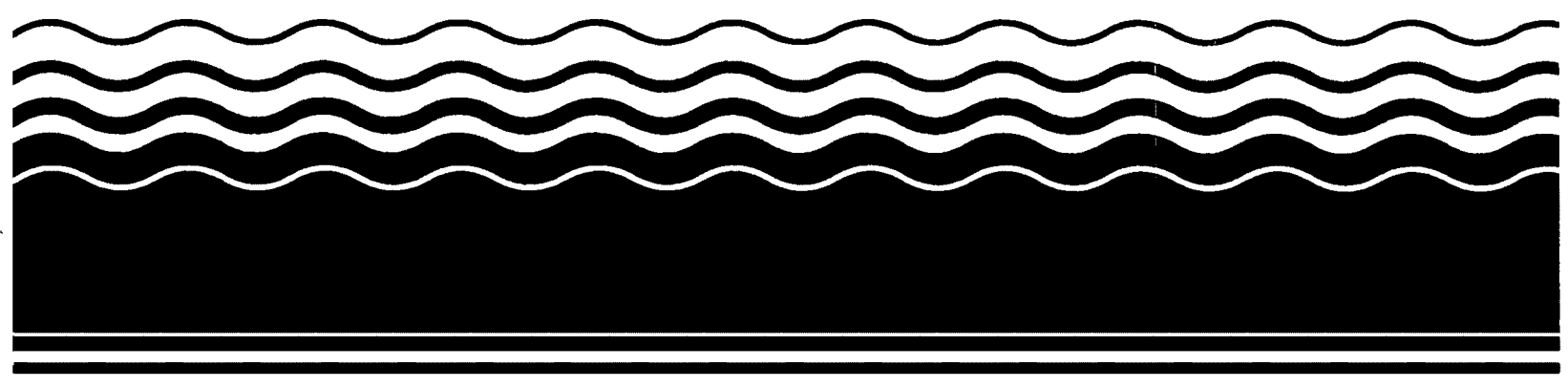




Superfund Record of Decision:

Witco Chemical (Oakland
Plant), NJ



NOTICE

The appendices listed in the index that are not found in this document have been removed at the request of the issuing agency. They contain material which supplement, but adds no further applicable information to the content of the document. All supplemental material is, however, contained in the administrative record for this site.

EPA/ROD/R02-92/177

Witco Chemical (Oakland Plant), NJ

First Remedial Action - Final

Abstract (Continued)

system and detected several chemicals of concern, including 2-butanone and the pesticides DDT and dieldrin. From 1987 to 1988, Witco voluntarily disposed of approximately 720 cubic yards of soil and other debris and fourteen 55-gallon drums of sludge that were shown to contain greater than 100 ppm of petroleum hydrocarbons; and collected and analyzed ground water samples from monitoring wells at the facility. This ROD addresses any remaining soil and ground water contamination resulting from site activities. Based on the results of remedial investigations, the removal of the seepage pits and surrounding soil by Witco during 1987 has effectively remediated the contamination at the site. Therefore, there are no contaminants of concern affecting this site.

The selected remedial action for this site is no further action, with implementation of limited ground water monitoring. Results of the RI indicated that there are no significant concentrations of hazardous substances remaining onsite. The estimated present worth cost for this remedial action is \$8,660, which includes an annual O&M cost of \$2,000 for 5 years.

PERFORMANCE STANDARDS OR GOALS: Not applicable.

ROD FACT SHEET

SITE

Site name: Witco Chemical Corporation

Site location: Oakland, Bergen County, New Jersey

HRS score: 33.12

ROD

Date Signed: September 28, 1992

Selected remedy: No Action

Capital cost: None

O & M cost: \$10,000 (5 year monitoring @ \$2,000/year)

Present-worth cost: \$8,660

LEAD

Environmental Protection Agency

Primary Contact: John Osolin, (212) 264-9301

Secondary Contact: Janet Feldstein, (212) 264-0613

Main PRPs: Witco Chemical Corporation

WASTE

Waste type: Volatile Organics

Waste origin: Laboratory Seepage Pits

Estimated waste quantity: Unknown (Relatively Small)

Contaminated medium: Soil and Groundwater

SEP 17 1992

Record of Decision for the Witco Chemical Corporation Site

Kathleen C. Callahan, Director
Emergency and Remedial Response Division

Constantine Sidamon-Eristoff
Regional Administrator

Attached for your approval is the Record of Decision (ROD) for the Witco Chemical Corporation site, located in Oakland, Bergen County, New Jersey. The selected remedy calls for No Further Action, with a limited off-site monitoring program. Witco removed contaminated soils and sludges in 1987 and 1988. That action appears to have fully addressed the principal threats posed by the Site.

