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1998

EPA Superfund
Record of Decision:

FISCHER & PORTER CO.
EPA ID: PAD002345817
OU 02
WARMINSTER, PA
09/28/1998

EPA 541-R98-054
<IMG SRC 980540>

RECORD OF DECISION
FISCHER & PORTER COMPANY SITE
DECLARATION

SITE NAME AND LOCATION

Fischer & Porter Company Site
Warminster, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This decision document is being issued by the United States Environmental Protection Agency (EPA) and presents the selected remedial action for Operable Unit Two (OU2) of the Fischer & Porter Company Site (the Site). Operable Unit Two was initiated to investigate the suspected source of contamination on the Site and evaluate the effectiveness of the original remedy, selected in 1984. This current remedial action was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the administrative record for this site.

The Commonwealth of Pennsylvania has not yet indicated concurrence with the Selected Remedy set forth in this Record of Decision.

DESCRIPTION OF THE SELECTED REMEDY: NO FURTHER ACTION

This operable Unit, OU2, is the second and final operable unit for this Site. The remedy selected for this operable unit is No Further Action beyond those implemented under EPA's 1984 decision, and is the final planned action for the Site. The continuing elements of that earlier remedy, which were constructed in 1986 and continue to be implemented by the Fischer & Porter Company, include extraction and treatment of the groundwater from three on-site wells with the treated groundwater discharged to the unnamed tributary of the Pennypack Creek located north of the property. Extraction of groundwater from the on-site wells, in conjunction with the Warminster Heights Home Ownership Association water production well number WH1, will contain further migration of the groundwater contaminant plume originating at the Fischer & Porter Site.

The remedy also requires continued monthly monitoring of water from the three on-site wells, the effluent of the on-site treatment system, the discharge to the tributary and the untreated water from the Warminster Heights production wells WH1 and WH2. Monitoring results are reported to EPA quarterly.

STATUTORY DETERMINATIONS

I hereby determine that the earlier remedy implemented at this Site has eliminated the need to conduct additional remedial action. The remedy described in the 1984 decision remains protective of human health and the environment.

EPA has determined that its response at this Site is complete and no further action is necessary at this Site. Therefore, the Site now qualifies for inclusion on the Construction Completion List.

Because hazardous substances remain on-site above health-based levels, a review will be conducted by EPA within five years to ensure that the remedy continues to provide adequate protection of human health and the environment.

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RECORD OF DECISION
FISCHER & PORTER COMPANY SITE
DECISION SUMMARY

I. SITE NAME, LOCATION AND DESCRIPTION

The Fischer & Porter Company Superfund Site ("the Site") located in Warminster, Bucks County, Pennsylvania, includes a source area on the property occupied by the Fischer & Porter facility, as well as the plume of contaminated groundwater extending to the north (Figure 1). The plume of contaminated groundwater underlies the Site and impacts the nearby Warminster Heights Home Ownership Association (a homeowners' co-op with their own water wells and distribution system). The Site is surrounded by a mixture of residential, commercial and industrial property. The Fischer & Porter facility is located at 125 East County Line Road at the intersection of County Line Road and Jacksonville Road and is comprised of three main buildings including the building where manufacturing takes place. The main building was constructed in 1941, renovated in the late 1980's and is currently being renovated by a new owner of the property. Historically, above and below ground tanks were used to store oil, waste oil, trichloroethene (TCE - a common degreasing agent) and other chemicals. Most of the tanks are no longer used and have been either removed or closed and abandoned in-place by filling with concrete.

As described in the following section, a groundwater extraction system consisting of three wells is currently operating at the Site. The extracted groundwater is treated in an air stripper located on the side of the manufacturing building. The effluent from the air stripper flows through a closed concrete conduit under a road to an open concrete culvert at the site. That culvert runs open for several hundred feet before discharging to a storm sewer along Jacksonville Road and ultimately to an unnamed tributary of Pennypack Creek located north of the property.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The contamination of the local groundwater was first recorded in 1979. That year, high levels of two organic solvents, trichloroethene (TCE) and perchloroethene (PCE), were identified in the industrial water supply wells on the Fischer & Porter property and in municipal water supply wells operated by the Hatboro Borough Water Authority and the Warminster Heights Home Ownership Association. Subsequently, the affected wells were either shut down or fitted with treatment equipment. Originally, the plume was believed to impact the nearby Hatboro supply wells; however, recent investigations at the Site indicate that it does not.

This Site was placed on the National Priorities List (NPL) in September 1983. In 1984, EPA selected a remedy (see Attachment 1) and entered into a Consent Decree with the Fischer & Porter Company to extract the groundwater from three on-site wells, FP1, FP2, and FP7, to contain the plume. The extracted groundwater is then treated in an air stripper, constructed as part of the remedy, to remove the contaminants and then ultimately discharged to the unnamed tributary of Pennypack Creek located north of the property. The Consent Decree also required the Company to give $500,000 to the Hatboro Borough Water Authority and $45,000 to the Warminster Heights Home Ownership Association to be used in the construction of air strippers

on their water supply wells. The Company implemented all of the requirements of the Consent Decree and finished construction of the remedy in 1986. The original remedy has been operating since then and Fischer & Porter is continuing the monthly monitoring and reporting requirement for the on-site wells and the Warminster Heights wells.

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In 1992, as part of the long-term monitoring requirements for Superfund sites, EPA started a "Five-Year Review" of the remedy at this Site. The preliminary results of that review indicated that the plume of contamination had not been confined to the property boundaries as had been anticipated in the 1984 remedy decision. Furthermore, the range in the levels of contamination in the untreated water in the three extraction wells and the two Warminster Heights Home Ownership Association wells have remained relatively steady since the late 1980's. Relatively large fluctuations in month to month measurements are seen, probably caused by seasonal changes in the water table, precipitation events and municipal well pumping rates. As a result of these findings, it was determined that more investigations into the source area were necessary. Subsequently, the Five-Year Review was expanded into a Remedial Investigation and Feasibility Study (RI/FS) focussed on the source of contamination and the effectiveness of the 1984 remedy.

During the Remedial Investigation the United States Geological Survey and two of EPA's contractors, Dynamac and CH2M Hill, were tasked to perform the following components of the investigation:

- ò install and sample new monitoring wells around the perimeter of the Fischer & Porter property,
- ò install and sample new shallow monitoring wells surrounding the suspected source area located close to the building,
- ò conduct a soil gas survey to indicate areas of soil contamination,
- ò Collect and sample the oil that accumulates in well FP-7, a former production well now used for groundwater extraction in the current remedy,
- ò Collect and evaluate samples of nearby surface water and stream sediments, where runoff and discharge of contaminated groundwater might have an unacceptable impact,
- ò summarize the results of the sample analyses in the Remedial Investigation Report, and
- ò Conduct a Feasibility Study of appropriate cleanup alternatives.

