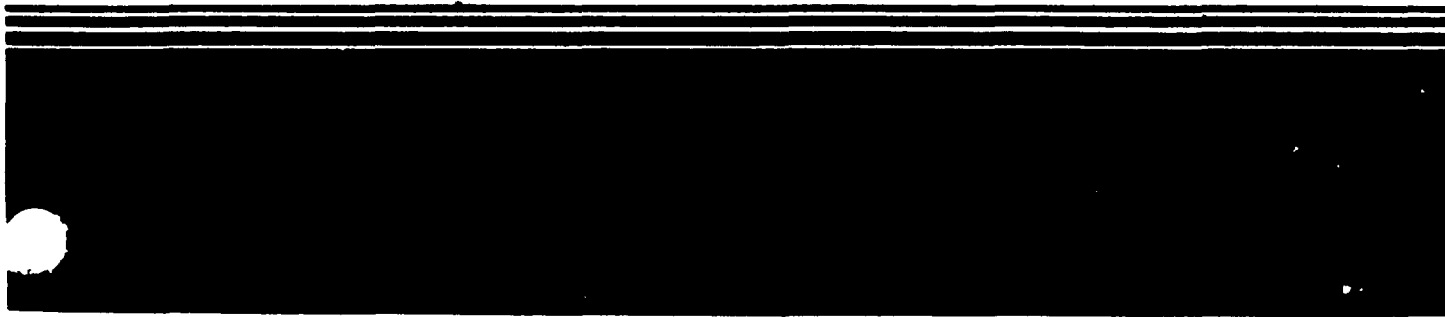


EPA

Superfund Record of Decision:

1000001

Rose Township, MI



ROSE TOWNSHIP RECORD OF DECISION AMENDMENT

PURPOSE

This decision document presents the amendment to the Record of Decision for the Rose Township-Demede Road site, in Oakland County, Michigan. It was developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan.

The State of Michigan has not concurred with the amendment.

BASIS

The decision to amend the Record of Decision (ROD) is based upon the administrative record. The index attached to the ROD identifies the items that comprise the administrative record upon which the selection of the remedial action is based.

DESCRIPTION OF THE AMENDMENT

The remedy selected in the ROD (attached) is a final remedial action. It consists of the excavation and on-site thermal destruction of the organic contaminants in the surface and subsurface soils, treatment of inorganic contaminants in the soils, and extraction and treatment of contaminated groundwater. This amendment allows in-situ soil washing, or "flushing", to be used as an alternate remedy for the contaminated subsurface soils provided that laboratory or pilot testing proves that soil flushing is as protective as thermal destruction. If soil flushing tests show it to be ineffective, implementation may not occur.

DECLARATION

The amended remedy, if implemented, is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate for this remedial action, and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining on-site above health-based levels (heavy metals in surface soils), a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection human health and the environment.

Frank M. Covington

for

Valdas V. Adamkus
Regional Administrator
U.S. EPA Region V

Date: 1-18-89

ROSE TOWNSHIP ROD AMENDMENT

PURPOSE

The purpose of this decision document is to amend the Rose Township site (Rose) Record of Decision (ROD) to allow the use of soil flushing rather than on-site thermal destruction, if demonstrated to be feasible, to remediate the contaminated subsurface soils.

SITE DESCRIPTION/HISTORY

The ROD (attached) contains a description of the Rose site as well as an encapsulation of the previous response actions undertaken by the United States Environmental Protection Agency (U.S. EPA) and the Michigan Department of Natural Resources (MDNR).

ROD FINDINGS

The Rose Township remedial investigation report (July 1987) identified several potential present or future exposure pathways for the hazardous chemicals at the site. These are:

- ° Potential present exposure via ingestion of contaminated groundwater on-site;
- ° Potential future exposure via ingestion of contaminated groundwater on-site and/or off-site;
- ° Potential present exposure via dermal contact and/or ingestion of contaminated soils onsite;
- ° Potential future exposure via dermal contact and/or ingestion of contaminated soils onsite;

These exposure pathways present unacceptable carcinogenic and noncarcinogenic risks to human health and the environment.

SELECTED ALTERNATIVE

To address the unacceptable risks posed by the hazardous chemicals found at the Rose site, the attached ROD detailed the following remedial action:

- ° Erect a fence around the site;
- ° Excavate surface soils contaminated with PCBs to a cleanup level of 10 parts per million (ppm) and thermally destroy on-site. The resulting ash would be tested for EP Toxicity and either replaced on-site (if non EP Toxic) or suitably landfilled off-site (if EP Toxic);

- ° Excavate surface soils contaminated with lead to a cleanup level of 70 ppm and surface soils contaminated with arsenic to a cleanup level of 14 ppm, treat to pass the EP Toxicity test, and replace on-site if treatment was successful. If treatment was not successful, that is the soils are EP Toxic, then these soils would be suitably landfilled off-site;
- ° Excavate subsurface soils contaminated by Volatile Organic Chemical (VOCs) and Semi-Volatile Organic Chemicals (SVOCs) to a health-based cleanup level of 80 ppb and thermally destroy on-site.
- ° Extract contaminated groundwater, treat on-site, and discharge to the adjacent wetlands. The groundwater target cleanup levels are listed in the ROD.

The ROD also determined that if treated water extracted from the site could not be discharged offsite, it could be allowed to percolate down through the subsurface soils while the PCBs in the surface soils were being thermally destroyed on-site. This would be an attempt to "flush" or wash out the VOCs and SVOCs out of the subsurface soils into the groundwater, and thus into the groundwater extraction system, for removal. It was the intent of this provision to reduce the amount of subsurface soils to be excavated prior to thermal destruction. After the PCBs had been thermally destroyed, the flushing operation would be evaluated to discern if it would be practicable as a cleanup alternative to thermal destruction. If the flushing was unsuccessful, excavation and thermal destruction would then commence on the subsurface soils that are still contaminated.

DISCUSSION

The ROD for the Rose site only permitted soil flushing to occur if the extracted groundwater could not be treated to meet allowable limits prior to discharge to the wetlands. Moreover, flushing as a remedial alternative was screened out as a viable remedy in the Rose Township feasibility study (July 1987) due to the following reasons:

- ° There are insoluble chemicals presenting a hazard in the surface soils which water would not "flush" out (PCBs, lead, arsenic);
- ° The geology is somewhat complex at this site, soils are marginally conducive to flushing operations;
- ° Pilot testing would need to be performed before such a remedy is implemented; and
- ° Flushing has not been well demonstrated in the cold weather environment of Michigan.

The RI/FS did mention, however, that if flushing was effective, it would eliminate the need to excavate the chemical-laden subsurface soils.

ROD AMENDMENT

U.S. EPA has determined that flushing may be a viable alternative for treatment of the subsurface soils contaminated with VOCs and SVOCs for the following reasons:

- ° When the surface soils are removed by excavation for PCB and lead remediation, most insoluble (or nonflushable) chemicals will have been removed. Any chemicals remaining would not pose a risk to receptors at the completion of the thermal destruction task.
- ° If one examines the logs of soil borings taken at Rose (RI/FS Report, Appendix B), it can be seen that clay lenses are not present in the entire contaminated area which would need to be flushed. Although the geology of the entire site as a whole is rather complex, the geology of the contaminated subsurface soils may not be. In some areas clay zones are found only in the water table. Other areas find clay at the surface which may have to be excavated due to the presence of PCB contamination.
- ° Pilot testing has not yet been performed to rule out flushing as an alternative.

