil, groundwater, surface water sediments, and indoor air. A risk assessment is one of many factors used to determine the best way to protect the public's health. It requires a risk assessor to apply scientific judgment to calculate the likelihood of risks to human health and the environment from exposure to contaminants from the site.

Baseline Risk Assessment Report Summary

The Baseline Risk Assessment Report concluded that sediments and surface water in Ralston Creek and Clear Creek do not present an unacceptable risk to human health or fish. The surrounding soil was considered unlikely to adversely affect mammals or birds.

Surface and subsurface soil in the vicinity of the Thoro property, and surface water and sediments in Ralston Creek and Clear Creek, do not pose an unacceptable risk to human health. Based on indoor air sampling, breathing indoor air at area residences did not pose an unacceptable risk to human health.

The Risk Assessment concluded that domestic use of untreated groundwater for drinking, cooking, and bathing would pose an unacceptable risk to human health. Currently, there are no such uses at the site.

Summary of Cleanup Alternatives

Cleanup Objectives: EPA considered a range of cleanup options for soil and groundwater in the Feasibility Study (FS) Report to address three main areas of contamination:

1. North Tank source area on the Thoro property;
2. South Pit area on the Thoro property; and
3. Downgradient groundwater plume area which extends from the Thoro property to Sheridan Blvd.

The main objectives for soil and groundwater cleanup are:

Soil

- Prevent ingestion and direct contact with contaminated soil in the North Tank source area and South Pit area.
- Prevent migration of contaminants that would further pollute groundwater.

Groundwater

- Prevent ingestion of contaminated groundwater;
- Restore the groundwater to beneficial use (drinking water standards) within a reasonable time frame;

These cleanup goals must be met for cleanup to be considered complete.

The Feasibility Study identified a number of alternatives for addressing the contamination, including a No Action Alternative. A detailed evaluation was completed on five alternatives for soil and seven alternatives for groundwater. Some alternatives were eliminated because they would not effectively address the contamination, could not be implemented, or would have had excessive costs.

After the initial evaluation the alternatives summarized on the following pages were retained for further consideration.

Soil Alternatives:

Alternative SO1, No Action: No cleanup would take place under this alternative. The "no action" alternative is presented as a baseline for comparison. Under this alternative, EPA would leave soil and groundwater in its current condition and would not take any action at the site to prevent human exposure to soil.

Capital Cost	$0
Time to implement	Immediate
Operation & Maintenance Cost	$0

Alternative SO3A, Soil Excavation with Off-site Treatment and Disposal: This alternative would remove the contamination from the soils on the Thoro property. This alternative combines removal of contaminated soil with disposal of soil at a permitted waste facility. Removing the soil would stop the supply of contaminants to the groundwater plume.

This alternative assumes that the main Thoro building would be left in place, but the sheds, above ground tanks and associated concrete pads would be demolished and removed prior to soil excavation. Sampling of the soil adjacent to the building and in the floor drain in the building will be performed to determine if the building needs to be removed.

If contamination under the building is not investigated and the building/soils are not removed, long-term institutional controls may be required.

Capital Cost	$2.2M
Time to implement	Several months
Operation & Maintenance Cost	$0M

Alternative SO4A, Soil Excavation with On-site Thermal Desorption: This alternative combines physical removal of soil with on-site treatment using thermal desorption. On-site thermal desorption destroys contaminants in the soil. Clean soil can be returned to the excavated area. Removing the soil would stop the supply of contaminants to the groundwater plume.

This alternative assumes that the sheds, above-ground tanks and associated concrete pads would be demolished and removed prior to soil excavation. It also assumes that the main Thoro building will be demolished and removed so that there is sufficient space for the on-site thermal desorption unit during soil treatment.

Capital Cost	$2.9M
Time to implement	Several months
Operation & Maintenance Cost	$0

Groundwater Alternatives:

Alternative GW1, No Action: No cleanup would take place under this alternative. The risk would remain as explained in the "no action" alternative for soils.

Capital Cost	$0
Time to implement	Immediate
Operation & Maintenance Cost	$0

Alternative GW3, Monitored Natural Attenuation (MNA): The MNA alternative assumes that natural processes will be sufficient to address groundwater contamination. The MNA alternative would only be retained if the soil source is removed so that there is no longer a continuing source of contamination to groundwater.

This approach allows natural processes to restore groundwater to a beneficial use.

Capital Cost	$0.1M
Time to implement	20 years
Operation & Maintenance Cost	$1.1M

Alternative GW4, Biorecirculation with Monitored Natural Attenuation (MNA): This alternative treats the source area groundwater through a biological process. Groundwater is pumped to the surface and nutrients are added, then the groundwater is reinjected back into the ground. The added nutrients help the natural microbes break down the contaminants into harmless chemicals.