The studies conducted for the Remedial Investigation and Feasibility Study were concluded in 1998 and are the basis for this Record of Decision.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The reports of the RI/FS as well as other information summarized in this Record of Decision (ROD) can be found in greater detail in the Administrative Record compiled for this Site. The Administrative Record is available for inspection at the public information repository located at:

Union Library Company of Hatboro
243 South York Road
Hatboro, Pennsylvania
(215) 672-1420

A copy of the Administrative Record is also available at the EPA Region III Office and can be reviewed by appointment arranged with the EPA representative named below:

Anna Butch
Administrative Record Coordinator
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3157

EPA encourages the public to review these collected documents in order to get a better understanding of the Site and the Superfund activities that have been conducted there.

On July 17, 1998, EPA issued its Preferred Alternative for this Site in the Proposed Plan which became part of the Administrative Record. EPA solicited input from the community in a formal public comment period for the Proposed Plan which was initiated July 17, 1998 and closed August 16, 1998. A fact sheet describing the Site, the comment period and the decision-making process was mailed to local residents, local officials, and to other interested parties. A public meeting was held on July 30, 1998 at the Warminster Heights Home Ownership Association auditorium located at 75 Downey Drive in Warminster, Pennsylvania. At this meeting, EPA presented a brief history of the Site and the results of the RI/FS, and discussed EPA's Proposed Plan and Preferred Alternative for the Site. A transcript of this meeting has been placed in the Administrative Record. Notice of the Public Meeting and comment period was published in the July 17, 1998 Philadelphia Inquirer, for Bucks and Montgomery Counties, North Neighbors section.

EPA accepted written comments throughout the comment period and oral comments at the public meeting. All of the significant public comments that EPA received during the comment period are summarized and addressed in the Responsiveness Summary which is included as Attachment 2 of this ROD.

IV. SCOPE AND ROLE OF RESPONSE ACTION

As discussed above, in 1986, a Site remedy consisting of pumping and treating three on-site wells was constructed. Also, funding was given to the Hatboro Borough Water Authority and the Warminster Heights Home Ownership Association to be used for treatment for their operating water supply wells. The 1992 review of that remedy indicated that additional investigation was necessary. The subsequent Remedial Investigation of the source of the contamination and the effectiveness of the operating remedy, and the Feasibility Study to evaluate possible alternatives for cleaning up the Site, were completed in 1997.

This Record of Decision is intended to address the Site, in its entirety, and the related threats to human health and the environment, as a final remedy.

V. SITE CHARACTERISTICS

The RI report summarizes the data collected during the different phases of the investigation. The information presented here is derived from investigation results that are presented in much greater detail in the RI Report, which can be reviewed in its entirety in the Administrative Record for this Site.

Groundwater beneath the Site occurs within the bedrock groundwater system, locally known as the Middle Arkose Member of the Stockton Formation. This system within the source area is overlain by approximately 2.5 to 16 feet of overburden, including urban fill. The urban fill ranges in thickness from 2 to 6 feet and includes clay, silt, sand, gravel, and cobbles. The weathered part of the shallow bedrock groundwater system ranges from a half-foot to 12 feet thickness within the source area.

The Stockton Formation is a complex and heterogeneous leaky bedrock multi-aquifer system that includes sandstones, siltstones and shales. Lithologic and hydraulic properties change over short horizontal and vertical distances. The bedrock groundwater system at the Fischer and Porter Site has been identified by the USGS as being composed of an unconfined shallow bedrock groundwater system and intermediate and deep bedrock groundwater systems which are semiconfined or confined.

Transmission and storage of groundwater within the bedrock groundwater system is greatly controlled by fractures, joints, and bedding planes. Because of pumping interferences caused by cyclic pumping of the Warminster Heights municipal wells, true static conditions within the bedrock groundwater system do not currently exist. Apparent groundwater flow in the shallow and intermediate bedrock groundwater system is towards the north.

Flow in the deep groundwater system has been demonstrated to be primarily towards the northeast. However, the USGS has found more than one occasion where the apparent flow of the deep system was west or west-southwest. These differences suggest that the deep groundwater system may be affected by long-term and possibly changing municipal pumping rates and cycles.

The primary contaminants of concern at this Site are volatile organic compounds, specifically, trichloroethene (TCE) and tetrachloroethene (also called "perchloroethene" or PCE) and their common breakdown products, including 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA) and vinyl chloride. The two parent chemicals have widespread usage in various industries; TCE is used as a degreaser and cleaning agent for metal parts in metal working operations, and PCE has also been used as a degreaser and is a primary ingredient in dry cleaning fluid. These contaminants have been found historically on the Fischer & Porter property and, at lower levels, in the neighboring Warminster Heights water production wells.

Portions of the Site near the plant buildings were identified as potential past sources of volatile organics. These areas are the locations where above- and below-ground storage tanks formerly resided, as well as the areas where floor drains, septic tanks and degreasers were formerly operated. Collectively, these potential past sources are referred to as the "combined source area" or simply "source area".

Within the source area beneath the Fischer and Porter Site, a downward hydraulic head gradient exists; apparently induced by stratigraphy and the combined pumping of the nearby Warminster Heights municipal wells, WH1 and WH2, and the Fischer and Porter extraction system, which includes wells FP1, FP2, and FP7. Wells WH1, WH2, FP1, and FP7 are open to the shallow, intermediate, and deep groundwater systems. Well FP2 is open to only the shallow and intermediate groundwater systems.

Approximately 20 gallons of dark, reddish-brown, viscous oil with a solvent odor, was found floating on top of the water in Fischer & Porter's former production well, FP7. This was an accumulation of approximately 14.4 feet of oil floating on top of the water in that well. Oil was not found in nearby well PH3 or in any of the other new monitoring wells located in the source area. After the oil was bailed out of the well to a thickness of approximately 0.9 foot, negligible, if any, oil recovery was measured over the next 3 weeks. Approximately 6 months later, 2.2 feet of oil was measured in the well. The slow rate of oil recovery observed is consistent with the high viscosity of the oil. This oil, floating on top of the water table, is believed to be the major source of the contaminants that migrate to the groundwater. Samples of the oil were analyzed and found to contain a combination of volatile organic contaminants in excess of 600,000 parts per billion. A liquid contaminant source that is lighter than water and floats in a clearly separate layer is called light non-aqueous phase liquid or LNAPL. The oil found in this well is, therefore, an LNAPL.

There is also the possibility of dense liquid organic contaminants, which are heavier than water, collected in pockets of the bedrock below the water table also contributing to contamination of the groundwater. This type of contamination, called dense non-aqueous phase liquid or DNAPL, is difficult to locate and identify, and although suspected, has not been confirmed at this Site.

A groundwater extraction system consisting of three former production wells, FP1, FP2 and FP7, is operated at the Site as part of the 1984 Consent Decree between the EPA and Fischer and Porter. The extracted groundwater is treated in an air stripper located on the side of the manufacturing building. The groundwater and oil pumped from extraction well FP7 are first pumped into an oil-water separator before being pumped into the on-site air stripper. The effluent from the air stripper flows through a closed concrete conduit under the parking lot to an open concrete culvert on the property. The culvert runs open for several hundred feet before discharging to a storm sewer along Jacksonville Road and ultimately to an unnamed tributary of Pennypack Creek located north of the property.