STATUTORY DETERMINATIONS

Soil flushing as a partial cleanup remedy, therefore, is not ruled out as a viable alternative for the subsurface soils at Rose, whether or not treated groundwater can be discharged to the wetlands. It must, however, be shown through laboratory or pilot studies that flushing would remove hazardous chemicals to such a degree that the operation would be as protective as removal of hazardous chemicals by excavation and thermal destruction. Otherwise full-scale flushing activities may not occur.

Accordingly:

- ° If target cleanup levels are reached by soil flushing, then flushing would be as protective over the long-term as thermal destruction. The continual source of groundwater degradation would be removed, allowing for the restoration of the aquifer. Although flushing may take longer to remove the groundwater degradation source, no receptors would be at risk over the short-term due to ingestion of contaminants. The groundwater extraction system would be pulling back the contaminant plume, which has not yet left the site.

- ° Provided appropriate target cleanup levels are met, all ARARs as in the ROD, would be attained.
- ° If shown to be as protective as thermal destruction, flushing would be more cost-effective than thermal destruction. The estimated cost of on-site thermal destruction of the subsurface soils (estimated total volume: 25000 cubic yards) is \$13 million. The estimated cost of soil flushing is approximately \$1 million.
- ° Provided that the groundwater treatment system utilizes granular activated carbon (GAC) to capture contaminants, and that the GAC is regenerated via incineration, the flushing remedy would utilize permanent and alternative treatment technologies to the same extent as the ROD remedy.
- ° Soil flushing thus would also reduce the toxicity, mobility, and volume of contaminants to the maximum extent, as does thermal destruction.

RESPONSIVENESS SUMMARY

Attached is the responsiveness summary concerning the ROD amendment and the proposed settlement reached with several potentially responsible parties. Both State and public comments have been noted and addressed.

RESPONSIVENESS SUMMARY: Rose Township ROD Amendment and Proposed Settlement

The United States Environmental Protection Agency (U.S. EPA) has received a number of comments concerning the proposed Record of Decision (ROD) amendment and PRP cleanup agreement for the Rose Township site. The comments will be addressed in the following order:

1. Written comments received at U.S. EPA, Chicago, Illinois, from the following groups:
 - (A) Area residents
 - (B) State Agencies
 - (C) Legislators
 - (D) Private environmental groups
 - (E) PRP groups
2. Questions/Comments received at the October 12, 1988 Public Meeting, Rose Center, MI.

In compiling the responses to the attached comments, U.S. EPA believes that it has successfully defended the ROD amendment as well as the negotiated settlement agreement between U. S. EPA and the 12 Settling Defendants.

WRITTEN COMMENTS

Note: Individual comments are excerpted here. Letters in their entirety are found in Appendix 1.

(A) Area residents

(i) Gisela King, dated 10-20-88, received 10-28-88.

"Although there are uncertainties with both the original proposal for cleanup and the proposed settlement by the PRPs, the latter has some serious flaws. The most serious of these is a complete absence of any attempt to demonstrate the technology of soil flushing at the site. Although the industry representative explained that two (2) successful cases of soil flushing as a cleanup technique are known to him, he did not supply any specific information. Your EPA representatives at the meeting were unable to substantiate this man's claim and told us that they were unaware of any cases where it had actually been demonstrated that the technique worked."

Response (R): The ROD amendment and Consent Decree require a preliminary laboratory study to demonstrate the effectiveness of soil flushing prior to implementation at the site. The Settling Defendants may attempt to "flush" in the field only if the laboratory study demonstrates that the technology could work. Moreover, in CERCLA, Section 121(b)(1), a preference for the use

of innovative technology, such as soil flushing, in site cleanups is expressed.

"The frustration level in our community is extremely high due to the unacceptable situation created by EPA's deviation from the original cleanup plan as proposed in 1987. You asked us to a public hearing in Oct. 1987 and explained in great detail the cleanup proposal such as the thermal destruction of chemicals in the soil, the groundwater purge system, etc. Every minute detail of the feasibility study and remedial action plan was made available to us. The DNR team who had actively participated at the site assessment explained carefully with the help of graphs, pictures, technical and chemical data what was to be done to clean up this toxic dump. An actual test burn with a scaled down unit was performed, with great monetary expenditures I may add.

Now, one year later you call us to another public hearing, on Oct. 12, 1988. You flatly state that you no longer want to go along with the initial cleanup proposal, but that you have signed a consent agreement with the PRPs. You admit that there are significant differences, mainly the soil flushing, but state that the companies have addressed the reasons soil flushing was previously rejected. Yet you show no evidence (nor do the companies) how this process will work. In other words you just want us to take your word for it that all will be done right."

R: U.S. EPA's goal at this site is protection of human health and the environment. At no time has this goal been compromised.

At the public meeting in July 1987, the Agencies (both MDNR and U.S. EPA) explained in great detail the proposed cleanup technology. EPA arranged for the pilot testing of the innovative on-site thermal destruction technology (at the expense of the equipment owner) at the Rose site and we await the final results. In no way, however, has the remedy for the cleanup of PCBs changed. PCBs shall be incinerated (either on-site or off-site). Before flushing takes place at Demode Road, it, too, shall be a demonstrated technology.

A conceptual model (drawing) of the flushing remedy was handed out at the October 12, 1988 public meeting. There, flushing was explained as an attempt to "mimic" the natural flushing which is now occurring at the site. An actual working model cannot be designed until laboratory testing is finished. Once testing is finished, the results will be compiled and presented to the public. At that time, U.S. EPA will decide as to whether flushing may be performed in the field.

"You have no alternative plan if the PRPs proposal for cleanup does not work (referred to as the big if during the meeting). The proposed trust fund is a mere \$500,000.00, a drop in the bucket considering the millions of dollars it may cost if the PRPs' proposal does not work and EPA should have to finish the job."

R: The Consent Decree clearly states that if flushing is unsuccessful, another permanent treatment remedy shall be performed by the PRPs. Whatever technology is used, the same cleanup levels will be achieved. The proposed trust fund of \$500,000 will earn interest and grow to well over \$1 million. According to U.S. EPA feasibility study guidance calculations, \$500,000 will be enough to fund long-term operation of the ground water extraction and treatment and flushing systems, thereby insuring against contaminated water reaching possible receptors.

"The consent agreement is written very loosely providing the possibility of additional court proceedings by the PRPs as an alternative solution should they decide that they will not or won't be able to do the cleanup of the site after all."

R: The Consent Decree obligates the Settling Defendants to clean up the site to certain specified levels. If soil flushing is ineffective, the Settling Defendants are required to perform a permanent treatment alternative to reach the same cleanup goals.

"Until the conflict between the DNR which was the lead agency with years of hands on experience at the site, and the EPA is resolved to the satisfaction of the Rose Township residents, signing this consent agreement is totally unacceptable."

