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RESPONSE TO COMMENTS

Date: October 18, 2004

REGARDING UNDERGROUND INJECTION CONTROL (UIC) PERMITS #MI-163-1W-C007 AND #MI-163-1W-C008 ISSUED TO ENVIRONMENTAL DISPOSAL SYSTEMS, INC., FOR WASTE INJECTION WELLS #1-12 AND #2-12 IN WAYNE COUNTY, MICHIGAN FOR THE PURPOSE OF COMMERCIAL DISPOSAL OF LIQUID HAZARDOUS WASTES.

Introduction

The United States Environmental Protection Agency (EPA) is providing this response in accordance with Section 124.17 of Title 40 of the Code of Federal Regulations (40 C.F.R. § 124.17), which requires EPA to issue a response to comments when it issues a final permit decision. That response must: (1) describe and respond to all significant comments raised during the public comment period, (2) specify which provisions, if any, of the draft decision have been changed and the reasons for the change. In addition, EPA must include in the administrative record any documents cited in the response to comments, and make the response to comments available to the public.

Background

The public comment period for this permitting decision began on May 26, 2004 and ended on July 12, 2004, a total of 48 days. Under 40 C.F.R. § 124.10, the minimum public comment period is 30 days. Public notices were published on May 27, 2004, in the Romulus Roman, on May 26, 2004 in The News-Herald, and on May 26, 2004 in the Detroit Free Press and mailed to other interested parties who had contacted EPA, Region 5, UIC Branch. The public notices also stated the date for the public hearing on the proposed decisions. The public hearing was scheduled for and held on June 29, 2004, at the Crowne Plaza Hotel in Romulus, Michigan. About 100 members of the public attended. Upon closure of the public comment period, EPA reviewed the issues raised by the public, gathered information to clarify those issues and developed this response to comments document.

Determination

EPA has determined that the public comments submitted did not raise significant issues which would alter EPA's basis for determining that it is appropriate to issue Environmental Disposal Systems, Inc. (EDS) permits to operate two hazardous waste injection wells. Therefore, EPA is issuing final permits to EDS on the date shown at the top of this document. EPA made the following changes to the final permits:

1. Added EDS storm water as a waste source in Part III(E) of the permits.
2. Corrected typographical errors on page A-3 to state concentration limits in units of g/l instead of mg/l.
3. Corrected a typographical error on page A-3 to change the concentration limit for N-Nitrosodimethylamine from 700 mg/l to 200 g/l.

Comments and Responses

Comment 1 - Will there be odor created at the well site and will it be carried west?

Response - The waste for disposal will be brought to the facility in closed tanker trucks and rail cars. All pumping to the storage/treatment system will occur within a building housing the storage tanks. EPA expects the waste to be mostly water which will not evaporate easily (it will have low volatility). In addition, the building contains air emission control equipment which is designed to prevent air emissions from leaving the EDS building.

Comment 2 - An accidental airborne gas plume from the facility would likely flow in a northeast direction toward Dearborn Heights.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. EPA addressed concerns about air emissions in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "...EDS is seeking a license from the State for operation of a RCRA treatment, storage and disposal facility that would address preparedness and prevention, and contingency plan and emergency procedure requirements, and may include some air monitoring requirements. Other requirements may apply as well. For example, in the case of certain spills or releases, there may be reporting and other requirements under other statutes. The EDS facility has a system which maintains the pressure in the building at a lower level than atmospheric pressure. As a result, outside air moves into the building. Contaminants and odors should not leak out." and "The waste will be contained in closed tanks within the building. Drummed waste will be pumped, not poured, out of the drums and sent to a temporary storage tank under a nitrogen blanket. The building has a filtering system which is designed to prevent escape of pollution. EDS will conduct ambient air monitoring around the facility. EDS must obtain a license from MDEQ for operation of its hazardous waste treatment, storage, and disposal facility under Michigan's authorized RCRA requirements and must comply with those State RCRA requirements, including air monitoring requirements."

Comment 3 - One commentor submitted several comments regarding potential air contamination such as: controlling odor during workovers, emissions during unloading, required air monitoring, and providing Summa canisters to sample air quality.

Response - Air quality management issues at the EDS facility were discussed in response to comments 1 and 2.

Comment 4 - Why were the wells sited in an urban/residential area?

Response - The permit applicant chose the location of the wells based on business considerations which are not considered in EPA's permitting process. As a result, the permit applicant is not required to provide EPA with reasons for the siting of the wells. The federal siting requirements for Class I hazardous waste disposal wells, at 40 C.F.R. §146.62, are based on the geology of the site and not on considerations of population density. Following review of the permit applications, EPA has determined that there should be no impact to drinking water supplies nor to the surrounding area as a result of injection into the wells.

The Michigan Department of Environmental Quality (MDEQ) implements the state regulations concerning the siting of hazardous injection wells, pursuant to Part 111 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 111). Please contact Steve Sliver of the MDEQ Waste Management Division (WMD) by telephone at 517-373-1976, or by mail at WMD, MDEQ, PO Box 30241, Lansing, MI 48909-7741, to seek additional information regarding Michigan regulations governing siting of the wells.

Comment 5- How many EDS, EPA, and DEQ employees live within a 10 mile radius of the wells?

Response - This comment is beyond the scope of this permitting action. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The living arrangements of employees are not addressed by the UIC regulations.

Comment 6- Who will be responsible for clean up if disaster or human error happens?

Response - The permittee is responsible and liable for any contamination on or from the site.

Comment 7- In the announcement for the meeting held on June 29 concerning the EDS well EPA stated: "All comments will be accepted, but EPA is bound by federal law to consider only the points that address the latest two permits, such as construction and testing of the wells, operating procedures and future monitoring." Please identify this federal law.

Response - The "federal law" referenced in the announcement refers to decisions by the EPA Environmental Appeals Board (case law) in other UIC permit appeal cases. These decisions may be reviewed on-line at http://www.epa.gov/eab/eabuic.htm. Two cases where the board addressed this issue are *In re Envotech, L.P.*, 6 E.A.D. 260 (EAB 1996) and *In re Beckman Production Services*, 5 E.A.D. 10 (EAB 1994). The Environmental Appeals Board in Envotech stated: "...the Region has a narrow and clearly defined responsibility in this matter. It is charged with implementing the UIC regulations promulgated by EPA in accordance with the mandate of Congress in the Safe Drinking Water Act.... More fundamental issues, such as siting of the wells, are a matter of state or local jurisdiction rather than a legitimate inquiry for EPA (except to the extent that a petitioner can show that a well cannot be sited at its proposed location without necessarily resulting in violations of the SDWA or UIC regulations)." In Beckman the

Environmental Appeals Board stated: "EPA's inquiry in issuing a UIC permit is limited solely to whether the permit applicant has demonstrated that it has complied with the federal regulatory standards for issuance of the permit." 40 C.F.R. §§ 124.13 and 124.17 address the public comment period and the response to comments respectively. EPA must consider comments on both the conditions of the permits and the appropriateness of preparing the draft permit.

Comment 8 - What will happen to the waste after 10,000 years? EDS should guarantee no leak ever or for 100,000 years.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "The basis for the 10,000 year time frame was discussed in the preamble of the final rule of the 40 C.F.R. Part 148 regulations: '... the Agency specified the 10,000 year time frame not because migration after that time was of no concern, but because it believed a site which could meet a 10,000 year time period would provide both containment for a substantially longer time frame, and allow for geochemical transformations which would render the waste non-hazardous or immobile.' (53 Fed. Reg. 28117, at 28126, July 26, 1988). EDS has demonstrated that hazardous waste will not migrate from the injection zone for at least 10,000 years to a reasonable degree of certainty. This determination is based on the interpretation of data and the use of conservative assumptions to characterize the injection zone and to predict waste movement. EPA reviewed in detail the no migration petition document and concluded that EDS has successfully provided this demonstration."

Comment 9 - Has anyone ever injected waste for 10,000 years to test and make sure it does not leak?

Response - This issue was discussed in response to comment 8.

Comment 10 - The Great Lakes as a source of fresh water are threatened by the injection wells.

Response - There is little likelihood that the nearness of the injection well operations will pose an environmental threat to the Great Lakes. Lake Erie, the closest Great Lake, has a maximum depth of 210 feet while the intended injection zone of the proposed injection wells will be located at approximately 3,300 feet below ground surface. This will allow for approximately 3,100 feet of vertical separation between the lake bottom and the intended injection zone. This separation consists of alternating low permeability shales and higher permeability limestones, which confine the wastes. As discussed in detail in the Notice of Issuance of Exemption from Land Disposal Restrictions, the waste will travel vertically no more than 250 feet upward and the waste in hazardous concentrations will travel between 4½ and 10 miles horizontally, depending on direction. In order to describe the movement of waste in a three-dimensional space in which horizontal movement is strongly favored, it is necessary to differentiate movement in all

directions, particularly in the horizontal and vertical directions. Although horizontal movement might be as great as the horizontal distances stated, vertical movement will never be more than a few hundred feet and the result is that the waste will remain almost three quarters of a mile below the surface, the Great Lakes, and the underground sources of drinking water (USDW).

Comment 11 - What would happen if there were a major earthquake in the area?

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "An analysis of seismic risk occurring at the EDS facility is presented in Section III.D of the no migration petition. The wells' casings could be sheared in the unlikely event that movement occurs on a fracture which actually is penetrated by the well bore. However, vibrations from an earthquake will not affect the integrity of the wells. ...no faults cutting the well bores were identified. EPA reviewed information from the National Earthquake Information Center (NEIC) in Boulder, Colorado regarding earthquakes in the area of the injection wells. The NEIC reported that the nearest earthquake was 41 kilometers, about 25 miles, away and occurred in 1980. Two other earthquakes have occurred within 100 km, about 61 miles, of the wells. Southeastern Michigan lies in a stable continental area where there is little risk of new faulting. Earthquakes in continental areas are usually deeper than the sedimentary strata penetrated by the well. Thus, there is a reasonable degree of certainty that the wells' casings will not be sheared. Moreover, injections in areas of high seismic activity such as Alaska, California and southern Illinois and Indiana have withstood earthquakes. EPA additionally notes that the well will be continuously monitored throughout the operational life under the UIC permit. Among other things, annual mechanical integrity tests (MITs) are required to demonstrate the mechanical integrity of the casing, tubing and packer, and demonstrate there is no significant fluid movement into a USDW through vertical channels adjacent to the injection well bore."