A plume of organic contamination exists in all three groundwater systems. Probably owing to the downward gradients, the shallow groundwater system shows a rapid decrease in measured organic contamination from the high levels in the source area (44,000 parts per billion) to virtually no detectable contamination at the perimeter of the property (see figure 2). The shallow groundwater in the source area displayed the highest groundwater contaminant levels at this Site.

The intermediate groundwater system, measured at various points across the Site ranging in depth from approximately 75 to 200 feet of depth, displays contamination ranging from approximately 30,000 parts per billion measured in the intermediate section of FP7, in the source area, to approximately 700 parts per billion in the downgradient intermediate monitoring well BK2522M located near the northern boundary of the property. Well FP7 was temporarily segregated into intermediate and deep sections during the Remedial Investigation to evaluate the variation between these two zones in the source area. This is the same well that produced the floating oil.

The deep groundwater system in the source area appears less contaminated than both the shallow and intermediate groundwater systems with total volatile organic contamination in the deep portion of FP7 under 13,000 parts per billion. The deep groundwater system also tends to dilute as it moves away from the source area, with the total volatile organic contamination declining to 245 parts per billion at the perimeter of the property.

Several metals were present in the groundwater. The levels of barium exceeded the Maximum Contaminant Levels ("MCLs", the legal limits required by the federal Safe Drinking Water Act) in shallow wells PH1 and FP5 in the source area. This metal is naturally occurring in the local bedrock formations and may dissolve more readily in the source area due to the effects of the concentrated organic contaminants present in the water. This metal does not appear at unacceptable levels away from the immediate source area.

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The RI data indicates that during pumping of the on-site treatment system the normal northeast flow of the shallow groundwater system within the source area is deflected beneath the Fischer and Porter manufacturing building. This suggests some capture of the shallow groundwater when wells FP1 and FP2 are pumped. The USGS has also observed effects in the intermediate and deep wells located around the property boundary when the source area wells are pumping. Well FP7 was not pumping at the time water levels were recorded during the RI; however, independent information suggests a greater degree of capture in all three groundwater

systems when well FP7 is in operation.

The Warminster Heights water production wells WH1 and WH2 have historically been associated with this Site because of the levels and types of contamination found in those wells, specifically TCE and PCE. Over the past ten years contamination in these wells has fluctuated, probably because of changes in the water table due to seasonal changes and variations in precipitation, but appears to be in a stable range pattern that rarely exceeds 100 parts per billion of either contaminant.

Evaluation of the groundwater flow direction and the levels of contamination of the monitoring wells at the Site indicates that WH1 is at the end of the contamination plume and functions as an extraction and treatment well. However, WH2 has been eliminated from the Site boundaries because of the following three observations:

- in relation to the groundwater flow, WH2 is upgradient of the Site,
- there are unaffected (clean) wells between the source area and WH2, and
- it has been determined that the contaminant profile found in WH2 does not match that of the Site.

On-site soils were sampled and evaluated in the suspected source areas surrounding the plant buildings. Volatile organic compounds were detected in the subsurface soils, but not at significant levels. This finding could indicate that small amounts of the compounds are transferring to the soil by evaporation of contaminants from the underlying groundwater or, in the event that there had been any historical spills in those areas, most of the materials have already migrated away.

Polynuclear aromatic hydrocarbons (PAHs), a group of large organic compounds typically associated with petroleum-based chemicals, were also detected in source area soils. The levels detected there indicate that their presence may be due to the use and storage of oil products related to Site processes, the nature of the fill materials used during landscaping activities, the industrial nature of the area where the Site is located, and the asphalt pavement that covers most of the source area at the Site. The highest levels of PAH concentration, as well as the greatest number of PAH compounds, were detected in the soil from a single subsurface boring. This indicates an isolated case and is not considered representative of the Site in general. PAHs were not detected in groundwater at levels which would present a human health concern.

Several metals were found in on-site soil. Metals occur naturally in soil and bedrock formations and the concentrations at which they were found in soil at the Fischer and Porter Site were all within the range of levels found naturally in soil in the eastern United States. The metals manganese and barium were not distributed evenly across the Site and were detected at higher levels near one of the manufacturing buildings. Most of the high metal detections were from subsurface soil samples collected from the weathered bedrock horizon and not from the surface or shallow subsurface soil samples. The results suggest that their presence may be associated with the natural bedrock at the Site.

Contaminants were detected at very low levels in surface water and sediment samples in the stormwater channel and downstream of the Site, indicating no significant impacts from the Site. The presence of volatile organic contaminants (VOCs) at the sampling locations downstream of the Site were similar to the levels detected upstream of the Site and are attributed to the urban nature of the area surrounding the Site.

Ambient air concentrations of VOCs as a result of emissions from the on-site air stripper are minimal and do not present a concern to facility workers or nearby residents. Independent of

the Remedial Investigation, the air stripper that treats the water from the Warminster Heights production wells was evaluated for air emissions and was also found to not pose a threat to workers or nearby residents.

Using the available data to evaluate the effectiveness of the current groundwater extraction remedy in containing the contaminant plume, it appears that the extraction system could be more efficient in the removal of VOCs if pumping were limited to the shallow and intermediate groundwater systems, rather than all three systems as currently operated. However, containment of VOCs may be reduced if less groundwater withdrawal occurs.

The downgradient extent of contaminated ground water appears to terminate at the municipal well WH1. This well functions as the fourth extraction well and, in conjunction with extraction wells FP1, FP2, and FP7, contains the plume of contamination.

VI. SUMMARY OF SITE RISKS

Human Health Risk Assessment

Baseline risk assessments are conducted as part of Superfund investigations to determine the health risk presented by the site conditions. Results of the Baseline Risk Assessment for this Site are presented in Section 6 of the RI report. Cancer and non-cancer risks are calculated using the toxicity of contaminants and anticipated exposure assumptions: degree of exposure, duration, and exposure route (inhalation, direct skin contact, ingestion). All of these variables are combined to generate estimated risk levels. The cancer and non-cancer risk levels are expressed in the format of the following examples:

Cancer Risk Format - 1 E-06, or 1 x 10 -6, both of these expressions signify one additional chance in 1,000,000 (one in one million) for a susceptible individual to contract cancer above the normal cancer incidence in the general population. EPA will typically take action if the cancer risk exceeds 1 x 10 -4. Between 1 x 10 -4 and 1 x 10 -6,EPA may take action in consideration of other site-specific characteristics. EPA will typically not consider taking action when risk is at or below 1 x 10 -6.

Non-Cancer Risk Format - Chronic Hazard Index (HI) = 1; The Chronic Hazard Index is the ratio of the exposure to a contaminant in relation to a recognized safe exposure. EPA considers that an HI at or below 1 represents an acceptable human health risk.

Exposure to Site Soil

There are no current unacceptable risks from exposure to Site soil. When estimating non-cancer risks for the potential future use of the property as residential, the HI appears to exceed 1 because of the addition of the risk numbers for arsenic, aluminum and manganese; however, these chemicals do not act similarly and are not truly additive. These initial risk estimates, presented in the risk assessment portion of the RI Report, were calculated using very conservative assumptions, including the use of the highest concentrations found in subsurface soil samples, which are not representative of the entire Site. Development of the property as a residence with exposure to only these soils is not considered a likely possibility.

