

**4425**

**DRILLING PROPOSAL FOR EIGHT ADDITIONAL  
GROUNDWATER MONITORING WELLS (WASTE  
STORAGE) (ADDENDUM TO WORK PLAN)**

**08/03/90**

**DOE-FN/WEMCO  
DCR #54  
6  
DCR WORK PLAN**

# DOCUMENT CHANGE REQUEST

This form is used to initiate permanent changes to controlled distribution project-specific procedures, such as the QAPP, Work Plan, and Sampling Plan.

REQUEST NO. DCR#54

Issue Date: 8-3-90

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REQUESTOR: W. Hertel PHONE NO.: 738-3100 DATE: 8-3-90

DOCUMENT TITLE: Drilling Proposal for Eight Additional Groundwater Monitoring Wells (Waste Storage)

SECTION/PARAGRAPH/PAGE NO.: Addendum Work Plan DOCUMENT NUMBER: \_\_\_\_\_

ISSUE DATE: \_\_\_\_\_ LATEST REVISION DATE: \_\_\_\_\_

### JUSTIFICATION:

See Attached Addendum

### CONTENT OF CHANGE:

See Attached Addendum

### EFFECTIVE DATE OF CHANGE:

When all approvals have been obtained: \_\_\_\_\_ Effective Date

Other (Specify): \_\_\_\_\_

### REQUIRED APPROVALS:

John Elyon for J. Wood 8/3/90  
Project Director Date

[Signature] 8-3-90  
Project QA Officer Date

H.E. Richardson 8/3/90  
WVCO QA Officer Date

John Elyon 8/3/90  
Technical Manager Date

Andrew P. Abel 8/3/90  
DOE COTR Date

### TO BE COMPLETED BY DOE

- A. Prior EPA notification required?  Yes  No
- B. ~~EPA~~ EPA approval required? Pending  Yes  No
- C. Immediate implementation?  Yes  No

DRILLING PROPOSAL FOR EIGHT ADDITIONAL GROUNDWATER MONITORING WELLS  
IN THE WASTE STORAGE AREA  
FOR THE  
FMPC REMEDIAL INVESTIGATION/FEASIBILITY STUDY

## 1.0 PROPOSAL

It is necessary to drill 8 additional groundwater monitoring wells in the location of the Waste Storage Area to investigate the nature and extent of potential hazardous waste or hazardous waste constituents in the glacial till and underlying regional aquifer. These wells are required to support the RI/FS and to fulfill parallel requirements of the Resource Conservation and Recovery Act (RCRA) regulations regarding monitoring systems (OAC 3745-65-91) and the integrity of monitoring wells (OAC 3745-65-91(C)). RCRA is also an Applicable Reasonable and Appropriate Requirement (ARAR) for CERCLA. All wells will be installed in strict conformance with the RI/FS Work Plan.

It is proposed that 4 1000-series wells be constructed to provide a groundwater monitoring system in the glacial till surrounding Waste Pit #4 (Locations #1, #2, #3, and #4 in Figure 2). These four monitoring well locations will also correct a deficiency reported to the EPA by PRC Environmental Management Inc., that three existing 1000-series wells, currently located around Waste Pit #4, are not suitable monitoring wells, see section 5 for a more thorough explanation of the deficiency.

It is proposed that 2, 2000-series monitoring wells be installed to evaluate Waste Pit #4. (Locations #5 and #6 in Figure 3). Location #5 will be located immediately upgradient to Waste Pit #4. Location #6 will be located immediately downgradient to Waste Pit #4. These wells will provide valuable insight into the localized effects Waste Pit No. 4 may be having on local groundwater quality and flow. This will also provide a monitoring system with 1 upgradient and three downgradient wells (as required by OAC 3745-65-91(A)) that can be used to determine if contamination has reached the water table of the sand and gravel aquifer.

It is proposed that a 2000-series monitoring well be drilled immediately southeast of Waste Pit #2 in the vicinity of monitoring well 1031 (Location 7 in Figure 3). No 2000-series well currently exists in this area and monitoring indicates minor concentrations of VOAs in the overlying glacial till in well 1031 (Figure 2). A 2000-series well will provide data to determine if the constituents found in well 1031 has reached the water table of the sand and gravel aquifer.

It is proposed that a 4000-series well be drilled upgradient of the waste storage area (Location #8 in Figure 4). This well is required to support statistical and engineering valuation under the RI/FS. Additionally, OAC 3745-65-91(A) requires that a monitoring system contain at least one well upgradient to the regulated unit of interest. The current 4000-series well monitoring system does not contain an upgradient well.

## 2.0 REGULATORY BACKGROUND

The Feed Materials Production Center (FMPC) is a RCRA interim status facility that disposed of hazardous waste in a land based unit. The regulated land disposal unit of interest is Waste Pit #4, which is subject to the regulations of the Resource Conservation and Recovery Act. It is one of 6 inactive solid and liquid waste disposal units (pits) at the FMPC. All of these pits are located in the Waste Storage Area, which is northwest of the Production Area. Waste Pit #4 is regulated by RCRA due to the disposal of barium salts in the pit from 1980 to 1983. Waste materials disposed of in the waste pits also include uranium,

thorium, solvents, heavy metals and PCB's. All 6 inactive waste pits are within the scope of Operable Unit No. 1 in the ongoing Remedial Investigation/Feasibility Study (RI/FS). RCRA technical requirements are being considered as Applicable or Relevant and Appropriate Requirements (ARARS) in the CERCLA response action process.

