Superfund Proposed Plan
Ripon FF/NN Landfill
Ripon, Wisconsin

September 1995

Cleanup Action Recommended

This fact sheet includes:

- *background on the site;*
- *a summary and comparison of cleanup options for the site;*
- *the recommended cleanup plan;*
- *how people can participate in choosing the final cleanup plan; and*
- *how to learn more about the site.*

Public Meeting Set

The DNR will hold a public meeting at 7 p.m. on Wednesday, September 13 to discuss the cleanup alternatives in this fact sheet. Comments will be accepted verbally or in writing. The meeting will be held at the Ripon City Hall Council Chambers, 100 Jackson Street, Ripon, Wisconsin.

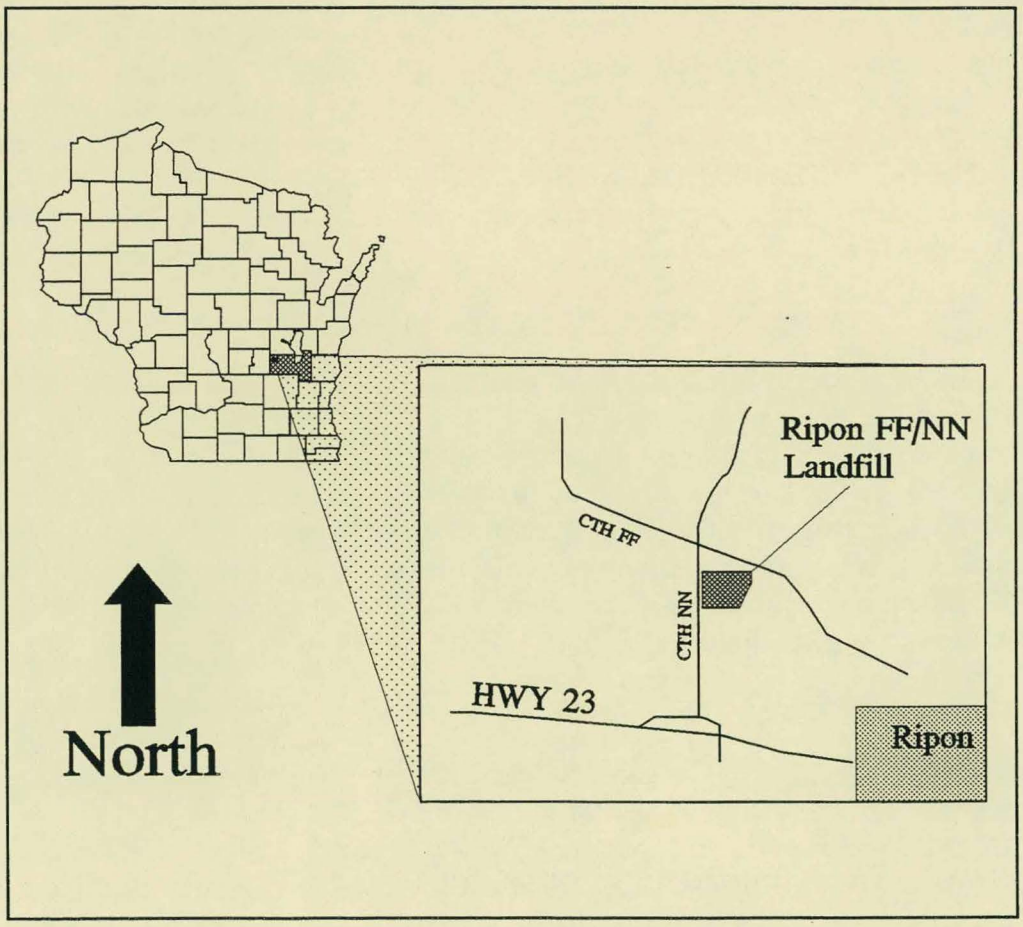

figure 1

Cleanup options for the Ripon FF/NN landfill Superfund site have been evaluated by the Department of Natural Resources. The report detailing the various cleanup options is called the Feasibility Study (FS). A copy of the FS can be found in the Ripon Public Library as part of the administrative record for this case.