Initially, in the RI Report, the estimated cancer risk in the potential future residential use scenario appeared to exceed 1 x 10 -4 based on the concentration of beryllium in the subsurface soil. However, since the risk assessment was written, additional studies have caused EPA to withdraw beryllium from the list of probable human carcinogens by the ingestion and dermal absorption routes. Reasonable risk estimates for the soil, calculated for current use or even future residential use of the Site, do not exceed EPA's acceptable criteria.

Exposure to Groundwater

Groundwater risks calculated for future residential use of the source area exceed cancer risks of 1 x 10 -4 and HIs of 1. It is important to note, however, that there are no drinking water wells in the source area and no one is currently exposed to untreated water. The driving chemicals are 1,2-dichloropropane, benzene, chloroform, methylene chloride, arsenic, barium, manganese, tetrachloroethene, trichloroethene, 1,2-dichloroethene, 1,1-dichloroethene, vinyl chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane, and 1,1-dichloroethane. Groundwater risks for the perimeter of the property, although less, still exceed EPA's risk criteria. The nearest downgradient well used for drinking water is the Warminster Heights production well WH1. This well has consistently displayed low level TCE contamination, typically between 20 and 100 parts per billion (above the MCL of 5 parts per billion), at the downgradient edge of the plume. Treatment on this well removes the contamination prior to chlorination and distribution.

Currently, there are no untreated drinking water wells in the area of the plume. In accordance with local Ordinance Number 32 of Warminster Township, any new well proposed for Warminster must obtain a permit from the Warminster Municipal Authority. The Authority will not issue a permit if they have a water main in the same vicinity as the property. A letter to EPA from the General Manager of the Authority stated that permits will not be issued in the area of this Superfund Site since they already have a main in the area.

As the on-site treatment system and WH1 contain the contaminant plume and no other wells will be permitted in the area, there is no potential for exposure to the water, and consequently, no actual current or potential risks.

Exposure to Air

The Risk Assessment demonstrated no unacceptable health risks from the ambient air or emissions from the air strippers on the Site.

Exposure to Surface Water/Sediments

Trace levels of VOCs were detected in both upstream and downstream surface water and sediment samples; however, recreational use of surface water and sediment is not expected to result in HIs above 1 or cancer risks above 1 x 10 -4.

Ecological Impacts

The Risk Assessment revealed that the only significant exposure route to environmental receptors is in the potential for contaminated groundwater discharging to the nearby downstream tributary of Pennypack Creek.

Contaminants detected at very low levels in surface water and sediment samples in the stormwater channel and downstream of the Site indicated no significant impacts from the Site. The levels of VOCs at the sampling locations downstream of the Site were similar to the levels detected upstream of the Site and are attributed to the urbanized nature of the area surrounding the Site.

VII. DESCRIPTION OF THE SELECTED REMEDY - NO FURTHER ACTION

The alternative EPA has selected for this Site is "No Further Action". Under this alternative, EPA will take no action beyond continued operation and maintenance of the remedy that was selected in 1984. Continuing elements of that earlier remedy, which were constructed in

1986 and continue to be implemented by the Fischer & Porter Company, include extraction and treatment of the groundwater from three on-site wells with the treated groundwater discharged to the unnamed tributary of the Pennypack Creek located north of the property. The remedy also requires continued monthly monitoring of groundwater from the three on-site wells, the effluent from the on-site treatment system, the discharge to the tributary and the untreated water from the Warminster Heights production wells WH1 and WH2. Monitoring results are reported to EPA quarterly.

Operation of production well WH1, which also serves as an extraction well, is an integral part of the cleanup and containment of groundwater contamination at this Site. However, the continued operation of this well is not specified or required in the current remedy or any binding agreement.

Because hazardous substances remain on-site, reviews of the remedy will be conducted at least every five years to confirm that the remedy remains protective of human health and the environment. These Five-Year Reviews will utilize the information gathered in the monitoring program, and any necessary additional testing which would, at a minimum, include air monitoring around the Fischer & Porter air stripper and the Warminster Heights air stripper. Five-Year Reviews can also trigger further response actions if unacceptable risks are discovered or Site conditions change. Any significant change in the continued operation of WH1 would constitute a change in Site conditions and would trigger the immediate performance of a Five-Year Review, regardless of where the Site is in the standard five year time frame.

Basis for the No Further Action Alternative

A determination that "No Action" or "No Further Action" is required, takes into account reasonable maximum exposure and the attendant risks. At the Fischer & Porter Superfund Site, the Remedial Investigation and Risk Assessment have demonstrated that, although there is identified contamination in Site soils and groundwater, there are no unacceptable risks to human health or the environment.

As discussed in the Summary of Site Risks section of this Record of Decision, the contaminated groundwater is contained by the operating extraction wells between the source area and the Warminster Heights Production well WH1, and no other wells will be permitted in the area, effectively eliminating exposure to contaminated groundwater.

The Risk Assessment also showed that there were no unacceptable current or potential human health risks from the reasonable maximum exposures to Site soils, ambient air, air stripper emissions, sediments or surface waters. There have been no demonstrated or expected adverse impacts to environmental receptors.

A discussion of EPA's decision not to include the identification and evaluation of, and potential compliance wiih ARARs is included in the Responsiveness Summary which is included as Attachment 2 of this ROD.

VIII. DOCUMENTATION OF SIGNIFICANT CHANGES FROM PROPOSED PLAN

As discussed in Section III, Highlights of Community Participation, on July 17, 1998, EPA issued its Proposed Plan for this Site. The Proposed Plan identified No Further Action as EPA's Preferred Alternative. EPA solicited input from the community in a formal public comment period for the Proposed Plan which was initiated July 17, 1998 and closed August 16, 1998. After review of all written and oral comments, EPA determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary. All of the major and significant public comments to the proposed remedy that EPA received during the

comment period are summarized and addressed in the Responsiveness Summary which is included as Attachment 2 of this ROD. As necessary, some specific responses and additional information were sent to individual commenters.

Attachment 1

Superfund Record of Decision:
Fischer & Porter Company Site
May 4, 1984

ENFORCEMENT DECISION MEMORANDUM

REMEDIAL ALTERNATIVE SELECTION

Site: Fischer and Porter, Warminster, Pennsylvania

Analysis Reviewed

I have reviewed the following documents describing the need for remedial alternatives at the Fischer and Porter site which is under the ownership of Fischer and Porter Company and located in Warminister, Pennsylvania.

1. Summary of Remedial Alternatives Selection.

2. Memorandum dated 5/3/84 from Thomas Eichler to Lee Thomas on Recommended Remedial Action at the Fischer and Porter site.

3. Memorandum dated 4/23/84 from Thomas Eichler to Courtney Price on concurrence on Proposed Consent Decree.

In addition, I have discussed the issues involved in this case with my staff and considered their recommendations.