Comment 12 - Use different technology to get rid of the waste or recycle the waste. Approval of the permits contradicts Region 5 efforts to minimize hazardous waste.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "The Agency agrees with the goal of reducing or eliminating hazardous waste from manufacturing processes and recycling hazardous waste. However, until these aims are achieved for all waste streams, the Agency will continue to review existing waste disposal methods to ensure protection of human health and the environment. Disposal of hazardous wastes through deep well injection is a safe and proven technology as long as the disposal is being performed in accordance with the applicable UIC regulations."

Comment 13 - There is no need for the wells.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. There is no requirement for the permit applicant to demonstrate that there is a "need" for the wells as part of the permit process. The "need" for a well is part of the potential owner/operator's business decision and does not impact any technical or operational requirements.

Comment 14 - The wells will damage the water supply in the area.

Response - The purpose of the UIC program is to protect USDWs from contamination by underground injection practices. A USDW is defined in the UIC regulations (40 C.F.R. §§ 144.3 and 146.3) as an aquifer or its portion which contains less than 10,000 milligrams per liter (mg/L) of total dissolved solids. Potable water generally contains less than 500 mg/L of total dissolved solids. By protecting water supplies that are far saltier than normal drinking water, the UIC program is also protecting those water supplies that are not currently being used for drinking water purposes but which may be so used in the future. Furthermore, the regulations specify the technical construction and operational standards which injection wells must meet in order to prevent contamination of USDWs.

As stated above, the injection zone for these wells will be approximately 3,300 feet below the surface. The deepest USDW for this site is the Dundee Limestone, at a depth of 136 feet. There is a separation of approximately 3,200 feet between the injection zone and the deepest USDW. The vast majority of this interval is shale, salt, and fine-grained limestone, which will serve to prevent fluid from moving upward. There will be monitoring systems operating continuously to ensure the wells are operating properly. Following review of the permit applications, EPA has determined that there should be no impact to the drinking water supplies as a result of injection into these wells.

Comment 15 - Why didn't EDS fund the wells but instead used the Detroit Policemen and Firemen Pension System?

Response -EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The funding of the injection wells is not addressed by the UIC regulations. It is part of the potential owner/operator's business decision and does not impact any technical or operational requirements.

Comment 16 - The Detroit Policemen and Firemen Pension System has been encouraged to continue backing this project and is now open to coercion from EPA, the DEQ and other federal

and state departments.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The funding of the injection wells is not addressed by the regulations. It is part of the potential owner/operator's business decision and does not impact any technical or operational requirements. EPA neither encourages nor discourages investments in any facilities it regulates.

Comment 17 - What individual financial investments are being made in the injection wells by EDS associates?

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The investments of the permittee and its employees are not addressed by the UIC regulations.

Comment 18 - What is the cost to taxpayers of the EDS project?

Response - The costs to taxpayers include the review of applications and all other available relevant information during the processing of these applications by government staff, and the costs associated with the public notices and hearings.

Comment 19- The CEO of EDS should not be running the injection well because he had run ins with the law and there were odor complaints against his other well in Macomb county.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The owner's background and the enforcement history of another site are not addressed by the UIC regulations. These issues do not impact any technical or operational requirements of the wells being permitted here.

Comment 20 - Sunoco Partners Marketing & Terminals LLP (SPMT) has a permit to extract brine from the same geologic formation into which EDS will be injecting. Even if EPA will stop EDS from operating if SPMT begins extracting, it will be too late. EPA should wait until it knows if SPMT operates an extraction well from the Mt. Simon.

Response - On June 21, 2004, a State court declared the May 29, 2003 State permit to SPMT for an extraction well null and void. In EPA's Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions

under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, EPA addressed the issue of SPMT's extraction well and its effect on the EDS operations. A direct quote from that document follows: ".....EPA does not know how deep the actual well will be, if it is drilled, or from which formations brine will be extracted. Indeed, SPMT's State approval for drilling a well to check for brine producing capacity is limited to the depth of the base of the Lockport Formation, about 2,227 feet below the surface, which is above the maximum extent of hazardous waste movement under the demonstration. At the present time, there is no well extracting from the injection zone, and EDS has demonstrated to a reasonable degree of certainty that its wastes will not leave the injection zone under current conditions. ...An extraction well drilled and operated in the Lockport Formation will not affect EDS's demonstration." If SPMT ever does extract, the Agency will consider taking appropriate action to address such extraction.

Comment 21 - There is inadequate access to the site for deliveries or emergency vehicles.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Site access issues are not addressed by the UIC regulations.

Comment 22 - The EDS facility will add high-risk traffic to intersections that already experience many accidents.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Transportation issues are not addressed by the UIC regulations. However, EPA notes that Michigan's Part 111 construction permit, with its attachments, confines trucks transporting wastes to a route which avoids sensitive areas. The area in which the wells are located is currently zoned MT2 (Heavy Industrial) by the City of Romulus, and is for the purpose of locating businesses that rely on trucking. There are numerous truck transportation businesses in the nearby area, and the additional amount of truck traffic expected from the proposed EDS project will be small. EDS estimates there will be a maximum of 26 trucks per day passing through the facility. As a part of its Part 111 construction permit, EDS entered into an agreement with the Environmental Concerns Association (ECA) which among other things, addresses truck routes, noise, odor, and residential drinking water well monitoring.

Comment 23 - A hazardous waste spill due to a highway accident would leak into the waterways and the sanitary sewer system and could harm the sewer infrastructure.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for

deep injection wells. Transportation of waste is not addressed by the UIC regulations. Clean up of spills in the course of transportation to the site is regulated under the State analog to 40 C.F.R. § 263.31 and is the responsibility of the transporter.

Comment 24 - A leak or a spill could endanger my family and my community.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "...EDS has demonstrated that, to a reasonable degree of certainty, there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous by showing, pursuant to 40 C.F.R. §148.20(A)(1)(i), that the hydrogeological and geochemical conditions at the site and the physiochemical nature of the waste streams are such that reliable predictions can be made that fluid movement conditions are such that the injected fluids will not migrate within 10,000 years: (A) vertically upward out of the injection zone; or (B) laterally within the injection zone to a point of discharge or interface with a USDW. Accordingly, EPA has determined that the EDS injection wells are protective of human health and the environment. Based on the no migration petition review, the local drinking water supply and Great Lakes watershed are not in danger of contamination from the proposed injection. EPA also notes that in meeting the no migration standard, the EDS wells satisfied the hazardous waste injection well construction requirements of 40 C.F.R. § 146.65. 40 C.F.R. § 146.68 requires monitoring and testing. The UIC regulations in 40 C.F.R. Part 146 for Class I hazardous waste injection wells provide for injection well monitoring and construction safeguards to prevent leakage from the well and the injection zone, and EPA reviews monthly operating reports and reports on periodic testing. In addition, the EDS facility will be inspected quarterly." Regarding the potential for a spill - the surface facility must be operated under a RCRA license from the MDEQ with requirements for safeguards which will ensure protective management prior to injection and corrective action plans to address any failure.

Comment 25 - A hazardous waste spill would wreak havoc on the region.

Response - There are a number of safeguards imposed in the SDWA UIC permits for the wells. If a leak occurs in an injection well, it will be discovered immediately due to continuous monitoring and appropriate safety measures will be taken. This would include shutting down the well, contacting EPA, and proceeding with remedial action. Due to the supplemental safeguards required for Class I injection wells, it is unlikely that any waste injected would exit the well anywhere other than the approved injection interval. The waste unloading will be managed within a closed building designed to contain any spill or materials which might be air pollutants. Moreover, EPA and MDEQ permits prohibit the injection of ignitable and reactive wastes. Also note that the EDS wells will need a Michigan part 111 operating license from the State under RCRA before they can begin operations. An Emergency Contingency Plan is part of the Hazardous Waste Management Facility (Part 111) license that MDEQ would issue.

Comment 26 - The community does not have adequate safety and rescue resources.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Emergency plans are not addressed by the UIC regulations. Storage of hazardous waste at EDS prior to disposal by injection is regulated under Michigan's authorized RCRA hazardous waste program. These RCRA requirements include general facility standards, preparedness and prevention, emergency procedures, and contingency plans. The MDEQ is reviewing the contingency and emergency procedures as a part of the Michigan Part 111 operating license process.

Comment 27 - Will waste be imported from Canada?

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. While consideration of the nature of the wastes is part of the UIC regulations, consideration of the geographic sources of waste is not.

Comment 28 - The former director of the MDEQ put financial interests before the interests of quality environment.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The actions of State officials are not addressed by the UIC regulations.

Comment 29 - Page A-1 of the draft permit is not clear as to the monitoring frequency. It appears that monthly monitoring may actually mean annual. There are risks associated with waiting a year for a report.

Response - A footnote at the bottom of page A-1 which states " *** As specified in the approved Waste Analysis Plan, found in the permit file for this permit. Monitoring frequency could be monthly, quarterly or annually", refers the reader to the Waste Analysis Plan which specifies the actual monitoring frequency for specific waste sources. The differences arise from the fact that the EDS facility will be accepting waste from various sources and many of them will be arriving infrequently. For example, monthly monitoring would be inappropriate for wastes arriving at the facility only a few times per year. For wastes coming continuously from the same source, monitoring will be at least monthly (it could however be more frequent if the generator's waste profile changes).