Cleanup decisions on Superfund cases are often separated into two decisions, a source control operable unit and a groundwater operable unit. Source control operable units involve remedial actions taken to

control or reduce/minimize the source of contamination to the environment. Groundwater operable units involve those remedial measures necessary to contain and renovate contaminated groundwater.

The Department of Natural Resources (DNR) recommends that the landfill be covered with a composite cap. A composite cap is one made up of soil and a plastic sheet or membrane. Included with the composite cap will be a landfill gas venting system. Monitoring of groundwater quality will also take place as part of the remedy. These factors are included as part of the source control operable unit for the site. The groundwater operable unit concludes that given the small area of contamination, active groundwater restoration measures aren't necessary. More specific details about the source control and groundwater remedies are provided later in this fact sheet.

PLEASE COMMENT ON THIS PLAN

Public input on the cleanup options and the information that supports these options is an important contribution to the cleanup process. Based on public comments or new information, the DNR may modify the recommended cleanup option, or select another option presented in the FS. Everyone is encouraged to review and comment on all options.

BACKGROUND

In 1967, Speed Queen Corporation leased the property for disposal of industrial wastes from it's facility in Ripon. In 1968, the City of Ripon leased the property. In 1978, the City and the Town of Ripon were signatory to the lease. A license to operate the landfill was issued by DNR to the City of Ripon in 1969. The site accepted wastes between 1967 and 1983. The site was capped in 1985. Vegetation was established to minimize erosion. A gas venting system (trench with gooseneck vents) was placed in a north-south orientation along the western edge of the landfill.

A private residence is located approximately 350 feet south of the landfill. The water supply well to this home was monitored for VOCs in 1984 and a couple of VOCs were detected, including vinyl chloride. Sampling of the well by DNR confirmed the presence of vinyl chloride. A replacement well was drilled for this household. Sampling of the replacement well also confirmed the presence of vinyl chloride. This well was abandoned in 1990. No water supply well exists on the property and no one is currently living in the home.

In the early 1980's the DNR began evaluating municipal landfills for possible inclusion on the federal National Priorities List (NPL). A hazard assessment was completed by DNR utilizing the EPA Hazard Ranking System. The site scored 51.9 and was recommended by DNR to EPA for inclusion on the NPL. The site was listed on the NPL in May, 1994.

RECENT ACTIVITIES

In response to the DNR recommending the site to EPA for inclusion on the NPL, a several Potentially Responsible Parties (PRPs) formed a group to investigate the environmental problems related to the site. The group of PRPs entered into a contract with DNR on August 14, 1992 to complete the following:

1. Conduct a remedial investigation (RI) to adequately characterize the site.
2. Perform a feasibility study (FS) to identify and evaluate potential remedial options for the site.
3. Prepare plans and specifications for a landfill cap, and landfill gas extraction system, as deemed necessary by DNR.
   These plans and specifications are considered part of a source control operable unit.
4. Implement the source control operable unit.

Since the contract was signed, the PRP group has completed the RI and FS. Data contained in these two documents, and other documents in the administrative record are used as the basis for this recommended cleanup option.

"Evaluating the Cleanup Options"

The following criteria will be used by the DNR and EPA to evaluate the cleanup options for the Ripon FF/NN Landfill Superfund site. Community acceptance will be evaluated after the public comment period.

THRESHOLD CRITERIA

Overall protection of human health and the environment addresses whether a remedy provides adequate protection of human health and the environment and describes how risks from exposure to contaminants are eliminated, reduced or controlled through treatment or other controls.

Compliance with State and Federal laws addresses whether a remedy will meet all of the state and federal environmental laws.

BALANCING CRITERIA

Long-term effectiveness and permanence refers to ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

Reduction of toxicity, mobility and volume through treatment is the anticipated performance of the treatment technologies.

Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

Ease of implementation is the technical and administrative feasibility of a remedy, including the availability of materials or services needed to implement the cleanup.

Cost includes estimated capital and operation and maintenance costs.

MODIFYING CRITERIA

Agency acceptance addresses EPA and DNR's comments or concerns with the proposed cleanup option.

Community acceptance summarizes the public's general response to the options described in the Proposed Plan.

EVALUATION:

Of these criteria, the final cleanup must meet the threshold criteria of protecting human health and the environment and complying with state law. If a proposed remedy meets these two criteria, it is evaluated against the balancing criteria and the modifying criteria in order to arrive at a final recommended option.

Cleanup Options for the Ripon FF/NN Landfill Site

Landfills represent large volume, generally low concentration sources of contamination. There are three primary hazards associated with landfill, 1) direct contact with the waste, 2) landfill gas, and 3) groundwater contamination caused by contaminants leaching from the refuse. To eliminate direct contact with the waste, the landfill needs to have some sort of cover, usually soil, placed over the waste to act as a barrier to contact with the waste and prevent infiltration of water into the waste. Landfill gas (LFG) is a mixture of predominantly carbon dioxide and methane generated by decomposing refuse. If left uncontrolled, methane can create an explosion hazard. The effectiveness of the landfill cover at minimizing infiltration is directly related to how much

contamination may leach from the waste. The more effective the cover at reducing infiltration, the less the amount of contamination that will leach from the waste and affect groundwater.

The list of potential cleanup options deals with these three areas, the landfill cap, landfill gas migration and the contaminated groundwater. The list of remedial options also includes a no-action remedy. Superfund requires that a no-action remedy be included to act as a baseline to which all of the other options can be measured against.

The list of cleanup options include:
Alternative A - No Action
Alternative B - Regrade Existing Landfill Surface
Alternative C - Construction of a Cover Layer on the Landfill
Alternative D - Reconstruct the Clay Cap
Alternative E - Construction of a Composite Cap on the Landfill
Alternative H - Passive Landfill Gas Venting
Alternative I - Active Landfill Gas Collection and Treatment
Alternative J - Groundwater Extraction, Treatment and Discharge to an infiltration Gallery
Alternative K - Groundwater Extraction, Treatment and Discharge to an Injection Well
Alternative M - Groundwater Extraction, Treatment at Ripon Wastewater Treatment Plant
Alternative O - Construction of a Composite Landfill Cap and Passive Gas Venting

Landfill capping and gas venting alternatives (i.e. alternatives B, C, D, E, H, I & O) are considered towards the source control operable unit. The groundwater restoration alternatives (i.e. alternatives J, K & M) are considered towards the groundwater operable unit.

A complete description of the various alternatives can be found in the FS. Provided below is a brief description of each remedy.

Alternative A - No Action Alternative

The No Action alternative is used as a baseline against which to compare other alternatives. Under this alternative essentially little to no remedial actions are taken and the site is basically left as it currently is.

The only actions taken under this alternative would be general maintenance of the site such as mowing and fixing erosion. A restriction against excavation or other intrusive uses of the property would be placed on the property deed. Monitoring of the groundwater, leachate and landfill gas is also part of this alternative.

Capping Alternatives

The deed restriction, maintenance and monitoring activities listed in Alternative A are also included with these alternatives.

Alternative B - Regrade the Existing Landfill Surface

This alternative would regrade the existing landfill surface to eliminate the low areas and provide for proper drainage.

Alternative C - Construction of a Cover Layer

The existing landfill cover was constructed without a protective soil layer above the clay. The purpose of the cover layer is to protect the clay from desiccation, freeze/thaw action, and to provide a rooting zone for surface vegetation. This alternative would remove the topsoil and place a soil layer above the clay. The topsoil would then be replaced and re-vegetated.