Description of Selected Alternative

1. Ground-water Recovery and Treatment On-site

   - contaminated ground water shall be recovered through pumping wells installed on the site, treated to contaminant levels specified in the consent decree, and discharged pursuant to state surface water discharge requirements.

2. Provision of treatment for off-site users of ground water

   - treatment shall be provided to municipal drinking water supplies for affected ground water supply wells such that contaminants are reduced to currently acceptable drinking water standards.

3. Effect of the selected on-site and off-site remedies on ground-water contamination

   - the combination of the on-site pumping and treatment and the pumping and treatment of the municipal wells off-site will effectively contain the further migration of the ground-water contaminant plume originating at the Fischer & Porter site, and will serve to gradually reduce the concentrations of contaminants within the plume to acceptable levels.

Declarations

Consistent with the Comprehensive Environmental Response,National Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan, and after consultation with the State of Pennsylvania, I have detemined that the above remedy for the Fischer and Porter site effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare and the environment.

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Summary of Remedial Alternative Selection

Fischer & Porter

Site Location and Description

The Fischer and Porter site refers to the ground water contamination problem associated with the Fischer and Porter Company, located at the intersection of County Line Road and Jacksonville Road, Warminster Township, Bucks County, PA. (See location map)

It lies in the the Piedmont physiographic province at the boundary of the Lowland section and the Piedmont Uplands section. The property drains to an unnamed tributary of Pennypack Creek located 1,000 feet northwest of the plant property.

The area is underlain by the Stockton Formation, the oldest unit in the Triassic-aged Newark Group. The Stockton Formation dips to the northwest at approximately 12 1/4 degrees and is divided into three members; the middle arkose member which underlies the property constitutes the major aquifer in the area. (SME Martin, 1980)

The plume of contaminated ground water under study is contained within this middle arkose member of the Stockton Formation.

Fischer & Porter Company had depended on this ground water for its water supply but has since switched to an alternate drinking water source. Both Warminster Heights and Hatboro, communities situated adjacent to Fischer & Porter, use wells for their water supply.

Site History

Fischer & Porter Company, Inc., manufactures water flow and industrial process control equipment and has owned and operated its Bucks County facility since 1947. The company used

trichloroethylene. (TCE) as a degreaser at its processing facility and stored TCE in a 2000 gallon underground tank which was periodically refilled.

In 1979, TCE and perchloroethylene (PCE) were identified in industrial water supply wells on the Fischer & Porter property and in municipal water supply wells operated by the Hatboro Water Authority for the Town of Hatboro, as well as several of the municipal wells serving Warminster Heights. Several of the Hatboro Authority wells were closed because of high TCE levels. Alternative water supplies were sought to augment the town's remaining water supplies. Warminster Heights, with Fischer & Porter's assistance installed additional treatment technology to reduce the contaminants in their water supply wells to an acceptable level.

In 1979 and 1980, EPA responded to requests for assistance by the Pennsylvania Department of Environmental Resources by sampling wells and surveying possible contamination sources. The Fischer & Porter site was identified as having the highest ground water concentrations of TCE and PCE (87,000 ppb and 26,000 ppb respectively). Fischer & Porter conducted a hydrogeologic investigation of their site and the surrounding area further identifying their facility as a major source of contaminants to the ground water aquifer.

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Current Site Status

Investigations conducted by EPA and the Fischer & Porter Company have defined the physical nature of the aquifer which has become contaminated and from which Hatboro and Warminster Heights derive their water supplies. The extent of the contaminant plume and the general nature of its migration have also been described. The middle arkose member of the Stockton Formation is and has been heavily used for ground water for both domestic and industrial purposes. Prior to the discovery of TCE/PCE contamination in the aquifer, the communities of Hatboro and Warminster Heights were fully dependent on ground water from this source. Intensive extraction of water from this rock unit, principally by municipal wells, has drastically modified the configuration of the prism of water in the rock unit, and has created steep hydraulic gradients superimposed on the water-table surface that under "normal" circumstances would prevail under these communities. Municipal wells have been in operation since ca 1900; as the local population grew and the demand for water increased, both the number and the yields of municipal wells ahve increased. This pattern has imposed significant historical variation on the configuration of the water-table surface under these communities, a variation that has continued during the period of use of contaminants at the Fischer & Porter plant.

The distribution of contaminants in ground water in the middle arkose member of the Stockton Formation under and adjacent to the Fischer & Porter plant is consistent with movement of contaminants contained in the ground water. This contaminant movement is described as follows:

1. radially outward from the Fischer & Porter plant,

2. down the dip of inclined beds in the aquifer, to a limited extent,

3. along the strike of individual beds in the aquifer,

4. down regional and local slopes on the surface of the water table, and

5. into the regions of pumping influence surrounding the

Hatboro and Warminster Heights Wells of concern.
(Giegengack, 1982)

Enforcement

Following investigations initiated by EPA and the State of Pennsylvania in 1979, a complaint was drafted and a lawsuit filed against Fischer and Porter Company, Inc. in U.S. District Court for the Eastern District of Pennsylvania on 10/8/80 pursuant to Section 7003 of RCRA and Section 1431 of the Safe Drinking Water Act. The complaint alleged releases of hazardous wastes into the environment presenting an imminent and substantial endangerment to public health, welfare and the environment, and the complaint alleged that these hazardous wastes were affecting a public drinking water supply.

Negotiations were initiated with representatives of Fischer & Porter Company in 1981, seeking mitigation of the above referenced endangerment and relief for the affected water supplies. Negotiations have continued and resulted in a judicial consent decree providing for this remedy described in this Enforcement Decision Memorandum and to be undertaken by the responsible party.

Consistency with the National Contingency Plan

When the U.S. Department of Justice filed the complaint against Fischer & Porter Company in 1980, specific remedies to abate the endangerment presented by the site were specifically sought in the complaint. These remedies included aquifer restoration at the site through ground water pumping and treatment, protection of public health by providing treatment at the contaminated public water supply wells, and improvements at the facility to prevent further releases of contaminants into the environment from the facility. These enumerated remedies formed the basis for negotiations with Fischer & Porter over the following four years and have resulted in the remedial action plan contained in the final consent decree.

On-site Remedial Measures

The complaint sought and the consent decree provides for facility improvements which will prevent future releases (spillage, leakage) of TCE and PCE from the facility and into the subsurface environment. These actions will essentially remove the source term of the contaminated plume which now exists in the ground water beneath the site.

A process water supply well has been continually pumping at the site since facility operations began and since the ground water contaminants were initially discovered. This pumping rate of approximately 25 gallons per minute has demonstrated some limited effectiveness in controlling the migration of the contaminant plume by creating a limited cone of influence and removing contaminants from the aquifer beneath the site.

The complaint sought and the consent decree provides for enhanced recovery and treatment of contaminated ground water under the site. Three wells will be pumped at a minimum rate of 75 gallons per minute to extend the existing cone of influence to perimeter monitoring wells and contain the further migration of contaminants from the site. Contaminated ground water will be pumped continuously and treated by packed column aeration to reduce effluent levels of TCE and PCE to 4.5 and 3.5 ppb respectively. The treated effluent will then be discharged to a surface water course according to state stream discharge requirements. This recovery process will continue until such time that the above treatment levels are attained in the ground water beneath the site or contaminant levels stabilize over a twenty-six month monituring period.