Comment 30 - What Department of Homeland Security reviews have been completed?

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Issues concerning the Department of Homeland Security are not addressed by the UIC regulations.

Comment 31 - This facility is a security target due to its proximity to the airport and the interstate highway. It is a hazard in case of accident or an act of sabotage.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Proximity to airports and highways is not addressed by the UIC regulations. In the event of an accident or sabotage, however, the UIC permits for the EDS wells require continuous monitoring of the injection wells, alarm systems and automatic shut-down mechanisms under 40 C.F.R. Part 146. This permit decision, however, is not the appropriate forum for larger questions on potential response to terrorism.

Comment 32 - Do not proceed until the Office of Inspector General has completed a review of matters for which they have requested research.

Response - This comment is beyond the scope of this permitting decision. While we are not certain what matters the commentor is referring to, EPA can neither confirm nor deny the existence of any investigation by the Office of the Inspector General.

Comment 33 - What will protect our homes, health, and families?

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions (LDR) under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "A determination on a petition for exemption from the LDR for deep well injection is based on the requirements of 40 C.F.R. Part 148 subpart C. ...an exemption granted under that Part is limited to those LDR. EDS has demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous pursuant to 40 C.F.R. Part 148 subpart C. Based on its review of the petition, EPA has determined that the proposed EDS injection meets the standards and requirements for such an exemption and is protective of human health and the environment." The SDWA was passed to protect USDW from contamination by underground injection practices. Furthermore, the regulations specify the technical construction and operational standards which injection wells must meet to prevent contamination of USDWs. Monitoring systems will operate continuously to ensure the wells are operating properly. Following review of the permit applications, EPA has determined that there should be no impact to the drinking water supplies as a result of injection

into these wells. In addition, RCRA provisions implemented by the State exist to protect human health and the environment.

Comment 34 - The situation at Gelman Sciences in Ann Arbor, Scion Township is a wake up call that storing hazardous chemicals underground is unpredictable.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "The situation at EDS is different from that arising at the Gelman Sciences facility. At Gelman Sciences, waste was stored in unlined lagoons and spread on the ground for disposal. Therefore, it was predictable that the waste would migrate into the shallow ground water. At EDS, wastes will be stored in steel tanks within secondary containment regulated under RCRA." Waste will be stored in these tanks for short periods; permanent disposal of wastes will be through the injection wells, not seepage into the ground from the surface.

Comment 35 - Deny the permits/ stop the wells. Deny the permits due to outstanding litigation surrounding the wells. What justification do you have for allowing EDS to operate this well? The original permits should have never been granted.

Response - A UIC permit can only be denied if the permit application does not meet the regulatory standards in 40 C.F.R. Parts 144 and 146. EPA has concluded that EDS has fulfilled the regulatory requirements for issuance of final permits.

Comment 36 - The government should guarantee in writing that it is responsible if anything goes wrong.

Response - The Safe Water Drinking Act does not authorize EPA to make such guarantees.

Comment 37 - What if non-permitted wastes find a way down the well?

Response - Each waste stream must be approved by EPA prior to disposal. At the time of the approval, EPA will assign a monitoring frequency to that waste stream based on the waste composition and frequency of injection of that waste stream. Sampling protocols are described in detail in the Waste Analysis Plan. EDS must comply with the monitoring, sampling and reporting requirements. Violations will subject the permittee to civil and possible criminal penalties and the violator will have to return to compliance. Additionally, the demonstration of no migration considered a broad range of potential contaminants, showing that they will not migrate more than 250 feet above the top of the injection zone within the 10,000 year demonstration period. As a result, injection of any unapproved wastes is unlikely to have any environmental consequences because containment has been demonstrated.

Comment 38 - UIC permits are also RCRA permits, and the proposed permits do not ensure

compliance with RCRA.

Response - EPA disagrees. UIC permits are mandated by regulations promulgated under SDWA. The UIC permits contain RCRA provisions only to the extent that they affect the operation of the wells. A UIC permit is also a RCRA permit by rule only if the injection well is the sole RCRA regulated unit at the facility, which is not the case at EDS. EDS also must obtain a license from MDEQ for operation of its hazardous waste treatment, storage, and disposal facility under Michigan's authorized RCRA requirements and must comply with those State RCRA requirements.

Comment 39 - EPA should modify the permits to include the conditions of the no-migration exemption (in a major modification).

Response - The draft permits included the appropriate conditions from the no migration exemption decision and these conditions remain in the final permits.

Comment 40 - Every well in the area has to be discovered so leaks do not occur.

Response - EPA reviewed EDS's protocol for locating artificial penetrations and determined that EDS conducted a complete search for artificial penetrations within the area of review (AOR). The search involved a thorough review of State and private maps and drilling and plugging records. The State's records are complete for wells drilled after 1934. The State records also include information which the State has been able to collect on earlier penetrations. Further, because no oil or gas has ever been found in the Michigan Basin in formations deeper than the Trenton at a depth of 2,956 feet at this site, there is little reason for deeper wells to exist in this area. If they did exist, they would probably have closed over the last 70 years as a result of flowing of rock with low compressive strength (such as salt and anhydrite) which exists between the injection zone and the lowermost USDWs. EDS has met the requirements for AOR at 40 C.F.R. §§ 146.63 and 148.20(a)(2)(ii).

Comment 41 - The notice said that the inspectors found no producing and no injection wells within the 6.1 mile area of review (AOR). Yet Sun Pipeline, located less than a mile from the EDS facility has operated a brine extraction facility for more than 50 years.

Response - SPMT does operate a facility using caverns for storage of natural gas liquids within the 6.1 mile AOR. However, the caverns and the wells which provide access to the caverns are less than 2,000 feet deep. The regulations at 40 C.F.R. § 146.63 require only wells which penetrate the confining zone to be investigated because wells which do not reach the confining zone cannot be conduits for waste to migrate. The regulations also require that the operator demonstrate that the waste will not migrate out of the injection zone. The AOR investigation must consider wells which penetrated the top of the confining zone to provide an extra measure of security. EPA reviewed EDS's protocol for locating artificial penetrations and determined that EDS conducted a complete search for artificial penetrations within the AOR. The search

involved a thorough review of State and private maps and drilling and plugging records. The State's records are complete for wells drilled after 1934. The State records also include information which the State has been able to collect on earlier penetrations. Further, because no oil or gas has ever been found in the Michigan Basin in formations deeper than the Trenton at a depth of 2,956 feet at this site, there is little reason for deeper wells to exist in this area. If they did exist, they would probably have closed over the last 70 years as a result of flowing of rock with low compressive strength which exists between the injection zone and the lowermost USDW. The commentor may be referring to the controversial brine extraction permit issued to SPMT by MDEQ that proposed extraction of brine from the Mt. Simon formation - the same formation that EDS plans to use as an injection zone. The SPMT well has not been drilled and furthermore, on June 21, 2004, a State court declared the May 29, 2003 State permit to SPMT for an extraction well null and void. Based on these facts, EDS has met the requirements for AOR at 40 C.F.R. §§ 146.63 and 148.20(a)(2)(ii).

Comment 42 - The unique risks posed by commercial hazardous waste injection wells are not worth taking. There are little or no benefits, economic or otherwise, to putting this well in the Romulus community. However, the environmental and economic risks are many.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "EPA disagrees. There are no unique environmental risks posed by commercial hazardous waste disposal wells. Liquid wastes behave similarly regardless of their sources. The Agency believes that properly constructed and operated Class I injection wells are a safe and effective disposal technology as regulated today. These wells must be operated within established requirements. Compliance with the UIC regulations minimizes the risks associated with disposal of hazardous wastes. A review of well failures made during the development of the regulations showed that the federal UIC regulations which were then developed and are now in force would have prevented these failures. Very few historical failures had environmental impacts, and there have been no failures resulting in contamination of underground sources of drinking water since implementation of the UIC regulations."

Comment 43 - Property values in the surrounding communities will decline.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Real estate values are not addressed by the UIC regulations. Note that the MDEQ stated in its response to comments in regard to the Michigan Part 111 construction permit that, "Notwithstanding the lack of a clear understanding of how property values might be impacted, the DEQ is requiring EDS to honor its commitment to compensate all residents within a one and one-half mile radius of the facility for property value losses attributable to the facility, as described in the Community Agreement, Attachment 13 to the permit." As a part of its Part

111 construction permit, EDS entered into an agreement with the Environmental Concerns Association (ECA) which among other things, addresses truck routes, noise, odor, and residential drinking water well monitoring, and agreed to pay damages to ECA members whose legally zoned residence located within 1.5 miles of the wellheads has decreased in value solely due to operation of the wells, subject to certain conditions.

Comment 44 - The wells are equipped with alarms - but by the time the alarm sounds it may be too late.

Response - Pursuant to 40 C.F.R. § 146.68, the final permits issued by EPA require continuous monitoring of the injection rate and injection pressure. They also require automatic alarms designed to sound before pressures, flow rates, or other parameters exceed permitted values. In addition, the tubing - casing annulus must maintain a pressure higher than the injection tubing pressure and this annulus pressure must be continuously monitored. This means that the pressure on the water between the outer casing and the inner tubing that carries the waste to the injection zone is higher than the pressure on the waste inside the tubing. Consequently, if the tubing leaks, the fluid in the annulus will leak into the tubing rather than the waste leaking out. The EDS wells' alarm systems will shut the wells down before the permitted values are exceeded. The continuous monitoring of the injection wells occurs whether or not the wells are operating.

Comment 45 - EPA has not provided the name of the company responsible for monitoring the wells after closure, or documents for monitoring procedures. What are the plugging procedures and costs? Will the wells be checked after abandonment? Financial assurance documents were not disclosed including amounts, conditions, financial instruments, range and dates.