### 3.0 GEOLOGIC SUMMARY

Bedrock underlying the FMPC is composed of flat lying shale with thin interbedded limestone. Unconformably overlying the shale bedrock is a sequence of sand and gravel outwash material. Near the surface, overlying the outwash sand and gravel, is a dense, silty-clay, glacial till. Perched zones of groundwater exist within the glacial till, but the perched zones do not represent a continuous system. An aquifer, as defined by 40 CFR 260.10 and OAC 3745-50-10, is a geologic formation; group of formations; or part of a formation, capable of yielding significant quantities of water to wells or springs. In accordance with this definition, the sand and gravel aquifer underlying the FMPC is considered the uppermost aquifer and specifically subject to the monitoring provisions of RCRA.

### 4.0 BRIEF OVERVIEW OF THE RCRA MONITORING PROGRAM

OAC 3745-65-93(D)(4) requires that the owner or operator of a RCRA regulated unit shall implement a Groundwater Quality Assessment Program to determine the concentration, rate, and extent of migration of the hazardous waste or hazardous waste constituents in the ground water. The FMPC Groundwater Quality Assessment Program monitors

groundwater in both the glacial till and the sand and gravel aquifer. Monitoring the groundwater in the glacial till provides an early detection system capable of providing valuable insight into potential future impacts on the underlying sand and gravel aquifer. Monitoring within the glacial till is performed by a 1000-series well monitoring system. A clay layer exists within the Sand and Gravel Aquifer that separates the aquifer into an upper and lower zone. Monitoring within the sand and gravel aquifer is performed at two depths above the clay layer (2000-series wells monitor the water table, and 3000-series wells monitor the water immediately above the clay layer) and one depth below the clay layer (4000-series wells monitor the water immediately below the clay layer). Figure 1.

The RCRA Groundwater Quality Assessment Program was established to monitor the Waste Storage Area as a single unit rather than try to monitor individual waste pits within the Storage Area. It was thought that it would be impossible to trace groundwater constituents back to a single pit due to their close proximity to one another. The OEPA has suggested several times that the FMPC needs to try to determine the specific contributions that Waste Pit #4 may be making to groundwater quality in the Waste Storage Area since Waste Pit #4 is the only RCRA regulated unit in the Waste Storage Area. To accomplish this task the FMPC needs to establish a monitoring network within the glacial till (drilling proposals #1, #2, #3, and #4, Figure 2) and to improve the monitoring system within the uppermost portion of the sand and gravel aquifer (drilling proposals #5 and #6, Figure 3) in the immediate vicinity of Waste Pit #4.

## 5.0 WELL INTEGRITY VIOLATION

In December of 1989 the US EPA contracted PRC Environmental Management Inc. to conduct a comprehensive groundwater monitoring evaluation (CME) inspection of the FMPC. The evaluation concluded that the FMPC was in violation of OAC 3745-65-91(C) because 4 wells (3 located in the Waste Storage Area, 1019, 1021, and 1022) and one located southeast of the waste storage area (1020) had been constructed in pits and cased in a manner that would not maintain the integrity of the wells. Well 1020 does not play a big role in monitoring the Waste Storage Area. Temporary abandonment of well 1020 will not adversely effect the program, but the other three locations are important as they are located around Waste Pit #4. These three wells will be replaced by the four new wells (drilling proposals #1, #2, #3, and #4, Figure 2). Since the glacial till is not a true aquifer, and flow has not been established, no upgradient or downgradient areas have been identified. Data collected from monitoring locations on each side of the pit will be compared with data collected from 1000-series wells located in areas away from the pit, to try to determine if Waste Pit #4 is effecting the till.

## 6.0 PROPOSED WELL LOCATIONS AND DEPTHS

Well Location 1, 2, 3, and 4: A 1000-series wells located immediately northwest, southwest, southeast and northeast of Waste Pit #4, respectively.

Well Location 5: A 2000-series well located immediately northwest of Waste Pit #4. This well location will provide a monitoring location immediately upgradient to Waste Pit #4. Data collected from this location can be compared statistically to data collected immediately downgradient of Waste Pit #4.

Well Location 6: A 2000-series well located immediately southeast of Waste Pit #4. This location will provide a third monitoring well immediately downgradient of Waste Pit #4.

Well Location 7: A 2000-series well located southwest of the Waste Storage Area. No sampling location is currently available in this area. This location will be used to determine if hazardous waste or hazardous waste constituents are entering the Sand Gravel Aquifer from the southwest corner of the Waste Storage Area.

Well Location 8: A 4000-series well located upgradient to the Waste Storage Area on the same well pad as MW3011 and MW2011. OAC 3745-65-91(A)(1) requires that monitoring systems have at least 1 upgradient monitoring location. Drilling this well will bring the FMPC into compliance with this regulation.

## 7.0 WELL INSTALLATION AND SUBSURFACE SOIL SAMPLING

Subsurface soil samples will be collected during drilling under the procedures described in the RI/FS Work Plan. Well construction and materials as well as field screening for radionuclides and organic contaminants, will also be as specified in the RI/FS Work Plan.

## 8.0 GROUNDWATER QUALITY SAMPLING

Groundwater quality samples will be collected from each of the 8 wells. These samples will be tested for total uranium and general groundwater quality parameters as specified in the RI/FS Work Plan and the RCRA Groundwater Quality Assessment Program Plan, Rev. 2.

The 8 wells will be sampled twice initially, to provide at least two data points from each well. In both these samplings, the analysis will be the same as that specified by the RI/FS Work Plan and the Groundwater Quality Assessment Program Plan, Revision 2. The wells will then be turned over to the FMPC Environmental Monitoring Program for long term sampling as outlined in the FMPC Groundwater Quality Assessment Program Plan, Revision 2.