R: Although MDNR has not accepted the proposed PRP cleanup agreement, U.S. EPA believes that the cleanup agreement is sound, and we will proceed with the remedial design phase of the project.

(ii) David Higgins, dated 10-26-88, received 10-31-88.

"It has been brought to my attention that the EPA and the Michigan Department of Natural Resources are attempting to resolve environmental contamination at the Demode Road industrial site in Rose Township, Michigan. Initially, I considered this to be good news, however, I have been informed that there are major disagreements between the State DNR and the EPA concerning a proper resolution. The EPA has decided to allow the responsible parties to treat the soil via a method called "flushing." However, the DNR does not consider this method to be acceptable."

R: EPA has decided to allow the PRPs to study soil treatment via flushing and implement it if the study is successful. Flushing will not occur if found to be unsuccessful in the laboratory.

"...it is my belief that the EPA has deviated from its original cleanup plan and that the present solution to the problem is unacceptable. My question is whether or not "flushing" works? What would be the next step and who would be responsible for further cleanup?"

R: It is EPA's belief that the remedy outlined in the settlement agreement is acceptable since it covers a great portion of work the ROD detailed as necessary at the Rose site. Once again, soil flushing will not occur unless the study is successful. If not successful, or even if it is and the full-scale implementation is ineffective, the PRPs are obligated to clean up the site in a fully protective manner.

(iii) Dr. and Mrs. Egbert Henry, dated 10-27-88, received 10-31-88.

"As property owners at the above-cited area, we are vehemently opposed to the soil flushing system to clean up this site. Instead, we are requesting that EPA adhere to the conditions outlined in the 1987 Feasibility Study for a purge system."

R: The settlement does involve the groundwater purge system, as well as testing the soil flushing concept before implementation of soil flushing.

(B) State Agencies

(i) Michigan Department of Natural Resources (MDNR): Andrew Hogarth, dated 10-28-88, received 10-31-88. Letter and attachment.

"The PRPs' proposed RAP is unacceptable to the State of Michigan. It does not accomplish the degree of cleanup or cleanup in a similar timeframe as that stated in the ROD."

R: The RAP is acceptable to U.S. EPA. While the groundwater degradation source may not be removed on the two to three year timeframe of total incineration, the goal of protectiveness is reached as long as the groundwater extraction system is operational. The degree of cleanup is the same: 10^{-6} excess lifetime cancer risk to possible receptors on or off-site.

"Also, the proposed soil and groundwater monitoring will not provide the assurance necessary to even remotely guarantee adequate cleanup of this site.

Actual and potential users of the groundwater will not be sufficiently protected."

R: There is no evidence in this letter to support these statements. EPA believes that the remedy will be protective for potential users of the site groundwater (there are no actual users of the site groundwater).

"The RAP will not ensure attainment of all applicable or relevant and appropriate requirements of state law, including, but not necessarily limited to, compliance with Michigan Comp. Laws Ann. 323.6(a) and Michigan Administrative Code 323.2201 et seq since it allows and does not remediate discharges of injurious substances into and degradation of State groundwater resources."

R: EPA believes that the PRP remedy will attain all applicable or relevant and appropriate requirements identified in the ROD. /

"We support the approach to soil and groundwater remediation as specified in the RI/FS and ROD. It is a conservative approach which deals effectively with the complex geology and definitional data gaps. The elimination of soil flushing was based on the very issues that we face with this decree. It is unlikely that the PRPs will overcome the issues and obstacles described in the attached document which have been challenging the scientific community for years and feel that the RAP attached to the consent decree is not an appropriate instrument to deal with such challenges."

R: Flushing will not occur until proven effective. The settlement only allows the PRPs to prove that flushing works before full-scale implementation.

(Attachment)

Soil Flushing

"EPA is ignoring the findings of the RI/FS and the recommendation that the physical characteristics and distribution of contaminants are not amenable to flushing. The RI/FS found soil flushing NOT APPLICABLE for the following reasons:

- a. the soils are marginally suitable for this technology because of variable permeabilities;
- b. soils contain both soluble and insoluble chemicals—flushing would have to be used with another technology to remove the entire source, and
- c. flushing is not well demonstrated, especially in cold weather environments."

R: EPA is not ignoring the findings of the RI/FS. As noted in the Explanation of Significant Differences document, soil flushing was eliminated from consideration due to the presence of insoluble chemicals, marginal soils, and the lack of pilot testing. The PCBs and lead are being addressed by other means, pilot testing will occur before field implementation, and soils in the area to be flushed could be amenable to flushing. However, the definition of marginal implies that the soils are at the lower limit of the acceptability range for flushing applications. Thus, EPA intends to have flushing tested first before ruling it out as an unacceptable alternative.

"Demode Road site is "NON-FLUSHABLE" according to EPA's own criteria for successful flushing as stated by Kevin Adler (October 12, 1988 Rose Township Public Meeting):

- a. chemicals to be flushed must be soluble;
- b. the geology must be simple, and
- c. testing must demonstrate flushing works.

These criteria are not met at Demode Road site for the following reasons:

First, there is a mixture of soluble and non-soluble chemicals at the site. Although much of the non-soluble chemicals such as PCBs will be excavated before flushing, there are still non-soluble chemicals such as pentachlorophenol, cyanide, phthalates, isophorone, etc., in the zone to be flushed."

R: If there are "non-soluble" chemicals in the zone to be flushed, then obviously they will not be removed by flushing. However, natural infiltration of rainwater will not wash them out of the soils either, thus these chemicals are not a risk to groundwater receptors. The chemicals listed above, which are either soluble ("cyanide") or slightly soluble (pentachlorophenol, isophorone, phthalates), were not found to be an unacceptable hazard (due to dermal contact) by the risk assessment in the RI/FS, even under realistic worst-case conditions.

"Second, the geology is very complex rather than simple. The dominant geologic feature is a morainal ridge. "The resultant deposits appear to lack stratigraphic continuity even on a very local scale" (pg. 28 of RI/FS). Boring logs over the entire site verify this interpretation. Within and near the area of soil contamination, the well logs emphasize geologic variability; some logs indicate all sand, others indicate variable thickness (3' or more than 20') of silt and/or clay. The presence of relatively impermeable layers along with the head of water applied will redirect flush water away from contaminated zones and/or minimize its vertical movement."

R: EPA agrees that the geology is not "simple" at the Rose site. However, that does not mean that the soils are impermeable, precluding the use of the technology. We intend to test and monitor to ensure the proposed system will work.

"Third, there is no generally accepted standard laboratory procedure for testing and evaluating the extent and rapidity to which contaminated soils will release contaminants and be cleaned up during flushing. There is no scientifically accepted method to correlate the concentration of chemical contaminants in the flushate and the concentration of chemical contaminants remaining in the soil. Research in these areas is in its infancy."

R: The Settling Defendants must submit a work plan, for EPA's evaluation and approval, to assess the effectiveness of a flushing system. (Again, flushing may be an innovative technology, but CERCLA states a preference for such technologies if they are protective and cost-effective.)

"Using flushate monitor wells to determine what can or cannot be flushed from the site soils (Phase I soil cleanup levels) is neither logical nor scientifically defensible for the following reasons.