Response - Pursuant to 40 C.F.R. § 146.71(d), before EDS plugs the wells, the pressure in the injection zone will be monitored to ensure that the pattern of pressure decline conforms to predictions. EDS will plug the wells by completely filling them with cement. As a result, after the wells are plugged, there will be no means to monitor the injection zone. The cost of plugging the wells is estimated at $22,000 per well. Copies of financial assurance documents are included in Part III(B) of the draft and final permits. The draft permits have been available for review in local libraries and on the EPA web site. Post-closure care requirements for Class I hazardous waste injection wells are set forth at 40 C.F.R. § 146.72. Prior to issuing the Class I UIC hazardous waste permits to EDS, EPA reviewed the post-closure plans for each injection well and found that they comply with the regulations.

Comment 46 - EDS bought the land and drilled the wells without proper zoning from Romulus.

Response - It is the permittee's responsibility to ensure compliance with all appropriate and relevant federal, state and local regulations. Under UIC regulations, a permittee is not required to demonstrate compliance with state or local regulations governing underground injection, only that the operation of a well will not allow contaminants to move into a USDW. In the event of non-compliance with a state or local regulation or ordinance, it is the responsibility of the state or

local governing body charged with implementing that particular regulation or ordinance to take necessary action. Therefore, the issuance of these UIC permits is not linked to issuance of any state or local permits or approvals. The fact that state or local authority is not considered by EPA in ruling on the permit, however, does not mean that the state or local governing body cannot assert such rights in another forum. The issuance of a UIC permit does not convey any exclusive privilege; nor does the issuance of a permit authorize any infringement of state or local law or regulations. This is clearly stated on Page 1 of the permits. EPA is not aware of any zoning violations on the part of EDS.

Comment 47 - People's lives are more important than profits.

Response - This comment was addressed in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "A determination on a petition for exemption from the LDR for deep well injection is based on the requirements of 40 C.F.R. Part 148 subpart C. Those regulations require the petitioner to demonstrate that, to a reasonable degree of certainty, there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. Based on its review of the petition, EPA has determined that the proposed EDS injection meets this standard and is protective of human health and the environment." A similar concept applies to permit decisions. Based on its review of the permit application, EPA has determined that the proposed EDS injection wells meet the standards for permit issuance set forth in 40 C.F.R. Parts 144 and 146.

Comment 48 - It is unjust to assume a proper containment in an unexplored void.

Response - The geology of southeastern Michigan has been well studied and is not an unexplored void. EPA performed a comprehensive geologic review of the area and confirmed that the site is adequate for the injection and containment of waste.

Comment 49 - This is a bad business of dilution as a solution for pollution.

Response - EDS has not proposed to dilute the wastes before injection. The commentor may be referring to the dilution of waste that happens after the liquid waste is injected and moves throughout the injection zone filled with formation fluid. Unlike the diluted pollutants from surface discharges, the injected fluids will not migrate within 10,000 years vertically upward out of the injection zone; or laterally within the injection zone to a point of discharge or interface with a USDW.

Comment 50- The State Site Review Board recommended that this well not be built in this community. MDEQ overruled that body and issued the construction permit.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards

that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. A review of the MDEQ's permitting decision is not addressed by the UIC regulations.

Comment 51 - In March 2000, the MDEQ Site Review Board (SRB) voted 5-3 to recommend that then Director Russ Harding deny EDS its Part 111 construction permit. Mr. Harding issued the permit anyway.

Response - The UIC permits for EDS were not considered by the SRB, and the SRB's recommendations do not address the requirements of 40 C.F.R. Parts 144 and 146. Therefore, there is no recommendation to EPA in the SRB's report. EPA's decision to deny or approve a facility's UIC permit is based upon a detailed technical review of the permit application. The siting criteria for Class I hazardous waste injection wells are listed in 40 C.F.R. § 146.62 and were considered by EPA prior to issuing the EDS wells Class I hazardous waste permits on March 18, 1998, and again during the review of the new draft and final permits.

Comment 52- Will the permits contain a condition from the land ban exemption that would revoke the UIC permits if SPMT drills its extraction well?

Response - No, the final permits will not contain such a condition. The exemption from the land disposal restrictions is a separate agency action that stands on its own. However, if the exemption is terminated for any reason, the final permits in Part II(K)(5) contain the following provision: "Petition Termination - Upon written notification from the Director that an exemption granted under 40 C.F.R. §148.20 has been terminated, the permittee shall immediately cease injection of all prohibited hazardous wastes."

Comment 53 - EDS let their current permits lapse for 18 months. They should have been forced to request an extension prior to permit expiration.

Response - The EDS UIC permits expired on October 15, 2003. EDS submitted an application for renewal of these permits in October of 2002. According to the permit condition in Part (I)(E)(3)(a) "Duty to Reapply - To continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 calendar days before this permit expires." EDS complied with this permit condition.

Comment 54 - You cannot allow this company to trespass under my land. I own the land to the core of the earth. I own the mineral rights too.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Property rights issues are outside of EPA jurisdiction. Moreover, Part I.(A)

of the permit states: "Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local laws or regulations."

Comment 55 - A tiniest flaw in EDS data could cause a catastrophe.

Response - EPA disagrees. The demonstration of no migration indicates that waste injected by EDS will remain far from the surface and any sources of drinking water. The UIC regulations require redundant levels of protection. Most of the data submitted by EDS in support of the permit application was independently verified by engineers and geologists. The wells were designed and constructed with many safeguards and a large margin of safety. In the history of the UIC program in the United States, no problems approaching a catastrophe attributed to operation of such wells have occurred.

Comment 56 - We cannot foresee all possibilities so we should not do anything.

Response - EPA agrees that "we cannot foresee all possibilities," but disagrees with the conclusion. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. EDS has fulfilled these requirements and met the relevant standards.

Comment 57 - Deny the EDS permits because the EDS facility is like Winona, Texas.

Response - A UIC permit can only be denied if the permit application does not meet the regulatory standards in 40 C.F.R. Parts 144 and 146. EPA has concluded that EDS has fulfilled the regulatory requirements for issuance of final permits. EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "Communication with EPA Region 6 in Dallas, Texas, confirmed that ground water contamination at the Winona, Texas, injection well facility was not a result of upward migration of injected waste. An expansion joint was improperly installed in the sump of the drum handling building at the Winona facility which allowed contaminants from spills to seep into the ground. After this error was identified, this sump was reconstructed so that there was no gap for fluids to seep through and remediation of the ground water was initiated. The plume is being recovered through a trench collection system and injected through one of the old deep wells. No contaminated ground water has left the Winona facility."

Comment 58 - The patchwork of permits makes it difficult to protect residents.

Response - While this comment is beyond the scope of this permit action, EPA disagrees. State and federal environmental laws and the permits issued under them are complementary and

protective of human health and the environment. EPA is charged with implementing and enforcing environmental laws passed by Congress and implementing federal programs which have not been delegated to the states. In addition to implementing federal laws (such as RCRA) for which the State of Michigan has obtained primacy, the MDEQ is responsible for implementing all laws which the Michigan legislature has passed for its citizens. Similarly local jurisdictions, such as counties and towns, are responsible for implementing programs which the state has delegated to them, such as zoning.

Comment 59 - There should be an alarm system integrated with the monitoring system that can alert the whole community. This would not be a system the facility can operate, but operates automatically when a release is detected above permissible health standards.

Response - The SDWA and the UIC regulations implemented by EPA under the Act at 40 C.F.R. Parts 144 and 146 do not require such an alarm. Additionally, such a system is not necessary for the wells to be protective of human health and the environment. There are many safeguards and redundancies built into the monitoring system. The injection operations will shut down before permit limits for injection pressure and annulus pressure differential are reached. The surface facility is regulated by the MDEQ RCRA program and the possibility of an air release or liquid spill is low.

Comment 60 - Establish an independent safety and emergency response inspector who lives in the community who would have authority to conduct random inspections and to conduct training and practice sessions for the community and school in utilizing various protective and evacuating measures.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. They do not require separate inspectors for each hazardous injection well site. Funding does not permit the Agency to hire an inspector for a single facility.

Comment 61 - Require EDS to fund a shelter in place system, with an air filtration system, for any school in the area.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The UIC regulations do not require the permittee to fund such a shelter. Additionally, such a system is not necessary for the wells to be protective of human health and the environment. There are many safeguards and redundancies built into the monitoring system. The injection operations will shut down before permit limits for injection pressure and annulus pressure differential are reached. The surface facility is regulated by the MDEQ RCRA program and the possibility of an air release or liquid spill is low.

Comment 62 - Require EDS to set up a $ 1 million annuity/trust for medical claims and emergencies, so residents can seek immediate medical attention for acute health effects.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The only requirement addressing the permittee's monetary obligations deals with providing financial assurance for plugging the wells and post-closure care in case the permittee abandons the site. Additional financial obligations could be imposed on the permittee as a part of the MDEQ RCRA operating license process.

Comment 63 - Provide a day/night emergency number to report odor nuisance, health effects, etc.

Response - EPA has an emergency response number for chemical spills. It is 1-800-424-8802. Citizen complaints may also be registered via e-mail to citizen.complaints@epa.gov. The MDEQ has a 24 hour Pollution Emergency Alerting System that may by reached by dialing 1-800-292-4706.

Comment 64 - All inspections of the facility should be unannounced and EDS should not be allowed to turn away the inspectors.

Response - EPA will conduct unannounced inspections of the EDS facility. However, not all inspections will be unannounced. EPA inspectors have to witness well mechanical integrity tests and these tests are scheduled in advance, so the proper equipment will be there. In addition, MDEQ has its own inspectors who will conduct unannounced inspections. If EDS turns away an EPA inspector, EPA may seek a warrant from a United States district court to enter the property.

Comment 65 - Take UIC primacy away from EPA and give it to the MDEQ.