Under this alternative, groundwater monitoring would be required during the operation of the recirculation system, and institutional controls would be needed to restrict use of groundwater.

Monitored Natural Attenuation would be implemented for the remaining groundwater plume. This approach allows natural processes to restore groundwater to a beneficial use.

Capital Cost	$0.6M
Time to implement	20 years
Operation & Maintenance Cost	$1.2 M

Alternative GW5, Permeable Reactive Barrier (PRB) with Monitored Natural Attenuation: This alternative treats groundwater by installing an underground "treatment wall" that the groundwater flows through. To build the underground "treatment wall" it is constructed by digging a large trench and backfilling it with a mixture of sand and tiny bits of iron. After the "treatment wall" is installed, the treatment occurs underground, with no pumping necessary. As the groundwater flows through the reactive material (mostly iron) in the wall, it is chemically treated.

The groundwater that flows out the other side of the wall will meet the drinking water standards.

Capital Cost	$0.6M
Time to implement	20 years
Operation & Maintenance Cost	$1.2M

Alternative GW6A, Bioremediation with MNA: This alternative treats the source area groundwater through biodegradation. The treatment occurs underground, with no pumping necessary. To speed up the natural biodegradation process, nutrients are added to the groundwater. The nutrients are used by the existing microbes in groundwater to help them naturally break down the contaminants into harmless chemicals. If necessary, laboratory-grown microbes could also be added to groundwater to improve the biodegradation and speed up the process.

Capital Cost	$0.7M
Time to implement	20 years
Operation & Maintenance Cost	$0.5M

Alternative GW7A, Chemical Oxidation with MNA: This alternative chemically treats the source area groundwater. The treatment occurs underground, with no pumping necessary. A chemical is directly injected into the groundwater, where a chemical reaction causes the break down of contaminants into harmless chemicals.

Capital Cost	$0.4M
Time to implement	20 years
Operation & Maintenance Cost	$0.7M

Evaluation of Alternatives

Pursuant to EPA's Non-Time-Critical Removal Actions Guidance, this fact sheet evaluates the alternatives using three criteria identified in the ***National Contingency Plan (NCP),*** the regulations governing EPA's cleanup actions.

Three Criteria for Screening Alternatives

> Effectiveness

> Implementability

> Cost

Effectiveness

Each alternative was evaluated for effectiveness in providing protection of human health and the environment. All of the alternatives except the "No Action" alternatives provide protection of human health and the environment by preventing exposure to, and treating the soil and groundwater contamination.

Implementability

Implementability consists of the technical feasibility of constructing, operating, and maintaining a remedial action alternative. All treatment technologies and remedies are readily available, and implementable without construction difficulties. Implementation of alternatives SO3A, SO4A, and GW6A, requires access to the Thoro property.

Cost

Comparative cost estimates for alternatives were made including both the capital cost and the operating and maintenance cost for the life of the cleanup. There are no costs associated with the "No Action" alternative except for the cost associated with a review every five years.

Summary of the Preferred Alternative

EPA's Preferred Alternative for this Site is a combination of SO3A and GW3. This proposed cleanup plan combines excavation and off-site treatment and disposal of contaminated soils with Monitored Natural Attenuation (MNA) for groundwater.

The Preferred Alternative for soils is SO3A, Soil Excavation with Off-site Treatment and Disposal because it achieves the best balance of overall protection of human health and the environment; long term effectiveness; and reduction in toxicity, mobility, and volume.

The soil removed from the Site will be transported by a licensed contractor and disposed at a permitted facility.

Based on groundwater modeling results, if the soil source is removed, the groundwater plume is expected to meet cleanup goals within about 20 years regardless of the treatment method.

The Preferred Alternative for groundwater is GW3, Monitored Natural Attenuation. Monitored natural attenuation can be used if the soil source is removed so that there is no longer a continuing source of contamination to groundwater. MNA will allow for natural processes to cleanse the remaining groundwater contamination over time. Monitored Natural Attenuation is simple to implement, is cost-effective, and would achieve remedial objectives.