- a. Flushate monitor wells receive flushate that percolates downward only in the vicinity above and around the well. Therefore, they are not representative of the entire soil contamination and are not reliable for decision making purposes for the following reasons:
 - 1.) The unequal distribution of contamination coupled with the potential effect of channelization of flushwater may result in varied concentrations and types of contaminant in samples collected only a few feet apart.
 - 2.) Based on soil sample analysis, the distribution of the contamination and concentrations vary to the extent that flushate monitor wells cannot be relied upon to provide representative, and statistically meaningful results.
- b. There is no accepted method to collect flushate samples.
- c. The mounding and fluctuation of the water table as influenced by flushing cannot be predicted with any degree of certainty; therefore, the depth of the flushate wells will be questionable.
- d. There is no general acceptance by the scientific community of the use or function of flushate monitor wells."

R: The above comments involve design criteria. All these and more will need to be satisfactorily addressed by the PRPs before EPA allows flushing to

occur at Rose. EPA believes that an adequate confirmational sampling system can be devised, however.

"The derivation of soil TCLs is unacceptable as described in the R.A.P.:

- a. The derivation of TCLs assumes that representative data from flushate wells can be obtained so that removal trends can be established to predict when and if TCLs can be achieved. This is not the case since data from flushate wells is not representative for reasons stated above.
- b. The ability to correlate just what levels of contaminants in the soils result in a particular flushate level has not been established by the scientific community.
- c. If flushing is not effective in removing contaminants due to physical constraints such as channelization or pooling in clay pockets, then it may incorrectly be interpreted as successful since there is no apparent contribution to groundwater. In fact, soluble contaminants missed by flushate would still be subject to movement. They will contribute contamination to the groundwater for many years. Thus, a technology such as flushing that fails to adequately remove residual contamination in the soils would appear a success. Under this scenario, the inability of flushing to remove soil contamination ironically is what determines the soil TCLs rather than health and environmental risks."

R: (See response to previous comments.) Successful flushing is also based upon confirmational soil sampling. Individual pockets of "missed" residuals found by soil sampling will need to be addressed by the PRPs before they finish flushing. The groundwater extraction and treatment system will be in place to retain chemicals that may be missed by the flushing operation. Therefore, the leaching of residual chemicals from these "missed" pockets, if it occurs, will not pose a risk to potential receptors.

"There is no explanation as to what data will be used or what analytical techniques will be applied to derive TCLs other than "all available data will be used." This does not assure adequate protection of human health and the environment and therefore is not acceptable to the State of Michigan."

R: The PRPs will need to adequately assure EPA that soil TCLs have been derived correctly before flushing is implemented.

"Scientific research has not shown flushing to work. Case histories referenced by Hart Environmental (11/19/87) substantiate the lack of research and emphasize the fact that few cases are available where flushing has been

attempted and completed. Also, little verification of final soil concentrations is available for those few sites that have attempted flushing."

R: Attached are literature citations of flushing applications. It is also a statutory requirement that U.S. EPA considers innovative or alternative technologies when making a decision how to best clean up a site. (Note that soil flushing was chosen as a viable alternative at the U.S. Aviox site, Cass County, Michigan.)

"The timeframe for flushing is unacceptable - if the ten year assessment of flushing (page 26 of the RAP) demonstrates that flushing has not worked and the PRPs can reasonably show that Phase I TCLs will be reached within a period not to exceed another 5 years then the flush period may be extended resulting in a flushing operation of 15 years to achieve just the Phase I levels. If they are not reached in 15 years then Task 6H of the consent decree (Additional Remedial Action if Transfer Criteria are Not Met) will be followed which may entail lengthy proceedings.

This is contrary to the timeframe in the RI/FS and ROD which estimated approximately 3 years for excavation and incineration of soils to the Phase II levels.

Soil flushing will adversely impact groundwater cleanup. Flushing as proposed will increase the length of time to operate the groundwater purge and treatment system. Because contaminants are being flushed to the groundwater for eventual extraction by purge wells, the time to achieve the groundwater TCLs is dependent on the time to reach soil TCLs. Hence, the timeframe to run the groundwater extraction system is determined not only by the time to achieve cleanup of the groundwater from the source interface to the purge well, but also by how long contamination will be entering the groundwater from the source area during flushing. Since flushing effectiveness is not being evaluated until year 10 of flushing, and there is provision for another five years of flushing, it is likely that the groundwater cleanup will be extended by at least 10-15 years because of soil flushing."

R: The ROD remedy was chosen based on its overall protectiveness and permanence of cleanup versus the other four alternatives analyzed. The timeframe for completion of incineration was not the main reason that remedy was chosen.

Since groundwater extraction and treatment was estimated by the RI/FS report to last 6 to 10 years after completion of incineration, cleanup activities would be occurring at Rose for a minimum of 9 to 13 years. Groundwater remedies may in fact take much longer to complete.

In the proposed agreement, flushing effectiveness is being evaluated annually with a major assessment at year 5. Provided sufficient progress is being made by the remedy, operations may continue.

Soil and Groundwater Investigations

"The RAP is deficient and unacceptable in not providing for the determination of the vertical and horizontal extent of groundwater contamination. Without such a determination, adequate cleanup cannot occur with regard to the following conditions:

- a. The north and south plumes may actually be connected. Monitor well RW 14 suggests this may be the case. Monitor wells RW 11 and MW 103 are completed very shallow in the aquifer; vertical gradients are likely to have carried contaminants below these wells. Thus, these wells may be giving misleading negative values by measuring water quality above the plume of contamination.
- b. The northern plume has not been completely outlined. There may be a component of plume movement east or west of DNR-4. Flow from the areas of known contamination at this time appears to be toward DNR-4 only because that is the most downgradient well; flow may actually be away from this well. Groundwater flow in the area of vinyl chloride contamination is radial."

R: The RAP is only a "thumbnail sketch" of the work to be performed at Rose. The system noted in the RAP is taken from the ROD which the State concurred with. An adequate monitoring system will be prepared in the design phase during the hydrogeologic investigations task. The estimated monitoring well network outlined in the RAP was never construed to be the actual well configuration.

"Site cleanup can NOT be considered adequate until the source of vinyl chloride in the northern portion of the site is determined. The source of vinyl chloride must be identified and remediated. If the north and south plumes are connected, this may be addressed in the area of known contamination. However, either way, it may be a separate source."

R: The ROD remedy was not specifically prepared to delineate a source of vinyl chloride. The RAP intends to remediate the vinyl chloride in the same manner as the ROD remedy. The suggestion that the two plumes are actually one is plausible. Source remediation via the proposed agreement should then address the source of the vinyl chloride as well. If found to be a separate source, it was projected in the RI/FS that groundwater extraction and treatment would be the cost-effective remedy for the vinyl chloride.