The remedial investigation report and the Proposed Plan were released to the public for comment on June 28, 1992. A public comment period on these documents was held from June 28, 1992 through July 28, 1992. In addition, a public meeting to discuss these documents and the preferred No Action remedy was held on July 14, 1992. Comments received during the public comment period generally supported the No Action decision; however, there were several residents who expressed a desire for the Agency to conduct further monitoring. The comments are addressed in the attached Responsiveness Summary.

The ROD has been reviewed by the State of New Jersey Department of Environmental Protection and Energy (NJDEPE), and the appropriate program offices within Region II. Their input and comments are reflected in this document. NJDEPE has concurred with the selected remedy for the Witco Chemical Corporation site, as indicated in the attached letter.

If you have questions or comments on this document, I would be happy to discuss them with you at your convenience.

Attachments

2ERRD/CNJS II/NJSB II/ROD3.WIT/9/15/92/MP

SYMBOL --->	CNJS II	CNJS II	NJSB II	ORC	NJP	ERRD		
SURNAME --->	OSOLIN	FELDSTEIN	BASSO	MCVEIGH	FRISCO	CALLAHAN		
DATE --->	9/16/92	9/16/92	9/16	9/17	9/16	9/17		

DECLARATION STATEMENT

WITCO CHEMICAL CORPORATION

RECORD OF DECISION

SITE NAME AND LOCATION

Witco Chemical Corporation Site
Oakland, Bergen County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Witco Chemical Corporation Site, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this Site.

The New Jersey Department of Environmental Protection and Energy concurs with the selected remedy. The information supporting this decision is contained in the administrative record for this Site.

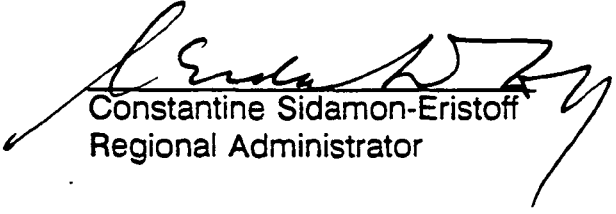
DESCRIPTION OF THE SELECTED REMEDY: NO ACTION

The U.S. Environmental Protection Agency (EPA) has determined that no further remedial action is necessary at the Witco Chemical Corporation Site. The removal of contaminated soil and sludge, undertaken in 1987 and 1988, appears to have been effective in remediating the principal threats associated with the Site. This determination is based on the results of the remedial investigation, which demonstrated that there are no significant concentrations of hazardous substances remaining at the Site. Furthermore, based on a site-specific risk assessment, the current and future risks posed by the Site are within EPA's acceptable risk range.

Upon completion of the remedial investigation and risk assessment, it became evident that no further remedial action was required. Accordingly, an evaluation of remedial alternatives, as described by CERCLA, was not appropriate. However, because sporadic ground water contamination has been detected, a limited ground water monitoring program will be implemented to ensure that this no remedial action decision continues to be protective of human health and the environment.

DECLARATION STATEMENT

In accordance with CERCLA and the NCP, EPA has determined that no further action is necessary to ensure protection of human health and the environment at the Witco Chemical Corporation Site. Therefore, the Site now qualifies for inclusion in the "Sites Awaiting Deletion" subcategory of the "Construction Completion" category of the National Priorities List. Because this site does not contain hazardous substances above health-based levels, the five year review will not apply to this decision.



Constantine Sidamon-Eristoff
Regional Administrator

September 28, 1992
Date

RECORD OF DECISION

**Witco Chemical Corporation Superfund Site
Oakland, Bergen County, New Jersey**

**United States Environmental Protection Agency
Region II
New York, New York
September 1992**

RECORD OF DECISION DECISION SUMMARY

**Witco Chemical Corporation Superfund Site
Oakland, Bergen County, New Jersey**

**United States Environmental Protection Agency
Region II
New York, New York
September, 1992**

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DECISION SUMMARY

WITCO CHEMICAL CORPORATION SITE

SITE LOCATION AND DESCRIPTION

The Witco Chemical Corporation Site (the Site) is located in the McBride Industrial Park, Oakland, New Jersey, in western Bergen County (**Figure 1**). The 9-acre site is bounded to the southeast by the Borough of Franklin Lakes, on the northwest by Bauer Drive, on the southwest by Hoppers Lake and the northeast by a vegetated lot (**Figure 2**). Two buildings exist on the Site: a research laboratory, and a small storage shed in the east corner.

The Borough of Oakland has a population of approximately 13,000 people. With the exception of one residential well, the area downgradient from the Site is supplied by a municipal water supply system, which consists of six active supply wells.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Witco Chemical Corporation (Witco) has owned and operated a technical research facility for the development of specialty chemicals at this location from 1966 through the present. From 1966 through 1984, the company neutralized laboratory waste water in a 2,000 gallon underground acid neutralizing tank, and then discharged it to a series of underground seepage pits.