Alternative D - Reconstruct the Clay Cap

The existing cover has approximately 2 feet of clay beneath approximately 6 inches of topsoil. This alternative would strip off the topsoil and as much clay as possible. A 2 foot clay layer would then be constructed. The other components of the soil cap would also be placed as the cap is reconstructed.

Alternative E - Construction of a Composite Cap over the Landfill

Under this alternative, a composite cap (i.e. one with both soil and plastic membrane components) would be placed over the landfill. The cap would consist of (from top to bottom):

- 6 inches of topsoil with vegetation
- 18 to 30 inches of cover layer
- a drainage layer
- a plastic membrane
- 2 feet of compacted clay.

Gas Removal/Venting Alternatives

Alternative H - Passive Landfill Gas (LFG) Venting

This alternative is designed to deal with LFG generated within the waste. This alternative would construct passive venting wells through the waste. The gas would enter the vent and then be discharged to the atmosphere. No treatment or destruction of the gas would occur.

Alternative I - Active LFG Collection and Treatment

Under this alternative the LFG generated within the waste would be actively collected through a series of gas extraction wells connected to a blower. The gas collected by the system would be destroyed via a flare.

Groundwater Treatment Alternatives

These alternatives are designed to remediate the contaminated groundwater. They could be implemented with both a capping and a gas/leachate control alternative.

Alternative J - Groundwater Extraction, Treatment and Discharge to a Surface Water

Under this alternative, contaminated groundwater downgradient of the site would be captured through pumping wells, treated to remove contaminants, and then discharged to a surface water body. The most likely discharge points would be one of the wetlands located northeast and southwest of the landfill.

Alternative K - Groundwater Extraction, Treatment and Discharge to an Infiltration Gallery

This alternative proposes extracting groundwater through pumping wells, treating it, and then discharging it to an infiltration gallery. An infiltration gallery is a series of trenches through which water can flow and percolate in to the soil.

Alternative M - Groundwater Extraction, Treatment at the Ripon Wastewater Treatment Plant

Under this alternative, groundwater would be extracted through pumping wells. Water treatment and discharge would take place at the Ripon wastewater treatment plant.

Combined Alternative

Alternative O - Construction of a Composite Landfill Cap and Passive Gas Venting

This alternative essentially combines components of Alternative E and Alternative H. A composite landfill cap would be placed over the landfill surface. A gas venting system would be incorporated into the composite cap to allow for the effective venting of gas to the atmosphere with no treatment of the gas. **This alternative, along with a groundwater monitoring plan, is recommended by DNR for cleaning up the site.**

Evaluation of Cleanup Options

1. Threshold Criteria

a. Overall Protection of Human Health and the Environment

All of the alternatives provide a soil barrier which eliminates the direct exposure to the waste within the landfill. Fencing of the landfill will also eliminate potential exposure pathways by keeping persons from trespassing on the landfill surface. A deed restriction will also help to prohibit disturbing the landfill cap. The venting of landfill gas within the fenced circumference of the site will reduce the exposure to landfill gas.

Alternative A - This alternative fails to control the migration of landfill gas. Also, the landfill cover system currently on the site is allowing precipitation to enter the waste, collect contamination, and then enter groundwater. The existing cap fails to stop this additional loading of contaminants to groundwater. This alternative is not protective of human health and the environment and will not be considered further.

Alternative B - This alternative only moderately improves upon the existing cap. Regrading the landfill surface will have minimal impact on reducing the amount of precipitation entering waste. Reducing infiltration is key to keeping contaminants from leaching out of the waste and into groundwater. This alternative is not protective of the environment and will not be considered further.

Capping Alternatives (Alternatives C, D & E) - All of the capping alternatives provide a barrier to the waste, preventing the direct contact exposure pathway. However, a capping alternative must be implemented with a measure to remove gas from the landfill. By itself the landfill cap doesn't provide all the necessary aspects to be a protective remedy. If implemented with a gas removal system, then all of the capping alternatives would be protective of human health and the environment.