Groundwater Monitoring

"An adequate monitoring system cannot be developed because the RAP does not provide soil and groundwater information specified above. Although the long-term monitor wells are NOT shown in Figure 2A of the PRP's RAP, the

description of their purpose appears to be more to monitor the plume outline (i.e., the spreading or lack of spreading of the plume) than monitoring the cleanup of the aquifer. A long-term monitoring plan must consist of two sets of wells: one set to monitor the extent of contamination, and one set to monitor the retraction and cleanup of the aquifer. Presently, there is only one well actually proposed to be in the contaminated plume on the southern portion of the site. The only function the proposed long term monitoring wells can serve is to monitor the spread of the plumes since they are in clean areas. Another set of wells are necessary to monitor the retraction and cleanup of the contaminated groundwater."

R: The tentative long-term monitoring well configuration is presented in Figure 2A of the RAP, and the actual configuration is subject to approval by U.S. EPA. Seven new wells are to be installed for the purpose of monitoring the southwest plume, the actual locations of these wells will be determined in the design phase of the project. These new wells, as a part of the entire monitoring configuration, will adequately monitor the cleanup of the aquifer.

"The wrong wells are being monitored to determine aquifer cleanup. This is unacceptable. Groundwater in the monitor wells (not the extraction wells as stated in the RAP) should be clean and be part of the transfer criteria. Extraction wells are inappropriate as the only indicators of groundwater quality. It is likely that extraction wells will indicate lower contaminant levels due to dilution with clean water than is actually represented by the monitor wells. The entire zone of groundwater that is contaminated must be monitored to ensure that results representative of contamination level are obtained."

R: Although not being considered in the transfer criteria, monitoring wells will be tracking the cleanup progress. However, in the design of the extraction system, the PRPs are clearly charged with the task of installing wells that will intercept, draw back, and remove both contaminant plumes. Also, unextracted (non-diluted) extraction well water will be analyzed--water from the most contaminated parts of the plume. If the most contaminated parts are being addressed, then clearly the less contaminated parts will be addressed as well.

"Using target parameters as proposed will be misleading. All monitor wells should be sampled annually for the HSL parameters (not just the target parameters every five years as stated in the RAP). This will identify breakdown products that may form and be better indicators of contamination cleanup problems. And, flushing may bring new contaminants and breakdown products into the aquifer."

R: EPA believes that the groundwater monitoring program is consistent with the Superfund Public Health Evaluation Manual in that only representative chemicals from each chemical group need be addressed. As long as the TCL

list is being remediated, then all associated chemicals will be as well. It is unlikely that there will be any new chemicals of concern. However, the purpose of the 5-year HSL analysis is to make sure there are no new chemicals of concern. If new chemicals of concern are found, they will be addressed accordingly.

Transfer Criteria

"The transfer criteria are NOT scientifically sound. As stated above, water concentrations in the flushate monitor wells neither represent the entire flushing area nor the concentration of contaminants on the soils available to contaminate the groundwater. In addition, the R.A.P. calls for using the average of the concentrations to determine conformance with target cleanup levels. This means that contaminated soils that produce a flushate with contamination that exceeds TCLs does not need to be treated when the average of the data set, of which it is a member, is below the TCL. This does not assure adequate protection of human health and the environment and is unacceptable to the State of Michigan."

R: Transfer criteria are based on soil samples, as well as water samples. Although an isolated contaminated flushate sample may show chemicals at levels of concern, this does not mean flushing will end. Grossly contaminated areas will be remediated before transfer, and soil flushing will continue after transfer.

Cleanup Levels

"Conceptually, the Phase I water TCLs are unacceptable. These levels do not restore the aquifer to drinkable condition. The parties responsible for contamination must be made to restore the aquifer to at least drinkable quality ("...fit to drink..." as stated in the ROD). Included in the term drinkable are the organoleptic (taste and odor) limits of water. Toluene, xylene and ethylbenzene, for example, have proposed Secondary MCL's of 40, 20, and 30 ppb, respectively. The Phase I TCLs for these compounds are orders of magnitude higher than these SMCL's. The same argument holds for the Phase II TCLs."

R: Phase II TCLs are ROD TCLs. They will restore the aquifer to a drinkable condition. Secondary MCLs are unenforceable standards unless adopted by the State as statutory requirements. Phase I TCLs are merely transfer criteria and are not intended to be final cleanup levels.

"MCL's are not appropriate cleanup levels when a variety of contaminants are present at a site such as this; no additive or synergistic effects are considered in the MCL standard criteria. With the variety of chemicals present at this site, the MCL's are too high and will not sufficiently protect for actual or potential groundwater use."

R: MCLs are not the final cleanup levels at Rose. The rationale for this is contained in the ROD.

"The burden of cleaning up a site to final target levels should be placed on the PRPs rather than the EPA, especially with all the uncertainties that exist at this site. The EPA and PRPs have agreed to establish a trust fund to pay for continued treatment to the Phase II cleanup levels specified in the ROD after the Phase I levels have been reached. This places the ultimate responsibility to clean up the site to acceptable levels and the risk of not attaining those levels upon the EPA, and ultimately, the public."

R: Based upon U.S. EPA guidance, we believe that a \$300,000 trust fund will be adequate to pay for the aquifer cleanup from the Phase I levels to the final Phase II cleanup levels found in the ROD. We believe that it was important to reach a settlement for this case to save the SuperFund \$30 million, although it means taking on the small burden of continuing the cleanup using the trust funds. Since the Settling Defendants are paying for the trust fund as well as the site work, the main burden of cleanup is in fact on them.

Operation and Treatment Systems

"The telemetry system as proposed is likely to result in more "down time" of the system than actual treatment. The pumps, electrical monitoring equipment, concentration analyzers, and piping system will be vulnerable to electrical service disruptions, harsh weather conditions, vandalism, and mechanical breakdowns. It is not likely that a telemetry system will be sophisticated enough to provide system shutdowns and/or corrections reliably.

More than two equipment inspections a year are necessary. As proposed, the O & M system is unworkable. There are many details that need attention and maintenance which warrants a full-time operator. Inspections of several times a week are necessary to assure adequate cleanup. The more complex the cleanup and treatment system, the more problems can arise.

More frequent sampling and analysis of the treatment system is necessary to assure adequate compliance and operation. The limited frequency of sampling limits the number of data points to the extent that any trend analysis will be of questionable significance."

R: The operations and maintenance plan has not been prepared yet, but it is subject to U.S. EPA approval. U.S. EPA will consider these technical comments at that time. Monthly sampling of influent and effluent should be sufficient to show compliance.

(ii) Toxic Substances Control Commission: Charles Cubbage, dated 10-28-88, received 10-31-88.

"It seems inconsistent to expend the considerable effort undertaken with the trial burn not to afford public dialogue and agency discussion of the results of the effort prior to abandoning the Record of Decision. At the time of the trial burn, we expressed our concerns both in writing and verbally to EPA staff and the contractor."

R: EPA has not "abandoned the Record of Decision." EPA is only amending it to allow for the possibility that flushing could clean up the subsurface soils in a more cost-effective manner. Incineration of the PCBs will still take place.

"With respect to the proposed soil flushing we offer the following observations:

The complexity of the site topography, recharge characteristics, and geology form a groundwater regime that is not particularly amenable to modeling generated from an office."

R: This point was never in dispute. Actual locations of extraction and monitoring wells will be discerned after the hydrogeologic studies called for in RAP are performed.