Response - This comment is not relevant to this permit decision, which is governed by 40 C.F.R. Parts 144 and 146. EPA does not have discretion to "give" primacy for a UIC program under SDWA to the State of Michigan. The MDEQ would have to apply for primacy.

Comment 66 - EPA did not make documents available for review.

Response - The commentor is incorrect. The administrative record for the draft permit has been available for review at EPA Region 5 offices during normal business hours.

Comment 67 - One commentor prefaced many of his comments with the following statement: "Item ...is an appeal to ask the Environmental Appeals Board (EAB) of the Environmental Protection Agency of the United States to review the final permit decision." - more specific comments followed this statement.

Response - Requests for EAB appeals may be made only after EPA issues a final permit decision. This is not the appropriate forum for appeals. The appeal procedures are described at the end of this document.

Comment 68 - During the course of preparing the permit EPA used calculations which rely on Theis' mathematical figures. EPA assumed a variable for the local aquifer that moves through the Mt. Simon sandstone that set it as an infinite aquifer which it clearly is not. This assumption and the figures used to jump to it are clearly wrong. Theis' work is wrong, and uses an oversimplified assumption that liquid spread in a rock is analogous to flow of heat by conduction.

Response - A modified Theis equation is used to calculate the size of the AOR. The permit does not concern itself with the extent of movement of waste within the injection reservoir. Calculations of the direction and extent of waste movement were made to support the decision to grant EDS an exemption from the ban of land disposal of hazardous wastes. No such calculations are required of permit applicants.

The maximum extent of movement of the injectate plume was calculated based on volumetric and geometric considerations which did not include the use of the Theis formula. Theis's work described the changes and distribution of pressure which would result from the extraction or injection of a fluid into a geological reservoir. Theis and subsequent workers in the field define the term 'infinite aquifer' to mean that, for the purposes of the calculations of pressure influence, an aquifer is so large that the pressure influence of the injection and/or extraction is not affected by the horizontal limits of the reservoir. Of course no aquifer is of truly infinite horizontal extent and a more precise term is "infinite-acting aquifer". Given sufficient time, the pressure effects due to extraction or injection will impinge upon any reservoir's boundaries. This becomes important when the effect becomes large enough to change the pressure appreciably within areas of interest.

The commentor is correct in asserting that the horizontal extent of the reservoir is not infinite. There is a limit on injection set by the permit. This rate is rather low considering the apparent qualities of the reservoir. EPA believes that the injection rate will be substantially below this limit, but used the limit when calculating both the spread of injectate and the distribution of pressure increase within the reservoir during the petition review.

EPA also recognizes that the Mt. Simon Sandstone thins as it approaches structural elements such as the Toledo limb of the Cincinnati Arch and the Canadian Shield which lie to the southeast and northeast of Romulus. There is a tongue-shaped region in which the Mt. Simon is absent due to thinning which extends from the northeast to within about 45 miles of Romulus. In other directions, the Mt. Simon extends for hundreds of miles.

Several very conservative assumptions were made during the no migration demonstration. One of these assumptions is that only the zones within the Mt. Simon and Eau Claire into which the waste goes first have any permeability. As a result, all of the waste stays in these zones. The

result of this assumption is that the simulation of pressure increase in those zones is higher than it will be in reality. In addition, the plume was calculated to be substantially larger than it will actually be.

In response to a comment that the Mt. Simon aquifer is not infinite, EPA asked EDS to provide additional modeling to consider the effects of a "pinch out", a geologic term for an area where a layer of underground rock thins significantly, of the injection zone which occurs 45 miles to the northeast. EDS provided additional modeling which included this pinch out (conservatively placed 25 miles rather than 45 miles from the EDS site) and one additional geological feature. The original modeling assumed, for simplicity and conservatism, that the interface between the injection layer and the layers surrounding it was impermeable. In reality, some of injected fluids will penetrate that layer a short distance, reducing the pressure in the injection zone. The new modeling used a conservative but realistic estimate of permeability. The result of this new simulation was to reduce the radius of the area of review from 32,280 to 24,342 feet. This confirms that the Mt. Simon is infinite acting relative to EDS's proposed injection program as well as the effectiveness of using conservative assumptions to define a distance beyond which pressure cannot force upward migration of waste into an underground source of drinking water.

After injection begins, EPA will monitor the pressure change in the reservoir. If the pressure change indicates that the pressure in the area of interest, that is the limits of the area of review (AOR), is increasing faster than the simulation predicted, then EDS will be required to revisit the demonstration and prepare a new demonstration, taking into account the then-quantifiable effects of the formation pinch out into account.

Charles Theis' name frequently appears in any discussion of pressure change resulting from injection because of the utility of his equation. Theis' equation allows prediction of pressure drop under nonequilibrium conditions. As such, it is the basis for aquifer analysis and the means by which pressure distribution in an infinite-acting reservoir can be predicted (because the aquifer is infinite in relation to the period of flow, equilibrium conditions cannot be established). The analogy of heat flow to pressure distribution in the subsurface was first mentioned by the mathematician Fourier. It is an accurate analogy accepted by all credible workers in the field.

Comment 69 - The software and processes used by EPA, the MDEQ and EDS to run the calculations to determine the spread of waste underground were not available to private citizens.

Response - This comment is not relevant to this permit decision as the calculations the commentor refers to support the exemption decision, and are not required by the permit regulations. EPA addressed a similar comment, however, in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "EPA does not have identical software [as that used by EDS]. As described in the petition text, most of the computations used are relatively simple empirical relationships which can easily be incorporated into any spreadsheet program. Accordingly, EPA has developed its own computer programs

which it used to verify the results of the modeling. EPA identified a number of errors in the use of the calculations during the course of review. As evidenced by the comments EPA made in reviewing the petition, EPA carefully checked and verified the mathematical modeling submitted by EDS and its consultant." The MDEQ did not review the petition for exemption from land disposal restrictions and any comments regarding software in its possession should be directed to that agency.

Comment 70 - Non-Darcy flow of the injectate was not considered.

Response - Darcian flow is flow through a medium which may be nonuniform on a microscopic scale but which can be treated as uniform on a macroscopic scale. Years of studies of sedimentary reservoirs similar to the Mt. Simon and the results of matching predictions of pressure changes to measured pressure changes in the Mt. Simon Sandstone demonstrate that fluid flow within the Mt. Simon is Darcian. Thus, there is no need to consider non-Darcian flow. An example of non-Darcian flow would be flow through a single transmissive fracture in an otherwise uniform reservoir. Such flow would destroy the possibility of predicting flow velocities throughout the reservoir based on a single averaging of reservoir properties.

The wastes which EDS proposes to inject are basically water and they will behave as water while the medium through which they flow contains a pore structure similar to that within a collection of sand, pebbles, or coarse pebbles.

Comment 71 - The sources of the materials to be injected were not provided.

Response - The permit applicant has submitted information on likely sources that will be injected, and has submitted general chemical analyses for these types of fluids. These are included in the draft and final permits in Part III (D). EPA performed its technical review using these general analyses and assuming some worst-case situations such as extremely low or high pH, or high concentrations of solvents. The final permits require EPA approval of each individual source before the waste can be injected into the well. EPA has approved one source since the issuance of the draft permits. This source, storm water from the EDS facility, is included in Part III(D) of the final permits.

Comment 72 - The half lives of many of the chemicals have been falsely represented to the public by both the MDEQ and EPA.

Response - Since no aspect of the final permit decision is based on half lives of any chemicals, this comment does not apply to these permit decisions. The diminishing concentrations of the waste constituents are accomplished through dilution and dispersion, not through any process described by half lives of these constituents.

Comment 73 - EPA, MDEQ, and EDS staffs are not trained in NIH's 29 C.F.R. § 1910.120 and if they are trained signs are not posted.

Response - This comment is beyond the scope of this permitting action. The quoted regulations pertain to safety training of persons handling hazardous waste and are administered by the Occupational Safety and Health Administration, not EPA. EDS employees will, however, be required to undergo such training pursuant to the requirements of the proposed RCRA operating license from the MDEQ. Further questions and comments regarding this issue should be addressed to the MDEQ. All EPA employees performing field work are required to undergo 24-hour safety training with 8-hour refreshers annually. They are not required to have hazardous waste handling training. EPA cannot comment on the training requirements of the MDEQ staff.

Comment 74 - One commentor brought up minutes from a Ground Water Protection Council Annual Forum held on September 25, 2000 to demonstrate the lack of sophistication of personnel involved in permitting of the EDS wells.

Response - The commentor presented two pages of minutes from a meeting that lasted several days. These minutes document discussions about UIC reporting to EPA headquarters. The conference participants were not involved in the EDS permit decision, nor was the conference a part of the permitting process. Thus, the conference minutes are not relevant to the EDS permitting process.

Comment 75 - This set of hazardous waste injection wells has been placed within a major aquifer for the City of Detroit and surrounding area; the confining layers contain upwelling of minerals that impede these layers.

Response - Any geological formation which allows the storage and flow of a fluid can be described as an aquifer. However, calling a formation an aquifer for a city implies that the city has or could use the contained fluid beneficially. The usefulness of the fluid contained in the Mt. Simon is limited because of its high salinity, and it is not "an aquifer for the City of Detroit" in any way except that it happens to underlie the City of Detroit. The commentor does not explain how the use of the Mt. Simon as a place to dispose of hazardous wastes will affect the City of Detroit. The purpose of the UIC program is to protect USDWs from being contaminated by underground injection practices. A USDW is defined in the UIC regulations as an aquifer or its portion which contains less than 10,000 milligrams per liter (mg/L) of total dissolved solids. Potable water generally contains less than 500 mg/L of total dissolved solids. By protecting water supplies that are far saltier than normal drinking water, the UIC program is also protecting those water supplies that are not currently being used for drinking water purposes but may be so used in the future. The brine in the Mt. Simon contains over 270,000 mg/l of total dissolved solids.