This on-site remedy is technologically feasible and reliable and is the only measure which

can effectively control contaminant migration and remove contaminants from beneath the facility. This remedy is consistent with on-site remedies developed pursuant to 300.68(e-j) of the National Contingency Plan.

Off-site Remedial Measures

The complaint specifically sought protection of public health by providing adequate treatment of contaminated ground water supply wells operated by Hatboro and Warminster Heights. These remedial measures were appropriate because the contaminant plume extended from the Fischer & Porter site to the municipal supply wells.

The municipalities considered alternate water supplies and alternate treatment technologies to remedy their water supply problem. Hatboro rejected alternate water supplies because of cost and because the available alternate water supply also contained unacceptable levels of contaminants. Consequently, treatment of the contaminated Hatboro wells was sought as the cost-effective remedial alternative. The consent decree requires Fischer & Porter Company to provide funding ($500,000) to Hatboro to be used for installation and operation of packed column aeration towers which will reduce TCE and PCE levels in the affected water supplies to 4.5 and 3.5 ppb respectively (currently the 10 -6 risk levels developed for these chemicals by the National Academy of Sciences).

Warminister Heights sought similar treatment of their contaminated wells because no alternate water supply was available. The consent decree requires Fischer & Porter to provide funding ($46,200) to Warminster Heights for installation of a water treatment system capable of reducing contaminated levels to the treatment levels stated above.

Both water treatment systems will effectively abate the endangerment to public health by reducing contaminant levels in affected water supply wells to safe drinking water concentrations. The off-site remedy achieved by the consent decree has been developed consistent with the objectives of 300.68 (e-j) of the National Contingency Plan.

Community Relations

Since the problem of contaminated ground water and drinking water supplies was first identified at the Fischer & Porter site 1979 - the municipalities of Hatboro and Warminster Heights have

been involved in discussions with EPA and the responsible party concerning resolution of the problem. The recommended alternatives have been discussed with both communities on repeated occasions in conjunction with settlement negotiations, and the communities have indicated that they approve of the remedies sought for their water supplies. Further, representatives of the municipalities have indicated that they will sign appropriate agreements documenting their commitment to implement the recommended off-Site remedial action.

Operation and Maintenance

Operation and maintenance requirements associated with the recommended alternatives include a program of water level and water quality monitoring to verify performance of the on-site ground water recovery and treatment system. These O & M costs will be covered entirely by the responsible party. O & M costs associated with the treatment systems installed on the municipal wells include normal operation and maintenance of the systems (utility costs for pumps and blowers) and any water quality monitoring which might be required to ensure performance of the treatment systems. The municipalities will assume responsibility for these Costs supplemented by funds provided to them from the responsible party.

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Attachment 2

Responsiveness Summary
for the Fischer & Porter Company Site
Warminster, Bucks County, Pennsylvania

Public Comment Period
July 17, 1998 through August 17, 1998

Fischer & Porter Company Site

Responsiveness Summary

TABLE OF CONTENTS

Responsiveness Summary
Fischer & Porter Company Site
Warminster, Bucks County, Pennsylvania

The Responsiveness Summary is divided into the following sections:

Overview: This section discusses evaluation criteria that the U.S. Environmental Protection Agency (EPA) uses for determining the preferred remedial action for a Superfund site.

Background: This section provides a brief history of community relations activities conducted during remedial planning at the Fischer & Porter Superfund Site.

Summary: This section provides a summary of commentors' major issues and concerns as well as EPA's responses to those issues and concerns. "Commentors" may include local homeowners, businesses, the municipality and potentially responsible parties (PRPs).

Overview

On July 17, 1998, EPA published the Proposed Remedial Action Plan (Proposed Plan) for the Fischer & Porter Superfund Site (the Site), located in Warminster, Bucks County, Pennsylvania. The Proposed Plan outlines EPA's preferred remedial action for the Site, giving consideration to the following nine evaluation criteria:

Threshold Criteria

- Overall protection of human health and the environment
- Compliance with federal, state and local environmental and health laws

Balancing Criteria

- Long-term effectiveness and permanence
- Reduction of mobility, toxicity or volume of contaminants
- Short-term effectiveness
- Ability to implement

ò Cost

Modifying Criteria

ò State acceptance

ò Community acceptance

After considering several alternatives, EPA determined that current treatment of the Site's contaminated water is sufficient and that no additional groundwater treatment facilities are necessary. Because no further remedial action is necessary at the Site to protect human health and the environment, EPA recommended "No Further Action" in the Site's Proposed Plan.

Background

Site History

The Fischer & Porter Company Superfund Site ("the Site") located in Warminster, Bucks County, Pennsylvania, includes a source area on the property occupied by the Fischer & Porter facility, as well as the plume of contaminated groundwater extending to the north. The Site is located at County Line and Jacksonville Roads in Warminster, Bucks County, Pennsylvania.

In 1979, volatile organic compounds (VOCs) were detected in groundwater beneath the Fischer and Porter and suffounding properties. The contaminants were identified in some public water supply wells of the Hatboro Borough and Warminster Heights Water Authorities, resulting in the shut down of some of those wells.

On September 1, 1983, the Fischer and Porter Company Site was officially added to the National Priorities List (NPL), EPA's list of the nation's most serious uncontrolled or abandoned hazardous waste sites. When the Site was added to the NPL, it became eligible for cleanup funds under the federal Superfund Program.

One year later, EPA issued a remedy decision for the Site and signed a consent decree with Fischer and Porter. In accordance with the 1984 decree, Fischer and Porter started pumping three onsite wells and installed an air stripper to treat the extracted water. Treated water is then discharged to an unnamed tributary of Pennypack Creek located north of the Site.

In 1992, as part of long-term monitoring requirements for Superfand sites, EPA began a review of the 1984 remedy for the Fischer and Porter Superfund Site. EPA's investigation revealed that despite the 1984 remedy, some contamination had continued to migrate off the property. Consequently, the review was expanded into an investigation of contamination sources and the overall effectiveness of the 1984 remedy.

From the recently concluded investigation, EPA determined that although some contamination still leaves the Fischer and Porter property, it is captured and treated by the Warminster Heights Home Ownership Association groundwater production well, WH1. As a result, there are currently no unacceptable risks to human health or the environment at the Site. For this reason, EPA recommended in the Proposed Plan that no further action be taken at this time.

Community Relations History

EPA's community relations program for the recent investigation activities was initiated in June

1998 with the publication of the Proposed Plan Fact Sheet. The fact sheet provided a brief history of the Fischer & Porter Site and announced the release of EPA's Proposed Plan for the Site. As the fact sheet indicated, the Proposed Plan was available for public review at the Information Repository in the Union Library Company of Hatboro. The fact sheet also announced the Site's public comment period and public meeting.