"The soil flushing proposal does not adequately detail withdrawal and monitoring well locations. Insufficient information is presented to demonstrate how the impact of recharge will be evaluated with respect to contaminant plume migration. It is quite possible that the direction and rate of existing plumes will be altered. This would be complicated by current data that suggest seasonal shifts in direction already occur. Under these conditions, monitoring within existing plumes should be expanded."

R: The concerns expressed here will be addressed during design phase work. Data should be gathered and analyzed concerning site conditions before concern is expressed about the possibility of failure of the remedy.

"In light of the variable plume migration, sampling frequency should be quarterly. Given the proposed EPA schedule for various contaminants, a more complete evaluation could be obtained with minimal added expense."

R: Sampling frequency is quarterly for the critical first few years of operation. Afterwards it is anticipated that biannual sampling will be sufficient to monitor plume interception and removal.

"We find the PRPs' proposal to use organic cleanup levels in soils that is less than specified in the ROD to be inconsistent with the best interests of the citizens of Rose Township and arguments for the changes were not documented in the materials sent with the notification of the October 12, 1988, public meeting."

R: The cleanup level for soils has not been discarded. It is only a theoretical calculation. Laboratory studies using actual soils and contaminants will yield a more realistic cleanup target-which may be higher or lower than the theoretical ROD cleanup target. Again, the overall protectiveness described in the ROD will be met. If flushing is ineffective, further remedial action will be required.

"Again, in light of the acknowledged complexity of the site and the amount of additional site detail needed, the effectiveness of flushing will be impossible to verify under the Demode Road conditions. It is questionable that even after five years whether or not the extent of remaining contamination can be determined."

R: EPA will be totally convinced that flushing will clean up the subsurface soils, based on bench and pilot scale studies, or flushing will not proceed in the field.

"We agree with the MDNR that the soil flushing option is not a viable alternative from the perspective that it removes primary responsibilities from the PRPs, will be impossible to verify the extent of cleanup, and hence does not offer a timely remediation."

R: EPA does not agree. Since the "Rose Township Trust" will be funded by the Settling Defendants, the entire cleanup will be paid for by the Settling Defendants. Two or three years of incineration would not have ended work at the site, for the groundwater extraction and treatment system was estimated to be operated for an additional 6 to 10 years afterward. We believe that the perceived time differential may be slight.

"Lacking the opportunity to review and comment on the results of the trial burn, the Commission finds the PRP/EPA proposal inconsistent with responsible EPA management."

R: The outcome of the trial burn is not relevant to the proposed settlement agreement.

(C) Legislators

- (i) George Crockett, Jr., U.S. House of Representatives; dated 10-21-88, received 10-24-88.

"I have read all of the materials handed out at the public meeting held at Rose Township Hall on Tuesday, October 12, 1988, and have talked with my representative who was present at that meeting. It is my judgment that the proposed consent judgment, while meeting many of the recommendations of the Record of Decision as discussed at the public hearing a year ago, still is seriously flawed. Moreover, the proposed consent decree between the EPA and some of the responsible parties was negotiated without input from the township or the affected residents and differs significantly from the Rose Township Remedial Investigation/Feasibility Study (RI/FS) with respect to the method of cleanup for the VOC-contaminated subsurface/soil at the dump site, which lies just west of my property. At least in this one respect the proposed consent decree breaks faith with the township residents who were relying on the EPA to carry out the terms of the Record of Decision."

R: EPA believes the Consent Decree between EPA and the Settling Defendants is a good, sound settlement. The nature of the negotiations in cases such as these are such that the proceedings are privileged and confidential until an agreement is signed. At no time did the EPA consider an agreement that would place the residents in jeopardy of receiving an inadequate cleanup.

"Permit me to list the four areas I consider to be flawed or about which I am concerned:

The proposed consent judgment requires the responsible companies to pay up to \$10,000,000 for the proposed cleanup, which includes a soil flushing method for the VOC-contaminated subsurface soil, rather than incinerate this soil as was originally recommended in the RI/FS. By the admission of your own representatives at the meeting, the soil flushing method is a big IF. It was the understanding at the meeting held in 1987 that the EPA was going to pay for the recommendations of the RI/FS at a cost of \$34,000,000. It was proposed at the meeting that the proposed consent judgment be amended to have the responsible parties pay the \$10,000,000, more or less, to the EPA, and then have the EPA do what the township thought was going to be done, clean up the dump site according to the recommendation of the RI/FS. I heartedly support this proposal."

R: At the public meeting in July 1987, it was announced to the public that if the EPA/MDNR recommended remedy was the Record of Decision (ROD) remedy, then EPA was prepared to commit 90% of the costs and the State of Michigan 10% of the costs. This resulted in a tentative cost to EPA of \$31 million and the State \$3 million. At this time, due to funding cuts by Congress, the \$31 million, EPA's share, may not be available any more. Thus, the choice is this: clean up the site via the Consent Decree or let the chemicals remain on-site until future dollars (if any) could be committed. In addition, even

though the Settling Defendants may spend less than \$34 million to clean up the site, the same cleanup levels will be achieved as in the ROD.

"Should the proposed method of cleanup fail at any point in the scheduled ten year cleanup period, there is no provision for alternative method which will be implemented upon that finding. Indeed, your representatives stated that no alternative method was negotiated because there may be new and better alternative methods should that occur. That means that there will have to be new negotiations, which could last for several years as the current negotiations have. Even if the proposed consent decree is granted (which I do not support) there should be an alternative method spelled out in it which would not require re-negotiation. For this purpose I would recommend the alternative already contemplated in the RI/FS, namely, incineration of the VOC-contaminated subsurface soil. Even if a new and better method does surface in the meantime, the consent judgment can always be amended."

R: If a new remedy is needed to replace flushing (if implemented at all) the Consent Decree requires that the Settling Defendants propose a new permanent treatment technology within 6 months. During this time, the residents would not be at risk to chemical exposure because the groundwater extraction system would still be operating and the PCBs will have been removed. There are other methods to remove VOCs from the soils besides incineration (thermal aeration, for example).

"The timetable in the proposed consent decree can be unconscienceable should the soil flushing method not work. It has been nine years since the dangers of the contaminants at the dump site became widely known (indeed, in the early 1970's the owner of the property was fined by the local courts for illegal dumping and given a nominal fine). The proposed method could well take ten years and be a failure. There would probably be several more years of re-negotiation, plus another ten years for cleanup of the site. All told, this would be over thirty years. That is too much to ask of the residents of the township."

R: (See answer above.) Groundwater remedies take many years to finish. There is no guarantee that if the ROD remedy was implemented that the groundwater would be cleaned up in 10 years as estimated. The site may be affected for a long time no matter how the cleanup is performed.

"I am given to understand that, all during the time of the negotiations with the responsible parties which occurred during the past year, no progress report or terms of settlement were shared with the township. Since the people most directly affected by contaminants have an essential stake in the cleanup, the consent decree or any other proposed method of cleanup should provide for sufficient monies for the township to hire its own engineer to satisfy itself that the cleanup is being conducted as agreed upon."