The confining layers are not known to contain an upwelling of minerals. The confining layers are wide-spread sedimentary formations which are not known to have any vertical discontinuities which might provide a connection between the injection zone and any shallower zone. The only minerals of note found nearby are salt deposits, which, like the confining layers beneath them, were formed in a sedimentary environment, not through any upwelling.

Comment 76 - The material used to create the annulus is cement of a grade and mixing proportion that is inappropriate for the long term safe operation of the well.

Response - EPA addressed this comment in the Response to Comments issued on March 16, 2004 as a part of EPA's final decision to grant EDS an exemption from the land disposal restrictions under the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act. A direct quote from that document follows: "During the no migration petition technical review process, EPA evaluated the surface casing strings of the EDS injection wells and determined that they were constructed and cemented to be protective of all USDWs. The cement utilized in well construction was specifically designated for surface casing applications and was pumped in place by a recognized well service firm. Additionally, EPA notes that the EDS wells satisfied all EPA UIC construction requirements for Class I hazardous waste injection wells in 40 C.F.R. § 146.65. Among other things, those standards require Class I hazardous waste injection wells to be constructed and completed to prevent the movement of fluid into or between USDWs or into any unauthorized zones."

Comment 77 - One commentor wrote, "The materials used for the construction of the well head are inadequate for the job, having been conceived and designed to perform pumping duties at atmosphere and not through the extreme pressure zones that it will be working at."

Response - EPA disagrees. EPA evaluated the construction procedures and materials prior to the beginning of the construction of the wells. The EDS wells satisfied the hazardous waste injection well construction requirements of 40 C.F.R. § 146.65 and the monitoring and testing requirements of 40 C.F.R. § 146.68. The wellheads have been designed to last in a corrosive environment. The entire internal wellhead body is coated with a corrosion resistant ceramic material and moving parts are made of stainless steel. The wellhead is rated for pressures up to 2000 psi and will be operated at a maximum pressure of 765 psi.

Comment 78 - There is no plan for the operation of the well and the security of all the materials on site in the event of a catastrophic event that would cause the well to cease operating. If power is cut backflow will immediately overwhelm the system and result in flooding of the system and blowout at the well head.

Response - If the wells cease operation for any reason, they can be shut off at the wellhead to prevent a back flow into the storage tanks. As discussed above, well construction and operation requirements are designed to prevent potential problems and testing, monitoring, and reporting requirements are designed to detect potential problems as early as possible.

Comment 79 - EPA and MDEQ met secretly with EDS to help them with applications and permits prior to any public meetings.

Response - There were no secret meetings between EPA and EDS. Many issues regarding the permit application were resolved over the telephone, via postal mail or e-mail. During reviews of

most permit applications, EPA employees routinely contact the permit applicants for clarification or to request additional documents. Communications records, documents and information used in making the final permit decision are part of the administrative record.

Comment 80 - During the first set of public meetings false information was provided to the local government of Romulus and non-binding agreements were presented as binding.

Response - The commentor did not provide any information on the referenced agreements or what information he/she considered false. EPA cannot respond to such a vague comment. In addition, it is unclear to which public meetings the commentor refers.

Comment 81 - The City of Detroit, which opposed the well, has gone quiet. As a reward, the DEQ and EPA have backed off on further sanctions for pollution caused by a Detroit Power station and other water related violations.

Response - This comment is beyond the scope of this permitting decision. However, EPA denies that the City of Detroit has received any reduction of EPA enforcement actions due to anything associated with the EDS facility.

Comment 82 - One commentor quoted the work of John A. Veil and Maurice B. Dusseault from Argonne National Laboratory regarding operational problems caused by settling solids. The commentor requested an explanation of EDS's readiness to respond to such problems.

Response - The referenced work deals with injection of solids. In some wells, solids may be injected either as propping material to hold fractures open or for disposal of the solids. Most disposal is of oilfield wastes. In either case, solids can be trapped in a well bore because the fracture into which they should have been forced 'screens out' the solids. Screening out occurs when the pressure drop within the well or fracture is so great that the pressure at the tip of the fracture falls below the fracturing pressure, and growth of the fracture ceases. With no place to go, the solids are left in the well bore. This process has no application to the EDS operation because solids will not be injected. The permits require filtration of the waste.

Comment 83 - A recent report to Congress by EPA was heavily weighted by participants who either support or were in some way responsible for the UIC program. The conclusions reached by the participants are not surprisingly in favor of underground injection.

Response - This comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The report to Congress was not a factor in this permitting decision.

Comment 84 - One commentor wrote, "This aquifer must be declared exempt as it is currently

producing natural gas that is to be consumed by American citizens."

Response - The Mt. Simon includes aquifers. None of these aquifers contain significant amounts of natural gas. In addition none of the formations that make up the injection zone has produced natural gas in Michigan. Throughout the Michigan Basin, natural gas is produced from much shallower formations.

Comment 85 - One commentor implied that Mr. Thomas Skinner - former Regional Administrator of EPA, Region 5 has had involvement and associations with the waste industry. The commentor stated that Mr. Skinner is a Village President of Lake Bluff, Illinois and that there are several large waste companies located in Lake Bluff. In addition, the commentor lists several individuals named Skinner in the United States who are in some form involved in waste management.

Response - This comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. This is not an appropriate forum to address these statements.

Comment 86 - The Director of the MDEQ at a recent meeting said that he was under the impression that the materials to be disposed of through the "High Pressure Injection Toxic Waste Well" in Romulus, Michigan by EDS would be mostly water. Prior to any further permitting the director should be informed on the entire list of chemicals to be pumped into the earth, their toxicity and source.

Response - The draft permits discussed in this document are for two Class I hazardous injection wells, not "high pressure injection toxic waste wells." EPA staff did not attend the meeting with the Director of the MDEQ and is not aware of the context of his statement. EPA agrees that the injected waste will be highly diluted liquid containing some concentration of hazardous constituents as allowed by the UIC permits.

Comment 87 - One commentor wrote, "EPA is playing a shell game with waste that it has taken under its operating mantle. Example is Wayne Disposal. One of the landfills operated by Wayne Disposal is listed as a Superfund site and Wayne Disposal is under scrutiny for its operation. Materials are being trucked from the Superfund site to another landfill operated by Wayne Disposal with payments apparently proceeding."

Response - This comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. EPA will not be directing waste to the EDS wells. Each source of waste EDS proposes to inject must be

approved in advance by EPA after submittal of the request and the chemical analysis of the waste.

Comment 88 - One commentor wrote, "Approval of this out of date technology, the well head and environmental plans of [EDS] by the [MDEQ] will be in violation of NAFTA [North American Free Trade Agreement] as unfair subsidizing of an under performing industry centered on pumping untreated and lightly treated waste into the earth will be enabled."

Response - This comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. Any comments regarding the MDEQ should be directed to that agency.

Comment 89 - The State of Michigan should not permit this well to operate as the well permits offered by EPA are based on fraudulent and incorrectly collected materials. The map plan for the site originally provided to EPA included maps of sites within the State of Illinois but included as maps of the site in Romulus.

Response - EPA checked its copies of the maps provided by EDS and did not find any site maps labeled Illinois. EPA staff members visited the EDS site and did not find any discrepancies from the maps of the site provided to EPA.

Comment 90 - The conclusion that the Mt. Simon aquifer is not connected to other aquifers is flawed. It is connected to several other local aquifers through an indirect system that includes faults, pressure cracks, direct connections and diffuse barriers.

Response - The commentor has provided no evidence of these "faults, cracks, direct connections, and diffuse barriers". No evidence of such connections was revealed during extensive testing of the proposed injection wells. Evidence tending to refute the commentor's assertions includes logs of the well bores using fracture identification tools and an injection test which predicted pressure change in one well as a result of injecting into the other. If such conduits as the commentor described did exist, the pressure response would have had a particular "leaky aquifer" signature which was absent. Monitoring of other wells used for injection into the Mt. Simon has shown that wastes have been confined as predicted.

Comment 91 - The emergency plan has not been made publicly available through the internet or other electronic means. The information has been held close to the vest by EPA and has been overlooked by the MDEQ.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for

deep injection wells. The UIC regulations do not require an emergency plan. EDS is, however, required to receive a license from the State for operation of a RCRA treatment, storage and disposal facility that would address preparedness and prevention, and contingency plan and emergency procedure requirements. Comments regarding emergency plans should be directed to the MDEQ.

Comment 92 - The two abandoned wells drilled by EDS have not been capped and are listed as active by EPA.

Response - EDS has drilled three wells in Romulus. Two wells are at the Citrin Drive facility. EPA issued final permits for these two wells concurrently with this response to comments. The third well, at the Wahrman Road facility, is temporarily abandoned under an agreement between EDS and the MDEQ. Wells are not capped when they are abandoned. Wells are left with plugs of cement at various depths. This prevents them from becoming vertical conduits between reservoirs at various depths. A simple cap at the top would provide little security.

Comment 93 - These wells were constructed from sub-standard materials with little engineering experience at such depths. EPA has shown poor judgment in construction techniques and materials.

Response - The EDS wells were drilled under the supervision of a competent contractor who employed a number of subcontractors of high quality to construct the well. The depths are by no means extreme, and the drilling entailed no unusual risks. The construction of the wells is comparable to the construction of other wells used for similar purposes. The commentor did not provide examples of poor judgement for EPA to address.

Comment 94 - These two abandoned wells cannot be used as test wells as they are beyond the point where invasion of the SPMT well site would occur and therefore would be late in their reporting of any difficulties. The abandoned wells which have still been labeled as active by EPA on their web site but identified as not existing in the current permit process need to be plugged and capped and tested.

Response - As stated in the response to comment 92 above, there is only one abandoned well. The commentor is correct in asserting that the single abandoned well cannot be useful in determining the extent of plume migration in the direction of the property owned by SPMT because its location is unfavorable.