To obtain public input on the Proposed Plan, EPA held a public comment period from July 17, 1998 through August 16, 1998. On July 30, 1998, EPA held a public meeting at the Warminster Heights Home Ownership association auditorium located at 75 Downey Drive in Warminster, Pennsylvania. At the meeting, EPA provided residents with information about the Site and proposed cleanup alternatives. The public meeting also provided an opportunity for residents to ask questions or comment on the Site and EPA's proposed cleanup alternatives. EPA announced the public meeting, the opening of the public comment period and the availability of the Proposed Plan in a public notice placed in the July 17, 1998 issue of the Philadelphia Inquirer, for Bucks and Montgomery Counties, North Neighbors section.

Approximately thirty (30) people attended the public meeting; most of the comments addressed in this Responsiveness Summary were taken from the oral comments recorded at the meeting.

Summary of Commentors' Major Issues and Concerns

This section provides a summary of commentors' major issues and concerns as well as EPA's responses to those issues and concerns. Commentors may include local homeowners, businesses, the municipality and PRPs. Major issues and concerns about the Proposed Plan for the Fischer & Porter Site (received during the public meeting on July 30, 1998) are grouped into the following categories:

A. Safety of Local Tap Water

B. Consent Decree

C. Future Operations of Site Wells

D. Source of Contamination

E. Local Health Assessment

F. Potentially Responsible Parties

G. Local Health Assessment

H. Compliance with Appropriate Requirements and Regulations

A. SAFETY OF LOCAL TAP WATER

1. How safe is the tap water in Warminster?

EPA Response: Water that comes out of local residents' taps meets the standards of the Safe Drinking Water Act which were developed to ensure the safety of the public water supply. Although there is typically between 20-80 ppb of trichloroethene (TCE) in the groundwater source for the Warminster Heights Water Authority, that water is treated to safe levels as determined by EPA and in accordance with the Safe Drinking Water Act before it is distributed

to the users. After treatment, the water is at or below 5 parts per billion (ppb) of TCE. As a public water authority, Warminster Heights cannot provide water with levels of TCE higher than the Safe Drinking Water Act allows. According to the Safe Drinking Water Act, public water authorities can provide water with no more than 5 ppb of TCE. The other contaminants that have been found at the Site, at lower levels than TCE, are similarly regulated.

2. Is there a filter on the market that would help remove chlorine in our tap water?

EPA Response: There are many different kinds of filters that remove different substances from water. However, EPA does not officially endorse any of these products and cannot recommend one or the other. The chlorination that was discussed at the public meeting does not come from the Site, but rather, is part of the normal treatment involved with providing public water.

B. CONSENT DECREE

1. Why did Fischer & Porter pay Warminster Heights only $45,000 when Hatboro got $500,000?

EPA Response: Fischer & Porter entered into a consent decree with EPA in 1984 to pump the three onsite wells and to operate an air stripper to treat the extracted water. Fischer & Porter also agreed to pay $500,000 and $45,000 to the Hatboro Borough and Warminster Heights Water Authorities, respectively, to support treatment of their water supplies. At the time the settlements were negotiated, these numbers were developed and believed to be fair because of the number of wells that showed contamination. It was later shown that the Hatboro wells, although contaminated, were not contaminated by the Fischer & Porter Site. Fischer & Porter is committed to fulfilling all of the consent decree's requirements. In exchange for its commitment, EPA granted Fischer & Porter a waiver of future liability. Consequently, EPA cannot require Fischer & Porter to pay money or perform work beyond that which was outlined in the 1984 Consent Decree.

2. What did the Consent Decree require Fischer & Porter to do about the Warminster well it contaminated?

EPA Response: The Consent Decree required Fischer & Porter to pay "the sum of Forty-Five Thousand ($45,000) Dollars to the Warminster Heights Water Authority, Warminster, Pennsylvania to be used in connection with a treatment system for the public drinking water wells of Warminster Heights Water Authority, Warminster, Pennsylvania." That was the extent of Fischer & Porter's obligation for that well.

C. FUTURE OPERATIONS OF SITE WELLS

1. Will monitoring of the Site's water continue?

EPA Response: Yes, monitoring of the Site's water will continue. The consent decree requires Fischer & Porter to pump and treat the three facility wells, and to monitor the water in the facility wells and in Warminster Heights Wells WH1 and WH2. Fischer & Porter continues to monitor the three facility wells and WH I and WH2 every month; EPA reviews the monitoring reports every quarter. EPA will continue to monitor the levels of contamination in WH I and WH2 until the contamination at the Fischer & Porter Site is reduced to safe levels in the untreated groundwater. Also, if any significant changes occur in the operation or contaminant level of WH1 or WH2, EPA will immediately begin a review of the remedy to ensure that it continues to be protective of human health and the environment.

2. What would happen if Fischer and Porter stopped pumping the wells? Would EPA take control of the wells?

EPA Response: EPA does not anticipate that Fischer & Porter would stop pumping the wells. However, if they did, EPA would conduct an immediate review of the remedy and take action as necessary to ensure continued protection of human health and the environment. If necessary, EPA would take control of the wells and continue operating the remedy, or implement other such remedies deemed appropriate at that time.

3. If Warminster Heights Well WH1 was shut down, would all the contamination go to Warminster Township and Hatboro?

EPA Response: Long-term pumping of the multiple production wells has caused artificial groundwater flow patterns to be maintained in this area. Because of this, the natural flow (without the effects of pumping) of groundwater at this Site has not been exactly delineated and it is currently not known how shutting down WH1 would affect the plume of contamination. The information that is available indicates that, without the operation of WH1, groundwater would tend to flow from the Site in a more northerly direction, probably flowing toward the unnamed tributary. It has been demonstrated that Site contamination is diluted from a level of 40,000 ppb of combined volatile organic contaminants in the source area on the Fischer & Porter property to under 100 ppb at the location of WH1. If WH1 stopped pumping, it is expected that dilution would continue until the plume reached nondetectable levels, probably within 3,000 to 4,000 feet to the north of the Fischer & Porter facility. There are no identified drinking water wells in this area, WH1ch is served by the Warminster Municipal Authority.

Because of these uncertainties, a permanent shutdown of WH1 would be considered a significant change in the continued operation of the remedy. EPA would conduct an immediate review and

take action as necessary to ensure continued protection of human health and the environment.

4. When the current stripping tower stops working, who will pay for construction of a new stripping tower?

EPA Respose: Because replacement of equipment is considered part of the standard expense of operation, the water authority would be responsible for building the new stripping tower.

5. If the Warminster Township Municipal Authority decides to double its production at the Newtown Road Well, will that affect the residents of Warminster?

EPA Response: It is currently unknown whether changes in the operation of the Newtown Road Well would cause any significant effect on either of the Warminster Heights wells. Newtown Road is upgradient of the Fischer & Porter Site and the Warminster Heights wells and significant impacts are unlikely. EPA does not monitor the operation of the Newtown Road well; however, WH1 and WH2 continue to be monitored in relation to the Fischer & Porter Site, and if any significant change is demonstrated in production or the level of contamination in these wells, EPA would conduct an immediate review and take action as necessary to ensure continued protection of human health and the environment.