R: EPA has developed a Technical Assistance Grants (TAG) program. TAG dollars are available to citizen groups with matching funds. The residents of Rose Township are welcome to apply for these monies if they feel it necessary. However, EPA will be hiring its own contractor to oversee the work to make sure that it is being done correctly.

"I have not mentioned the effect on the quality of living which will result from the cleanup, even if successful. For parts of the next decade, a fence will be constructed around the site. There will be an on-site treatment plant for the ground water, burning of PCB contaminated soils on-site and thousand of trucks going up and down the dusty dirt road past my property. I respectfully submit that in view of all of the above, the proposed consent decree does injustice to the residents and should be modified or rejected."

R: The ROD remedy would have the same effect on the quality of life as the proposed remedy. Both call for on-site treatment of groundwater and on-site incineration of PCBs. "Thousands of trucks" will not be going up and down the area roads if incineration takes place on-site.

(ii) Bob Carr, U.S. House of Representatives; dated 10-28-88, received 11-1-88.

"The flushing method of cleanup seems inadequate on several counts:

The site itself may be inappropriate as a candidate for this method of cleanup due to the geology of the area."

R: EPA feels that given the restrictions placed on the Settling Defendants use of a soil flushing system, the Settling Defendants should be allowed to test soil flushing as a cleanup alternative before site implementation, instead of rejecting the flushing concept outright.

"The time necessary to perform and assess the effectiveness of the flushing proposal seems excessive."

R: The time to clean up the groundwater under the ROD may have taken just as long to accomplish as in this settlement.

"Assessing the effectiveness of the flushing method will inherently be very difficult given the geology of the area and the lack of a widely accepted methodology for judging performance."

R: EPA agrees that assessment will be difficult, but not impossible.

"Such difficulties will always leave questions about the contamination levels in the area. These questions should be resolved as decisively as possible for the citizens of the area."

R: There may be questions about the residual contaminant levels after flushing is completed (if implemented). However, there will be no question as to whether the residents will be at risk since the trust fund will be operating the groundwater extraction system as long as it is necessary to protect public health and the environment.

(D) Private environmental groups

(i) The Environmental Defense Fund/Michigan Environmental Council: Lois Epstein, Charles Barr, dated 10-27-88, received 10-28-88.

(Comments begin on p.2 of the submittal)

Cleanup Levels

"In the Consent Decree's proposed remedy, neither the organic toxins, the PCBs, nor the heavy metals are expected to be reduced to appropriate cleanup levels. No technical justification for the weakened cleanup levels is given in EPA's "Proposed Settlement Plan, Explanation of Significant Differences," in the "Remedial Action Plan", and in the Consent Decree; thus, weakening of the agreed-upon cleanup levels is wholly unacceptable."

R: This statement is false. No cleanup levels were weakened. PCBs and heavy metals will be treated as specified in the ROD to the level specified in the ROD. Subsurface VOC cleanup levels, while theoretically calculated for the ROD, will be scientifically proven for the Consent Decree cleanup. The remedy will be as protective as the ROD remedy.

"The Consent Decree's proposed remedy includes Phase I and II Target Concentration Limits for the groundwater and for the water flushed through the soil during implementation of the proposed remedy. The proposed remedy requires that Phase I cleanup levels be reached prior to releasing the Settling Defendants from their cleanup responsibilities. These Phase I cleanup levels are, for nearly half the chemicals, including most of the organics, significantly less environmentally protective than the Phase II cleanup levels, which are equivalent to the cleanup levels required in the ROD. According to the "Remedial Action Plan," however, the Phase II cleanup levels need not necessarily be reached during the course of cleanup."

R: It is EPA's intention to reach Phase II TCLs during the course of the remediation.

"Though PCBs above 10 ppm will be incinerated under the proposed remedy, Rose Township soils with concentrations less than 10 ppm will remain on-site. Under the approved ROD, PCB-contaminated soils down to 0.1 ppm would be incinerated at 99.9999% efficiency. Additionally, the U.S. Fish and Wildlife Service in East Lansing, Michigan even recommended that the ROD's soil cleanup level be lowered to 0.05 ppm PCB "to provide for a margin of safety... [to prevent] direct and adverse impacts to resident and migratory wildlife at the Site" (Responsiveness Summary, ROD, p. 30), but this more stringent PCB cleanup level was not incorporated by EPA into the ROD."

R: This statement is false. The ROD clearly states that PCBs above 10 ppm will be incinerated on-site. This provision is unchanged in the Consent Decree (although the PCBs may be incinerated off-site if the PRPs choose to do so). The 10 ppm cleanup level was endorsed by the MDNR as well.

"The "Remedial Action Plan" is wholly inadequate in its description of how metals contamination at the site will be remedied and to what levels. According to the "Remedial Action Plan," Settling Defendants shall remediate soils at the Site containing concentrations of arsenic greater than 14 mg/kg and lead greater than 70 mg/kg ("Remedial Action Plan", pp. 16-17). If these soils do not fail the EP toxicity test, however, no remediation appears to be needed. If the soils do fail the EP toxicity test, the "Remedial Action Plan" requires the Settling Defendants to "excavate and treat such soil" (Ibid., p. 17), but in an unspecified manner. Such treatment is completed when the treated soil no longer fails the EP toxicity test, not when specific cleanup levels are reached. Moreover, the EP Toxicity test only accounts for the groundwater route of exposure from the site and cleanup should be based on total lead levels, not leachable levels. Thus, it is our organizations' opinion that under the proposed remedy, significant levels of untreated metals are likely to remain on-site."

R: Under the ROD remedy the metals would also remain on-site. There is no deviation from the ROD in terms of heavy metal treatment. The Consent Decree provides for additional protection by requiring five feet of clean soil to be placed over any metal-contaminated soils (treated or untreated).

Technical Considerations

"The 1987 RI/FS describes the Rose Township site geology as "a stratified sequence of sand layers, interbedded with lenses of silt clay overlying glacial till believed to be laterally continuous beneath the site" RI/FS, p. 32). As stated by MDNR....because the site has clay lenses interspersed in a complex and unpredictable fashion, the site is not conducive to the proposed soil flushing remedy. These clay lenses may direct flush water away from the contaminated zones, preventing its collection by the water treatment system, and the lenses may disallow certain trapped organics from being captured by the flush water. EPA itself is still concerned about the consequences of the

variable permeability of the Rose Township soils on the effectiveness of the soil flushing remedy ("Proposed Settlement Plan, Explanation of Significant Differences"). Additionally, the complicated geology at the site makes it very difficult to monitor the effectiveness of soil flushing."

R: Recall from the RI/FS and the ROD that any contaminated soils below the water table would not be excavated and incinerated (since no PCBs are present in those soils). This includes clays. While the entire site may be geologically complex, only a small portion is intended to be evaluated for flushing. In that area some clays are present - either on the surface (PCB removal) or at or below the water table. Thus, a good portion of the clay problem either will be addressed or treated as in the ROD.

It is also logical to assume that low permeable soils would have also redirected contaminants away as they migrated towards the water table. In essence, flush water may follow nearly the same path(s) as the contaminants. Thus, highly permeable soils that are more heavily contaminated will be more intensely flushed than less permeable soils which are less contaminated.