The single abandoned well will be referred to as temporarily abandoned on the EPA website until it is properly plugged. At that time, any references to it will be through the part of the website which contains information about abandoned wells. The well will be plugged when the terms of the agreement, referenced in the response to comment 92, between EDS and the MDEQ are met. The plugging will include a cement plug reaching to the surface from a depth of 4,100 feet. The casing will be cut off beneath the surface, and a steel plate will be welded across the top. After

the well has been thus plugged, there will be no means to test the well.

Comment 95 - The maps used by the MDEQ and EPA do not match. The geology maps do not match. The well location maps do not match. Very little coordination or effort at communication has gone on. Several errors have been introduced into both the subsurface and surface permitting procedure that must be reviewed.

Response - The commentor may be unaware that maps which EPA generates and those which MDEQ generates are usually in different map projections. (A map projection is a method of displaying data from the earth's approximately spherical surface on a flat surface, such as a paper map.) The standard used by EPA Region 5 is an Albers map projection while the MDEQ usually uses a map projection called Michigan GeoRef, which is an oblique Mercator projection. Maps based on identical information can look quite different if they are in different projections. Since EPA regulates only injection wells, it does not maintain an independent database of oil and gas production and exploration wells. EPA staff members rely on well location maps prepared from data provided by the MDEQ because MDEQ regulates oil and gas production wells and maintains a database with this information. Because the commentor did not provide any references to specific errors that could be investigated by EPA, we cannot address that part of the comment.

Comment 96 - One commentor wrote, "Due to Federal and State treaties, requirements and agreements, the following associations and government agencies need to be notified concerning the construction and operation of any new or refurbished 'High Pressure Toxic Waste Injection Wells' prior to permitting and certainly prior to operation. Apparently these requirements have been overlooked or purposefully avoided." The commentor proceeds to list 19 federal, state, and local agencies, public and private organizations, some from states as far away as New York.

Response - EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. The regulations do not require notification of any of the organizations listed by the commentor. The commentor did not identify, nor is EPA aware of any "treaties, requirements, and agreements" that require such notification.

Comment 97 - The e-Waste software in use by the MDEQ has not been properly tested yet has been placed in use to record the acceptance and transport of liquid and solid wastes.

Response - This comment is beyond the scope of this permitting decision. EPA cannot comment on software used by the MDEQ. Questions and comments regarding the MDEQ should be addressed to that agency.

Comment 98 - The Department of Natural Resources (DNR) in Michigan and the MDEQ both lack strict guidelines on working towards total water quality.

Response - This comment is beyond the scope of this permitting decision. EPA cannot comment on interactions between Michigan DNR and MDEQ. Questions and comments regarding these agencies should be addressed to them directly.

Comment 99 - One commentor wrote, "Monitoring wells do not exist and using the Sun Oil Well system as a monitoring well is both unwise and morally repugnant. If the abandoned wells are going to be used a full set of investigations must be undertaken as much of the material collected in the permitting process was incorrect and much of it is missing" and "Testing of the groundwater is limited in scope to tests for changes in pH level to determine if the water has become more acid or alkaline. Tests are not required to detect the presence of the materials that are being injected."

Response - The UIC regulations do not require ground water testing. EDS does, however, have a ground water monitoring system installed. Ground water monitoring is required under the state implemented RCRA program analog to 40 C.F.R. § 264.97 and is a requirement of the RCRA operating license from the MDEQ. There are five ground water monitoring wells. Once the well operations begin, EDS will test the ground water quarterly for various constituents including metals, pH, and volatile organics. No abandoned wells will be used for ground water monitoring.

Comment 100 - One commentor wrote, "According to EPA regulations an operator of a hazardous waste injection well is required to submit a groundwater monitoring plan. This plan should include a monitoring well that is completed in the first porous, permeable interval that lies above the maximum vertical migration. In other words, a monitoring well that reaches the Mt. Simon. Has a groundwater monitoring plan been submitted and does it include the use of any such monitoring wells on the site? If not, I would demand that it does".

Response - The UIC regulations specific to Class I hazardous waste injection wells at 40 C.F.R. § 168.68(e) require some ambient monitoring. Under those regulations, EPA may mandate periodic monitoring of the ground water quality in the first aquifer overlying the injection zone, but is not required to do so. Given the depth of the wells below the USDW at the Romulus facility, EPA did not require this additional monitoring. As discussed in the response to comment 99, State RCRA regulations require a ground water monitoring plan for treatment, storage, and disposal facilities.

Comment 101 - The injection process itself will create dioxins both at the surface where mixing will occur and at the injection point. Control and eventual remediation of these dioxins has not been reviewed.

Response - EPA is unaware of instances in which dioxins have been created during injection or mixing operations. The demonstration of no migration considered a broad range of potential contaminants, showing that they will not migrate more than 250 feet above the top of the injection zone within the 10,000 year demonstration period. As a result, injection of unapproved wastes will have little or no environmental consequences because containment has been

demonstrated. However, injection of any unpermitted wastes will subject EDS to an enforcement action.

Comment 102 - One commentor wrote, "Beyond the tests carried out by the MDEQ do not test for the polymers that are created under the conditions existing at the point of injection."

Response - EPA is unaware of instances in which polymers have been created at the point of injection. Testing required by EPA regulations and permits is done to determine the condition of the well and the injection zone reservoir, such as mechanical integrity testing and ambient reservoir pressure monitoring. No testing required by EPA addresses polymers at the point of injection. The demonstration of no migration considered a broad range of potential contaminants, showing that they will not migrate more than 250 feet above the top of the injection zone within the 10,000 year demonstration period. As a result, injection of unapproved wastes will have little or no environmental consequences because containment has been demonstrated. However, injection of any unpermitted wastes will subject EDS to an enforcement action.

Comment 103 - Over the last three years the MDEQ and several other Michigan State institutions have taken over 300 million dollars from EPA to study many different things and carry out work. Prior to completing this permitting process a thorough review of all monies exchanged between the State of Michigan and EPA should be reviewed.

Response - While EPA does award a significant percentage of its funding to implement environmental programs, this comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. EPA has not provided any funding to the State of Michigan related to the review of the UIC permits.

Comment 104 - No hydrogeologists performed any independent work for the MDEQ concerning these wells with the result that the wells have been located on poorly drained land that has an anchored well head in a swampy mire that would not be suitable to build a small home upon let alone a "high pressure injection toxic waste well head".

Response - EPA cannot comment on the well siting review process conducted by the MDEQ. Questions and comments regarding the MDEQ should be addressed to that agency. EPA inspectors have been to the EDS facility and the wells are not located in a "swampy mire". The wells consist of several concentric casings cemented into bedrock. The well bore is 20 inches in diameter and the innermost of the four casings has a diameter of seven inches. The walls of the well are seven inches thick, including almost 1.5 inches of steel and the remainder cement. As a result, the wellheads have a very secure foundation.

Comment 105 - In EPA's document "Assessing the Geochemical Fate of Deep-Well Injected Hazardous Waste" scientists cannot predict what will happen to the waste when it is injected other than to say that most of it will become more hazardous than before it was injected.

Response - The first part of the commentor's statement is correct, that scientists cannot predict the chemical fate of injected waste with confidence but the second part, the assertion that most of it will become more hazardous, is unsupported by review of the document the commentor referenced. A major conclusion was the difficulty of making predictions concerning the fate of waste under the conditions present in deep well reservoirs given the highly variable nature of some hazardous wastes.

Comment 106 - The Sylvanian sandstones are liable to degradation by the increased force below them and again by the decrease in force as the injected liquids flow away through transference, non-Darcy flow, quickening and through fissuring.

Response - The Sylvania Sandstone is within 600 feet of the surface. Injection will be into the Mt. Simon and lower Eau Claire Sandstones at depths below 3,300 feet. Between the depths of 3,300 and 600 feet there are 2,700 feet of rock layers which are mostly dense and very resistant to vertical flow. Flow will be confined to the Mt. Simon and Eau Claire which are well cemented sandstones, unlike the Sylvania Sandstone. Because the Sylvania will not be affected by injection, the possibility of erosion and crater formation is not relevant to issuance of a permit for injection into the Mt. Simon Sandstone.

Comment 107 - As a direct result of the operation of the "High Pressure Injection Waste Well" operated by LTV Steel in Illinois an earthquake was recorded on 6/28/2004. The earthquake is directly attributable to the well operated by LTV Steel and approved for operation by EPA and the Illinois EPA.

Response - This comment is beyond the scope of this permitting decision. If the commentor is implying the EDS wells will cause earthquakes, that comment was addressed in response to comment 11. Regarding the June 28, 2004 earthquake in Ottawa, Illinois, located more than 80 miles from the LTV facility, there is no indication that it was caused by any injection activity. None of the information provided by the commentor supports the claim that the earthquake was caused by the injection activity.

Comment 108 - The people who are going to be affected by this proposal have been consistent in their opposition. Unfortunately, they have been ignored by the very Agency entrusted to protect our environment.

Response - EPA has held several public hearings during various stages of this project. The public had several opportunities to voice their opinions. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well

engineering, operating, and monitoring standards for deep injection wells. EPA has not received any comments that would warrant a denial of the final UIC permits to EDS. EPA believes that regulated waste disposal through the wells is protective of human health and the environment.

Comment 109 - There have been serious problems with every commercial hazardous disposal well that has ever operated in our country.