Gas Removal Alternative (Alternatives H & I) - Removing the gas from the landfill and effectively venting it or destroying it are measures for controlling landfill gas migration. However, these alternatives must be implemented with one of the capping alternatives (Alternatives C through E). If implemented with a landfill capping system, then these gas removal alternatives are protective of human health and the environment.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - These alternatives involve removal and treatment of groundwater. From a groundwater perspective, these alternatives are protective of human health and the environment.

Alternative O - This alternative combines a capping alternative with a venting alternative. This alternative is protective of human health and the environment.

b. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Capping Alternatives (Alternative C, D & E) - These alternatives all help to reduce the amount of water entering the waste. Minimizing the amount of water entering the waste will help to improve groundwater quality. However, the effectiveness in reducing the percolation of water varies with the design of these three capping alternatives. These capping alternatives comply with all

relevant and appropriate requirements related to capping.

Gas Removal Alternatives (Alternatives H & I) - These alternatives will limit the uncontrolled migration of landfill gas. Venting or mechanical extraction of the gas will comply with all relevant and appropriate requirements related to gas migration.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - These alternatives comply with all relevant and appropriate requirements related to groundwater.

2. Primary Balancing Criteria

Alternatives which satisfy the two threshold criteria are then evaluated according to the five primary balancing criteria.

a. Long-term effectiveness and permanence

Capping Alternatives (Alternatives C, D & E) - Capping a landfill is the most effective method to reduce the amount of contamination potentially leaching from the site. All of the capping alternatives will provide some measure of long-term effectiveness and permanence. However, the membrane capping alternative (Alternative E) is much more effective at reducing infiltration into the waste when compared to the soil capping alternatives.

Gas Removal Alternatives (Alternatives H & I) - Both of these alternatives offer long-term effectiveness and permanence. The passive system (Alternative H) will be easier to maintain over the long term when compared to an active gas extraction system. Also, the passive system would have greater effectiveness over the long-term because once designed, it will operate in perpetuity with very little annual maintenance required. An active gas system is only effective as long as it is operated.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - The groundwater removal options offer long-term effectiveness and permanence. These systems would run until they are no longer necessary. At that point the contaminants would have been removed from groundwater and assuming an effective source control, minimal loading of contaminants to groundwater will take place.

Alternative O - This alternative offers long-term effectiveness and permanence. A membrane cap is very effective at limiting the amount of infiltration entering the waste. A passive gas venting system, once designed and installed, will effectively vent the gas as long as the waste continues to generate gas. Also, a membrane cap and passive gas vent system will only require simple, routine maintenance to keep operating as designed into the future.

b. Reduction in Toxicity, Mobility or Volume Through Treatment

Capping Alternatives (Alternatives C, D & E) - Capping a landfill minimizes the amount of infiltration that can enter the waste. This will reduce the mobility and volume of contamination leaving the waste. However, treatment is not addressed under these alternatives.

Gas Removal Alternatives (Alternative H & I) - Proper venting or physical extraction of landfill gas will reduce it's mobility and keep the gas from migrating offsite. However, this reduction is not due to treatment. Alternative I, the active gas extraction alternative also involves destruction of the captured gas in a flare. Combustion of the gas in a flare constitutes treatment and eliminates the toxicity of the gas. Neither of the gas removal alternatives will reduce the volume of the landfill gas.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - An active groundwater capture system will reduce

the mobility and volume of contaminants in groundwater. The captured water would be treated prior to discharge.

Alternative O - Like the other capping alternatives, this alternative will greatly minimize the amount of water entering the waste. This will reduce the mobility and volume of potential contamination that may affect groundwater. The gas venting system will reduce the mobility of landfill gas and keep it from migrating offsite. However, the improvements as a results of this remedy are not due to treatment.

c. Short-term Effectiveness

Capping Alternatives (Alternatives C, D & E) - These alternatives will reduce the amount of contamination coming from the landfill by reducing infiltration into the waste. These benefits will occur immediately after the landfill cap is in place. All of the alternatives could be implemented in a single construction season. A short term adverse impact that may occur under these remedies is the potential for additional leaching of contaminants from the waste during construction. During cap reconstruction, the existing landfill cover will be disturbed and all of the vegetation will be removed. This may increase leaching of contaminants to groundwater. This potential adverse impact would only occur during the construction season.