D. SOURCE OF CONTAMINATION

1. Is there a way to pull the plume back?

EPA Response: Although the current on-site pump and treat system is removing contaminants and effecting limited containment, EPA evaluated a number of different responses to the

contamination plume in the Feasibility Study, a copy of which is in the Administrative Record. It is believed that drilling new extraction wells, and pumping more aggressively could remove more contaminants from the groundwater and potentially stop the contamination from leaving the property. However, because the Fischer & Porter Site is located in an area of fractured bedrock, where groudwater flow is complex, it can not be assumed that a new system would be completely effective.

In the two scenarios evaluated for expanded pumping of new wells to capture and purge the contaminants from the plume area, it has been estimated that purging the contaminants from the area of the plume will take at least a century. However even this estimate is too conservative because it assumes that there are no hidden pockets of pure contaminant; that possibility cannot reasonably be ruled out. The estimated cost of these two pumping alternatives, depending on the extent of necessary treatment, range from $3.1 million to $16.9 million respectively. With no guarantee of success, and no current unacceptable risk, EPA chose not to select one of these alternate remedies.

2. Has EPA investigated other possible sources of contamination for Warminster Heights Well WH2 since determining that the Fischer & Porter Site is not the source of contamination?

EPA Response: As described in the Record of Decision, EPA has determined that WH2 is not being impacted by the Fischer & Porter Site, but it has consistently displayed low levels of contamination - trace levels of trichloroethylene (TCE) and levels typically less than 100 parts per billion of tetrachloroethylene (PCE). EPA has looked at a number of sites in the area to determine if they could be contributing to the contamination in WH2; however, none of the Sites that have already been identified appear likely to be causing the contamination of WH2. EPA will continue to evaluate information generated in the area, but due to the historically low levels of contamination found in WH2 and the fact that the water is treated successfully, subsequently presenting no unacceptable risk to human health or the environment, it is unlikely that EPA will actively search for the specific source of contamination for this well.

3. EPA has determined that Warminster Heights Well WH2 is not impacted by the Fischer & Porter Site because it is upgradient and has a different contaminant profile, and because there are clean monitoring wells between WH2 and the source. Considering the complexities of fractured bedrock in the Stockton Formation, these observations do not preclude that at least a portion of the contamination found in WH2 comes from the Site.

EPA Response: This statement is correct. However, the observations stated in the Record of Decision and in this comment do make it unlikely that significant contamination from Fischer & Porter is impacting WH2. In each of the production and monitoring wells on the Fischer & Porter property, Trichloroethene (TCE) is present at many times the concentration of tetrachloroethene (PCE). Typically, in WH2, PCE levels range between 20 and 80 parts per billion (ppb) while TCE levels are less than 1 ppb, strongly indicating that this contamination originates elsewhere.

E. EXTENT OF CONTAMINATION

1. EPA has delineated the extent of the contamination plume as being contained by the on site pumping wells and Warminster Heights Well WH1; however there are no off-site monitoring wells to support that conclusion.

EPA Response: The approximate limit of contamination presented in the Proposed Plan as well as the determination that the contaminant plume is contained by the on-site extraction wells and WH1 are estimates based on information from the wells present at the Site. Because the Site is

located in an area of fractured bedrock, the actual shape and ultimate extent of the plume would be extremely difficult to characterize definitively. However, it is reasonable to use the estimates for the purposes of decision-making as long as it is understood that they are not exact.

EPA did not place new monitoring wells outside the estimated boundaries of the contamination because it is highly unlikely that finther information would result in a significantly different representation of the Site. Even relatively large differences in the estimated extent of contamination would not change Site risks or the ultimate remedy selection, because the area in which the plume is traveling is serviced by the Warminster Municipal Authority and therefore has no potential groundwater users or exposure risk.

F. POTENTIALLY RESPONSIBLE PARTIES

1. Is there a way the community can seek assistance from the company that bought Fischer & Porter?

EPA Response: Under the Superfund law, parties liable for the cleanup costs at a Superfund Site include owners - current or past. If a new owner does not obtain a release from liability from EPA, then that party could be potentially liable. Therefore, the company that bought Fischer & Porter could be liable for cleanup costs. Under the Superfund law, "third parties", those parties that are not EPA or the liable parties, can institute legal actions against the liable parties to recover costs associated with responding to the releases of hazardous materials.

G. LOCAL HEALTH ASSESSMENT

1. Are there any health assessment records for the Site?

EPA Response: In 1980, in response to numerous incidents of trichloroethene found in drinking water wells, the Centers for Disease Control, Bureau of Epidemiology, conducted a study of drinking water supplies in Montgomery and Bucks Counties in Pennsylvania. A review of deaths attributable to liver cancer over the 19-year period 1960-1978 showed no statistically significant differences between the incidence in these two counties and incidence in the rest of Pennsylvania. Warminster Heights was included in this study. The study did not define the sequelae (effects) to low-level exposure. The levels measured in the Warminster heights drinking water ranged from 5.8 to 20 parts per billion at that time.

Treatment of the Drinking water supply at Warminster Heights to acceptable levels has been continuous since 1986, and the Remedial Investigation conducted at the Fischer & Porter Site has demonstrated that there is currently no unacceptable risk. In September 1998, EPA requested the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate the health risks of exposure to TCE in drinking water at the levels likely to have occurred before the public water

supply began treatment. Results of that evaluation will be made public when available. ATSDR is on long-term contract to EPA to do health assessments at Superfund sites.

H. COMPLIANCE WITH APPROPRIATE REQUIREMENTS AND REGULATIONS

1. Levels of groundwater contaminants at the most downgradient monitoring wells of the Site indicate that site-related contaminants are leaving the Fischer & Porter property.

Sampling the Warminster Heights production well, WH1, has also shown that site-related contaminants have contaminated this well. Pennsylvania Code 25 Chapter 250.403(d) states that "Current drinking water or agricultural uses of groundwater, at the time

contamination was discovered shall be protected".

More restrictive requirements for this Site, given that the Site is surrounded by residential properties, would be the following sections of the Act 2 regulations: Chapter 250.302(a) for point of compliance, Chapter 250.303(b) and 250.303(c)(3) for aquifer determination. Also Chapter 250.303(c)(3) refers to Chapter 109 for well head protection in the area of a municipal well.

EPA Responses: Generally, the requirements of º121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Public Law 96-510 (commonly referred to as "Superfund" or CERCLA), 42 U.S.C. º9621, apply only to response actions taken at Superfund Sites. SARA added the requirement that Remedial Actions comply with Applicable or Relevant and Appropriate Requirements (ARARs) which are federal and state environmental statutes and regulations. The previous response decision at this Site was selected in 1984, prior to the enactment of SARA. Accordingly, that original response was designed to provide protection of human health and the environment, but was not required to comply with ARARs.

Because the earlier response action was not required to comply with ARARs and there is no further action required, EPA has concluded that identification and evaluation of, and potential compliance with ARARs is not required. The remedies implemented at this Site continue to be protective of human health and the environment.