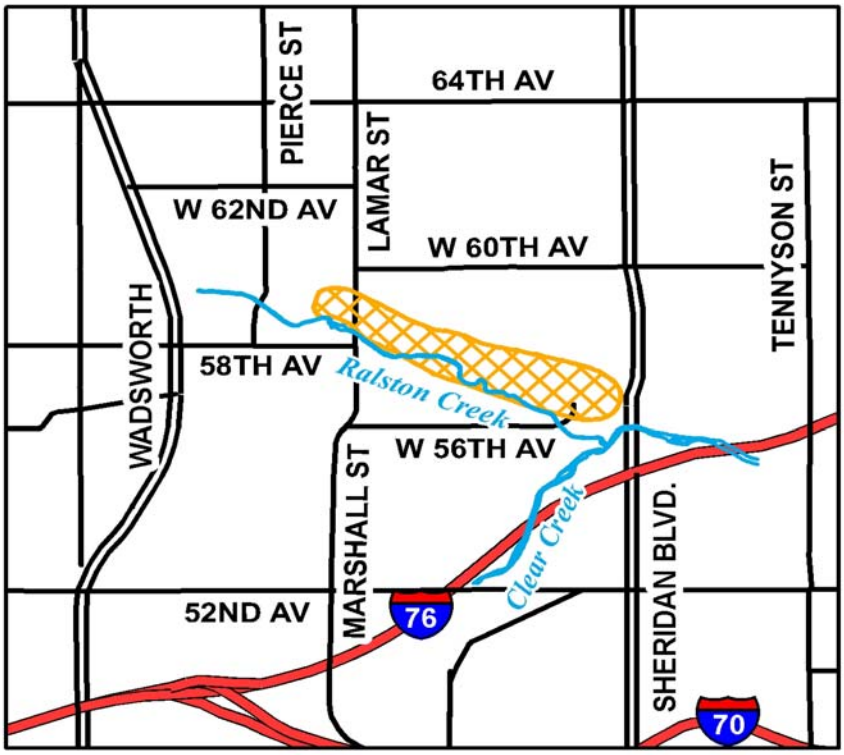
More Information on the Twins Inn Site

More information on the Twins Inn site is included in the Remedial Investigation, Feasibility Study and Baseline Risk Assessment Reports. If you would like to review these documents, they are available for public review at the Arvada Public Library and EPA's Superfund Record Center (See page 1 of this fact sheet). Ask for the Twins Inn Site Administrative Record and Information Repository documents.

Opportunity for Public Comment

The U.S. Environmental Protection Agency and the Colorado Dept. of Public Health and Environment want to hear your views about the plans for this cleanup project. You may comment on the fact sheet for cleaning up the Twins Inn Site at a public meeting to be held on **May 21, 2007** at the Arvada Waste Water Treatment Plant, 5555 W 56th Ave., Arvada, CO.

You may also submit written comments via mail: U.S. Environmental Protection Agency, 1595 Wynkoop St., Denver, CO 80202, Attn: Erna Waterman; email: Waterman.erna@epa.gov or FAX: 303.312.6897.



Map 1
Twins Inn Site Location

Glossary

Action Memo: An action memo provides a concise, written record of the decision to select an appropriate removal action.

Administrative Record: The body of documents EPA uses to form the basis of selection of a remedy.

Alternative: An option for reducing site risk by cleaning up or otherwise limiting exposure to contamination.

Aquifer: A water bearing zone of rock and sand formations below the ground surface; groundwater.

Baseline Risk Assessment: A study conducted as part of the RI that determines and evaluates risk that site contamination poses to human health in the absence of cleanup.

Capital Costs: Expenses related to the labor, and equipment and material costs of construction.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): a Federal law passed in 1980 and modified in 1986 and 2001. It set up a program to identify sites where hazardous substances have been, or might be, released into the environment and to ensure they are cleaned up.

DCE or 1,1-dichloroethene (also called 1,1-dichloroethylene): a man-made chemical also known as vinylidene chloride, is used to make certain plastic wraps and flame-retardant fabrics.

DCA or 1,2-Dichloroethane: DCA is a colorless, oily liquid with a sweet odor. It evaporates easily at room temperature and burns easily. It does not occur naturally in the environment.

Electron Donor: An electron is a chemical entity that donates electrons to another compound. It is a reducing agent that, by virtue of its donating elections, is itself oxidized in the process.

Feasibility Study (FS): The FS identifies and evaluates the most appropriate technical approaches to address contamination problems at a Superfund site.

Groundwater: The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs.

Institutional Controls: Administrative or legal tools, such as local government ordinances or environmental covenants, designed to minimize the potential for people to be exposed to contaminants.

Maximum Contaminant Level (MCL)

The maximum permissible level of a contaminant in water delivered to any user of a public system. MCLs are enforceable standards.

Monitored Natural Attenuation (MNA):

Regular testing of groundwater to ensure volatile organic compounds are breaking down to non-toxic substances.

National Contingency Plan (NCP): The EPA's regulations governing all cleanup under the Superfund Program.

Risk Assessment: Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants.

PCE or Tetrachloroethene(also called tetrachloroethylene): PCE is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Plume: A measurable area affected by the discharge of contaminants from a given point of origin.

TCA or 1,1,1-Trichloroethane(also called trichloroethene): TCA is a colorless liquid with a sharp, sweet odor. Even though it is usually found as a liquid, it evaporates quickly and becomes a vapor.

TCE or Trichloroethylene: TCE is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste.

U.S. Environmental Protection Agency
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