Response - Since the implementation of the UIC program, there have been no confirmed cases of USDW contamination due to hazardous waste injection through a properly operated Class I well. There have been quite a number of studies on the safety of injection wells, both by the federal government and individual states. One of the earliest EPA studies was "The Report to Congress: Waste Disposal Practices and Their Effects on Ground Water" [EPA-570/9/77/001], January 1977, Chapter XIII of which is devoted to injection wells. Another major EPA report was issued in June 1977 entitled "Review and Assessment of Deep-Well Injection of Hazardous Waste" [EPA-600/2-77-029]. Another EPA report is entitled "Report to Congress on Injection of Hazardous Waste," dated May 1985; this report identifies all deep well injection failures and concludes that adherence to the UIC regulations would have prevented them. It is available on EPA web site at http://www.epa.gov/safewater/uic/pdfs/19506.pdf in Adobe Portable Document File (PDF) format. The U.S. General Accounting Office produced an independent report in August 1987 entitled "Hazardous Waste: Controls Over Injection Well Disposal Operations" [GAO/RCED-87-170]. More recently EPA published a "Study of the Risks Associated with Class I Underground Injection Wells [EPA 816-R-01-007]" in March 2001; this report is also available on the EPA web site at http://www.epa.gov/safewater/uic/classonestudy.pdf also in PDF format. The national UIC web page lists many other reports related to this program which you can view online. Please check http://www.epa.gov/safewater/uic/qry_smallAllUIC_Files.html. EPA believes that regulated waste disposal through the wells is protective of human health and the environment.

Comment 110 - One commentor wrote, "...the regulations pertaining to hazardous waste injection require at least one 'major permeable bleed-off zone' between the injection zone and the base of drinking water supply. Now, a bleed-off zone serves to release the pressure of injection by allowing some of the material to 'bleed off.' In the case of the EDS wells, there are two bleed-off zones. One is just below the drinking water supply. This sounds like a very dangerous proposition."

Response - EDS has demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the injection zone for 10,000 years. EPA granted EDS an exemption from the LDR based partially on this demonstration. However, the UIC regulations at 40 C.F.R. § 146.62(d)(1) additionally require that "The owner or operator shall demonstrate to the satisfaction of the Director that: (1) The confining zone is separated from the base of the lowermost USDW by at least one sequence of permeable and less permeable strata that will provide an added layer of protection for the USDW in the event of fluid movement in an unlocated borehole or transmissive fault..." This duplicative protection may create concern that EPA is not confident in the demonstration. That is not the case. The preamble language (FR 53

No. 143 7/26/88 p28133) discusses this requirement stating, "... the goal of § 146.62(d) was to deal with uncertainties which some members of the regulatory negotiating committee believed were inherent in characterizing geologic condition in the subsurface." In response to objections that there is no need for additional safeguards, EPA responded, "... overlapping safeguards are a sound and frequently used principle of good engineering." This redundancy of protection is characteristic of the UIC regulations.

The permeable zones are referred to as bleed-off zones because any fluid migrating vertically upward or downward will be deflected horizontally, and the force causing upward movement will be dissipated (bled off) as a result. Bleed-off zones are a powerful deterrent to upward flow through rock strata which is not so impermeable as supposed, uncased well bores, pre-existing fractures, or even fractures being propagated as a result of injection pressures which exceed the fracturing pressures of the injection and confining zones. The regulations require one bleed off zone. EPA chose to cite two, the Lockport Dolomite and the Sylvania Sandstone. Bleed-off zones are an additional defense against contamination.

EPA also notes that neither Detroit nor its suburbs obtains water from underground aquifers. Even private water wells are unlikely to use water from the bedrock aquifers because of their high sulphur content. The deepest aquifers used for drinking water are likely to be near the base of the glacial till at about 100 feet below the surface. The Sylvania Sandstone is a massive sand body between the depths of 400 and 600 feet at the EDS site. The Sylvania is used as an injection zone elsewhere, and is quite capable of absorbing significant amounts of fluid with little or no pressure increase transmitted to its upper portions.

Comment 111 - When EDS drilled its wells, were there any problems with circulating cement behind the long-string casing or any other casing? If so, what were they specifically and have they been addressed?

Response - There were no problems associated with circulating the cement for the long string, intermediate, or surface casings. There were problems during the cementing of the conductor casings because each of the wells had penetrated a shallow lost circulation zone just prior to cementing. Lost circulation zones are intervals encountered when drilling in which strata are fractured, cavernous, or susceptible to fracturing. The drilling mud flows into the zone and does not circulate back to the surface. After cement would not circulate to the surface during the cementing of the conductor casing, the cement was allowed to set, and the volume between the casing and the well's wall which was not filled with cement was cemented using a small pipe run down the outside of the tubing. Because the earlier cement sealed off the lost circulation zones, the cement placed in this manner filled the remainder of the well bore and sealed it.

The construction of the EDS wells satisfied all EPA UIC construction requirements for Class I hazardous waste injection wells in 40 C.F.R. § 146.65. Casing inspection logs confirm that there is no damage beyond surface scratches and indentations typical of casing installation.

Comment 112 - What were the results from EPA's review of the geophysical logs run by EDS?

Has EPA sought independent review of these geophysical logs by an outside qualified contractor or expert before proposing to approve EDS's permits. If not, why?

Response - Results of EPA's reviews of the logs run by EDS during and following construction of the wells are part of the administrative record for this permitting decision and show that the wells met the requirements of the UIC regulations. In addition to EPA staff that reviewed these logs, Dr. David Westjohn of the United States Geological Survey (USGS) also conducted an independent review. His report was reviewed and approved by other USGS experts and is a part of the administrative record for these permit decisions.

Comment 113 - What were the results of EPA's review of EDS's quality assurance plan with respect to the methods used for sample collection and analysis during the drilling of the wells?

Response - The original quality assurance project plan (QAPP) was rejected because it was neither comprehensive nor detailed. Over a period of six months immediately preceding the construction of the wells, EPA reviewed a series of revised QAPPs submitted by EDS. As a result of responding to EPA's comments, EDS developed a plan which EPA approved on November 1, 2001.

Comment 114 - The new governor and the new director of MDEQ should carry out wishes of the Michigan people.

Response - This comment is beyond the scope of this permitting decision. The governor and the director of MDEQ do not have the authority to issue or deny UIC permits.

Comment 115 - Congress should mandate the UIC permitting process to look beyond science and include real issues.

Response - This comment is beyond the scope of this permitting decision. EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have a UIC permit application approved. These regulations deal primarily with the geologic siting, well engineering, operating, and monitoring standards for deep injection wells. These regulations were issued to implement the requirements of the SDWA as passed by Congress. This is not the appropriate forum for discussion of the commentor's issue.

Comment 116 - The reduction of injection rate from the 1998 permits is an admission by EPA that it did not correctly study the problem and overlooked common issues.

Response - The rate reductions were not mandated by EPA. EDS did not provide EPA with specific reasons for the rate reduction in its permit application. EPA reviews the plans submitted. If the proposed rates allow the operator to meet certain standards, then EPA issues the permits. The rate proposed in 1998 was approvable. The lower rates proposed in 2003 were also approvable.

Comment 117 - The waterways look clean because the UIC program has mushroomed.

Response - The surface waterways are being cleaned up, but the UIC program plays only a small part. Only a few producers of relatively large volumes of waste which would be expensive to treat use deep wells. There are only two facilities in Michigan currently using Class I wells to dispose of hazardous wastes. Twenty years ago there were at least five. The number of facilities at which Class I wells are used to dispose of nonhazardous wastes has not changed much. Several new facilities have been permitted, but others have gone out of business and their wells were plugged.

Comment 118 - The waste analysis plan gives too much freedom to the facility.

Response - The approved waste analysis plan meets the requirements of the regulations and conforms to Region 5 guidance.

List of Acronyms

AOR	Area of Review
CEO	Chief Executive Officer
C.F.R.	Code of Federal Regulations
DEQ	Department of Environmental Quality
DNR	Department of Natural Resources
EAB	Environmental Appeals Board
ECA	Environmental Concerns Association
EDS	Environmental Disposal Systems, Inc.
EPA	United States Environmental Protection Agency
LDR	Land Disposal Restrictions
MDEQ	Michigan Department of Environmental Quality
MIT	Mechanical Integrity Test
NAFTA	North American Free Trade Agreement
NEIC	National Earthquake Information Center
NIH	National Institutes of Health
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SPMT	Sunoco Partners Marketing & Terminals LLP
SRB	Site Review Board
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water
USGS	United States Geological Survey
WMD	Waste Management Division

Appeal

In accordance with 40 C.F.R. § 124.19, any person who filed comments on the draft permits or participated in the public hearing may petition the Environmental Appeals Board to review any condition of the final permit decision. Such a petition shall include a statement of the reasons supporting review of the decision, including a demonstration that the issue(s) being raised for review were raised during the public comment period (including the public hearing) to the extent required by these regulations. The petition should, when appropriate, show that the permit condition(s) being appealed are based upon either, (1) a finding of fact or conclusion of law which is clearly erroneous, or (2) an exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review.

If you wish to request an administrative review, you must submit such a request by regular mail to the United States Environmental Protection Agency, Clerk of the Board, Environmental Appeals Board (MC 1103B), Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460-0001. Requests sent by express mail or hand-delivered must be sent to the United States Environmental Protection Agency, Clerk of the Board, Environmental Appeals Board, Colorado Building 1341 G Street, NW, Suite 600, Washington, D.C. 20005.

The request must arrive at the Board's office on or before **November 21, 2004.** The request will be timely if received within this time period. For this request to be valid, it must conform to the requirements of 40 C.F.R. § 124.19. A copy of these requirements is attached (Attachment A). This request for review must be made prior to seeking judicial review of any permit decision.

Final Permits

The final permits are available for viewing at:

Romulus Public Library, 11121 Wayne Road, Mon. - Thurs. 10 am - 8 pm, Sat. noon - 5 pm;
Taylor Community Library, 12303 Pardee Road, Mon. - Thurs. 10 am - 8 pm, Fri. - Sat. 10 am - 5 pm;
Eshleman Library, Henry Ford Community College, 5101 Evergreen Road, Dearborn, Mon. - Thurs. 7:30 am - 9:30 pm, Fri. 7:30 am - 4 pm, Sat. 9 am - 5 pm.

Attachment