Gas Removal/Venting Alternatives (Alternatives H & I) - These alternatives will limit the migration of landfill gas. This benefit will occur after the gas system, whether it be venting or active extraction, is in place. A gas venting or extraction system can be implemented within a single construction season.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - An effective groundwater removal system will stop the spread of contaminated water. Any of these alternatives can be implemented within a single construction season.

Alternative O - This alternative will reduce the amount of contamination coming from the landfill by minimizing infiltration and by properly venting landfill gas to keep it from migrating offsite. These benefits can be realized within a single construction season.

All of the alternatives listed above have short term adverse impacts related to construction. All of the remedies will involve construction using heavy machinery, movement of large quantities of soil, and disturbing the existing landfill cap. While using experienced contractors and proven construction techniques can minimize these risks, any activity involving large equipment can present potential hazards.

Another short-term adverse impact due to these alternatives is increased truck traffic during construction. The capping alternatives will involve bringing soil and other materials to the site. This will increase truck traffic along Highways FF and NN creating the potential for traffic accidents with residents living near the site, or with trucks from the active sand & gravel quarry across the street from the site. Increased warning signs along the roadway would help to reduce the potential for an accident.

d. Implementability

Capping Alternatives (Alternatives C, D & E) - All of the capping alternatives are readily implementable using established construction techniques and materials.

Gas Removal/Venting Alternatives (Alternatives H & I) - The gas removal alternatives are all readily implemented using established construction techniques and materials.

Groundwater Removal and Treatment Alternatives (Alternatives J, K & M) - All of

the groundwater removal and treatment alternatives are readily implementable using established construction techniques and materials.

Alternative O - This alternative can be readily implemented using established construction techniques and materials.

All of these remedies will require some level of oversight by DNR. Because of the common nature of these remedies, the remedies can be readily implemented without excessive administrative burdens.

e. Costs

Alternative C
Capital Costs - $631,000
Annual Costs - $33,000
Present Worth - $1,085,000

Alternative D
Capital Costs - $850,000
Annual Costs - $33,000
Present Worth - $1,304,000

Alternative E
Capital Costs - $1,171,000
Annual Costs - $33,000
Present Worth - $1,625,000

Alternative H
Capital Costs - $161,000
Annual Costs - $3,000
Present Worth - $202,000

Alternative I
Capital Costs - $165,000
Annual Costs - $19,000
Present Worth - $427,000

Alternative J
Capital Costs - $167,000 to $219,000 depending upon discharge location
Annual Costs - $50,000
Present Worth - $855,000 to $907,000 depending upon discharge location

Alternative K
Capital Costs - $170,000
Annual Costs - $51,000
Present Worth - $872,000

Alternative M
Capital Costs - $269,000
Annual Costs - $46,000
Present Worth - $898,000

Alternative O
Capital Costs - $1,220,000
Annual Costs - $34,000
Present Worth - $1,688,000

3. Modifying Criteria

a. State Acceptance

The DNR is the lead agency on this case and authors this proposed plan.

b. Community Acceptance

The public is invited to comment on this proposed plan. Public comments should be submitted to the DNR project manager. The address for submitting comments can be found on the back page of the fact sheet. Public comments will be addressed in the Record of Decision for this site.

c. Summary

The landfill cap that currently exists on the site is not very effective at limiting the amount of infiltration entering the wastes. Of the capping alternatives proposed, the composite cap will be most effective at minimizing precipitation into the waste. Over the long term, limiting the amount of water entering the waste will have beneficial affects on groundwater quality.

The waste does produce a small volume of landfill gas. Gas generation rates are not high enough to warrant an active landfill gas removal system. A properly designed gas venting system will limit the migration of

landfill gas and greatly diminish any explosion hazard associated with the gas. Also, because of the small volume of gas generated by the site, the gas can be safely vented to the atmosphere without causing any exceedances of air emission standards.