"EDF and MEC are also concerned that the soil flushing procedure will be unable to remove semi-soluble contaminants from the soil in a timely manner. Such contaminants are likely to remain in the soil during the initial ten-year remediation period and be slowly released to the groundwater in the future. The EPA "Proposed Settlement Plan, Explanation of Significant Differences" also does not address one of the problems expressed in RI/FS Table 9-1, namely that soil flushing is not well demonstrated, especially in cold weather environments such as Michigan."

R: Recall that EPA will be directing the Trustee to continue flushing operations after the ten-year (or more) PRP operation is over. Semi-soluble contaminants will be captured as necessary. Semi-soluble contaminants may also not appear in high enough concentrations to pose unacceptable risks to receptors.

Cold weather is not expected to pose a problem all year long. Equipment will be designed to enable its operation during the winter.

"To make the soil flushing option even more unacceptable at this site, treated excess effluent may be discharged to nearby wetlands. Though this effluent must be within NPDES permit limits and, if applicable, ambient water quality standards, it will nevertheless contain measurable quantities of contaminants, further harming an already-damaged nearby natural resource."

R: The ROD remedy planned to discharge treated groundwater to the nearby wetlands as well, but in greater quantity. The Consent Decree remedy would use part of the extracted water to flush the subsurface soils, thereby reducing the amount of water to be discharged. EPA also questions the

statement regarding the "harming (of) an already-damaged nearby natural resource." No evidence exists as yet to suggest a nearby wetland has been harmed. The design phase will address this question.

Cleanup Schedule

"According to the ROD's Responsiveness Summary, expected implementation time for the ROD remedy is "between two and three years, at most" (Responsiveness Summary, ROD, p. 2). Under the Consent Decree's proposed remedy, the Rose Township site is likely not to be fully remediated within ten years. EDF and MEC object to the extensive remediation delay that will be incurred at the site with implementation of the proposed remedy. Complete cleanup of the site has already been delayed for nearly a decade and EPA gives no justification for delaying full cleanup for at least an additional decade. Moreover, EPA itself has to undertake continued remediation after ten years to reach the Phase II cleanup levels, if these levels are, in fact, ever attainable with the proposed remedy."

R: Recall that cleanup operations would not stop at Rose once the ROE incineration was finished. Groundwater operations were expected to last up to 10 years, which could be a low estimate. If there were no settlement, EPA/MDNR would be doing the remedy, in effect placing the risk on the Agencies.

"Because the proposed remedy for the site is questionably effective (see above), the Settling Defendants are being given ten years to demonstrate the capability of the soil flushing remedy. If the proposed remedy fails to clean up the site in ten years, however, the Settling Defendants must implement "a permanent remedial action" (Remedial Action Plan," p. 31). This permanent remedial action may, in fact, be the incineration remedy rejected by the Consent Decree, because the "Remedial Action Plan" further requires that the "permanent remedy shall not include capping of the VOC soil," (Ibid., p. 31), the remedy advocated by the PRPs prior to the signing of the ROD."

R: Comment noted.

"Unfortunately, the "Remedial Action Plan" does not even automatically require implementation of a demonstrated permanent remedy after ten years of failed soil flushing because of a provision contained in section 6C.4.1. This provision allows soil flushing to continue after the ten year implementation period if it can be "reasonably shown that an additional period of soil flushing, not to exceed 60 months" (Ibid., p. 26) will result flush water that meets those cleanup levels after this extended remediation period. Because the Settling Defendants must already have made a laboratory demonstration prior to implementing the proposed remedy showing that soil flushing is capable of meeting the Phase I cleanup levels in the water flushed through

the site within ten years, no demonstration of the capability of soil flushing to clean up the site effectively within an additional 60 months is likely to be technically credible."

R: If flushing occurs for up to 60 months longer than expected, then the Trust Fund will grow to an even larger sum, insuring that the remedy will continue to be implemented at PRP cost as long as necessary. In addition, since the groundwater treatment system will continue to operate after the Phase I levels have been met, the treated groundwater will have to continue to be discharged anyway.

Conclusion

"EDF and MEC strongly oppose EPA's decision to weaken Rose Township cleanup levels, and to allow a technically questionable and comparatively slow remedy to be implemented at the site. By allowing the soil flushing remedy to go forward, citizens near the Rose Township site are not assured a protective remedy and further natural resource degradation is likely to occur. EPA is also wrong to back off from its earlier, environmentally protective ROD position for cost reasons, since the Agency itself deemed the remedy to be "cost-effective" (Responsiveness Summary, ROD, p. 7) within the constraints of the SARA program."

R: As previously discussed, cleanup levels are not weakened, the relative speed of subsurface soil remediation is not the issue, and the remedy (if implemented) would be protective since the groundwater extraction system would be operating in tandem. It is more advantageous to the U.S. Government for responsible parties to perform a protective cleanup remedy than for EPA to perform a remedy that is equally protective.

(E) PRP groups

(i) Settling Defendants, dated 10-27-88, received 10-31-88.

(See Appendix 1 for the Settling Defendants' submittal in its entirety.)

R: U.S. EPA notes the comments and information provided by the Settling Defendants.

PUBLIC MEETING

Attached is the transcript from the public meeting held in Rose Center, Michigan, on October 12, 1988. All oral questions and comments were addressed by representatives of the U.S. EPA at that time. The oral comments generally mirror the contents of the written comments received and addressed above, and need not be repeated herein.

APPENDIX 1 : COMMENTS RECEIVED

Contents

1. Gisella King (resident)
2. David W. Higgins (resident)
3. Dr. and Mrs. Egbert W. Henry (residents)
4. Michigan Department of Natural Resources
5. State of Michigan Toxic Substances Control Commission
6. George Crockett, Jr. (U.S. House of Representatives)
7. Bob Carr (U.S. House of Representatives)
8. Environmental Defense Fund/Michigan Environmental Council
9. Settling Defendants
10. Transcript - Public Meeting

APPENDIX 2

Literature Citations: In Situ Soil Flushing

1. Technology Screening Guide for Treatment of CERCLA Soils and Sludges. EPA-540/2-88/004, September 1988, p.77-79.
2. Case Studies 1-23: Remedial Response at Hazardous Waste Sites. EPA-540/2-84/002b, March 1984, p.11-1 to 11-24.
3. Remedial Action at Waste Disposal Sites (Handbook). EPA-625/6-85/006, June 1985, p.9-44 to 9-47.
4. "The Development of Chemical Countermeasures for Hazardous Waste Contaminated Soil"; W.D. Willis and J.E. Payne, in 1984 Hazardous Materials Spill Conference Proceedings: In-Situ Soil Flushing and Soil Washing Technologies for Superfund Sites.
5. "Field Evaluation of In-Situ Washing of Contaminated Soil With Water/Surfactants"; J. Nash, EPA Hazardous Waste Engineering Research Laboratory, Release Control Branch, Edison, NJ.
6. Record of Decision, U.S. Aviox site, Cass County, Michigan. (1988)
7. Record of Decision, Lipari Landfill, Mantua Township, NJ. (1985)
8. Supplemental Record of Decision, Sylvester site (Gilson Road), Nashua, NH. (1983)