The recommended alternative, Alternative O, along with an effective groundwater monitoring program, provides all of the factors necessary for a remedy which is protective of human health and the environment, will comply with applicable or relevant and appropriate requirements (ARARs) and is cost effective. The composite cap will greatly reduce infiltration when compared to a soil cap. This will have beneficial effects over time and warrants the additional cost of a composite cap relative to a soil cap. A proper gas venting system will limit landfill gas migration and remove contaminants present in the gas making them unavailable to dissolve in the leachate. The low gas generation rates don't warrant construction of an active gas extraction and treatment system. A groundwater monitoring program that detects changes in groundwater quality and the location of the contaminant plume provides protection to nearby residential wells also helps to make this remedy protective of human health and the environment. In summary, the Source Control Operable Unit for this site includes the following:

* a composite landfill cap
* a gas venting system
* a groundwater and landfill gas monitoring program
* fencing of the site to restrict access
* a restriction on the property deed denoting that a landfill exists on the property and prohibiting disturbing the cap except for maintenance purposes

Groundwater contamination does exist at the site. However, it's impacts are fairly limited. Contaminated groundwater is present between the site and the wetland to the southwest of the site. Concentrations of VOCs, namely vinyl chloride and cis 1,2-DCE are high near the waste boundary, but diminish greatly with distance from the site. VOC concentrations in the groundwater discharging to the wetland are low enough so as not to cause an adverse impact to the wetland. Given the small area of groundwater contamination, the decreasing VOC concentrations with distance from the site, and lack of impacts to the wetland where the groundwater discharges, active groundwater restoration efforts are not necessary for this site. With the improved landfill cap and gas venting system in place, monitoring the groundwater to detect changes in quality with time will be sufficient to protect human health and the environment. Therefore, DNR concludes that no active remedial measures are necessary for the groundwater operable unit.

Information Available

Anyone interested in receiving more information about the Ripon FF/NN Landfill is encouraged to review the various documents that have been prepared for the site. Copies of all information used to make decisions about the cleanup of Ripon FF/NN Landfill are available for review at:

Ripon Public Library
120 Jefferson Street
Ripon, Wisconsin

For more information on the Ripon FF/NN Landfill site, contact the following individuals:

Steve Ales, Project Manager
Wisconsin DNR
Southern District
3911 Fish Hatchery Rd.
Fitchburg, WI 53711
(608) 275-3310

Chuck Warzecha
Hydrogeologist
Division of Health
1414 E. Washington Ave
Madison, WI 53707
(608) 267-3732

PUBLIC COMMENT INVITED

Comments provided by residents and other interested parties are valuable in helping DNR and EPA select a cleanup action for the Ripon FF/NN Landfill Superfund site. DNR and EPA encourage you to share your views about the recommended cleanup action and the options presented in this fact sheet.

Please send written comments to Steve Ales at the address below. Comments must be postmarked by **September 29, 1995**.

DNR will respond to comments in a document called a Responsiveness Summary. The Responsiveness Summary will be attached to the Record of Decision and will be made available to the public in the Administrative Record File at the address listed below. The Record of Decision will explain the cleanup option that is chosen for the Ripon FF/NN Landfill Superfund site and why it was chosen.

Mailing List Additions

If you did not receive this fact sheet in the mail, you are not on the Ripon FF/NN Landfill mailing list. If you would like to be placed on the mailing list, please fill out, detach, and mail this form to Steve Ales at the address listed on this page.

Name:_____

Address:_____

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Ripon FF/NN Landfill Superfund Site

Public Meeting Set for:

September 13, 7:00 p.m.

Ripon City Hall Council Chambers

Comments will be accepted on cleanup options until September 29.

Department of Natural Resources
Southern District Headquarters
3911 Fish Hatchery Rd.
Fitchburg, WI 53711