On March 10, 1982, representatives of the New Jersey Department of Environmental Protection and Energy's (NJDEPE's) Division of Water Resources performed an inspection at the facility to review operations and waste water management practices for compliance with the New Jersey Water Pollution Control Act.

On April 2, 1982, NJDEPE issued a directive requiring that Witco take measures to cease the unpermitted discharge of industrial waste waters to ground water at the Site. On July 16, 1982, NJDEPE further directed Witco to submit a plan for the elimination of the discharge of industrial waste waters into ground water and to implement a hydrogeological study to investigate possible soil and ground water contamination.

On April 14, 1982 and November 18, 1982, NJDEPE collected seepage pit, soil and ground-water samples at the facility. Compounds detected include petroleum hydrocarbons, chloroform, toluene, carbon tetrachloride, chlorobenzene, benzene, xylene and ethylbenzene.

In response to NJDEPE's directive, Witco initiated a hydrogeological investigation in November 1982 which included the installation and sampling of four ground water monitoring wells. In addition, three soil borings and two sludge samples from the seepage pit system were collected and analyzed. The analyses revealed that the ground water, soil and sludge were contaminated with petroleum hydrocarbons and various

organic compounds including toluene, carbon tetrachloride, chloroform, xylene, benzene and chlorobenzene.

In February 1984, Witco replaced its underground seepage pit system with a 6,000 gallon capacity fiberglass tank with associated line connections, pumps and level gauges. This tank is used for the accumulation of laboratory waste waters prior to off-site disposal. The system has been in operation at the facility from February 1984 through the present.

On August 28, 1985, EPA performed a Site Investigation at the facility to evaluate potential contamination due to the previous operation of the underground seepage pit system. Ground water, soil and surface water were sampled and analyzed. Compounds detected during the Site Investigation include 2-butanone, dieldrin, 4,4'-DDE, 4,4'-DDT and benzo(a)pyrene.

On November 30, 1987, Witco initiated remedial activities at the Site including excavation and stockpiling of soils, removal of sludge from the six seepage tanks, and removal and disposal of the seepage tanks. These activities were completed in January 1988. Soils that were shown by Witco's analyses to contain greater than 100 parts per million of petroleum hydrocarbons were removed and disposed of off site. Witco reported that approximately 720 cubic yards of soil and other debris, and fourteen 55-gallon drums of sludge were disposed of off site. Ground-water samples from monitoring wells at the facility were collected and analyzed by Witco on five occasions from February 1987 to June 1988 as part of a voluntary monitoring program. The removal and disposal of materials from the Site and the collection and analyses of samples were conducted voluntarily by Witco and were not subject to oversight or verification by NJDEPE or the Environmental Protection Agency (EPA).

The Site was proposed for inclusion on the Superfund National Priorities List (NPL) in June 1988. In September 1989, it was formally placed on the NPL.

In June 1989, EPA notified Witco of its potential Superfund liability with respect to the Site. EPA offered Witco the opportunity to conduct and finance the Remedial Investigation and Feasibility Study (RI/FS) for the Site and Witco agreed. Witco and EPA entered into an Administrative Order on Consent (Order) which provided for Witco's performance of the RI/FS with oversight by EPA. The Order became effective on August 29, 1989 and the Remedial Investigation field work was initiated in August of 1990. The RI was completed in the late Spring of 1992.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

In accordance with the public participation requirements set forth in Sections 113 and 117 of the Comprehensive Environmental Response, Compensation and Liability Act, as amended (CERCLA), the following activities were conducted. The Remedial Investigation

Report, the Risk Assessment, the Proposed Plan and other documents, which comprise the Administrative Record for the Witco Site, were released to the public for comment on June 28, 1992. These documents were made available to the public at the Superfund Record Room at EPA's Region II offices in New York City and the Oakland Public Library in Oakland, New Jersey. On June 28, 1992, EPA published a notice in the Bergen Record which contained information relevant to the public comment period for the Site, including the duration of the public comment period, date and location of the public meeting, and the availability of the administrative record. The public comment period began on June 28, 1992, and ended on July 28, 1992. In addition, a public meeting was held on July 14, 1992, where representatives from EPA and NJDEPE gave a presentation and were available to answer any questions regarding the Remedial Investigation and the proposed no action remedy. Responses to the significant comments received during the public comment period are included in the Responsiveness Summary, which is part of this Record of Decision.

SCOPE AND ROLE OF RESPONSE ACTION

Based on EPA's risk assessment, the risks posed by contaminants associated with the Site are within EPA's acceptable risk range. Consequently, there is no need to implement any remedial action at the Site. Monitoring of the Oakland Public Water Supply System is conducted by the Borough twice a month. This monitoring has not revealed any evidence of site-related contaminants. Although EPA does not believe it is likely that site-related contamination could impact downgradient wells, the Agency will monitor a private well downgradient of the Site (see description of "No Action" remedy). This well is located between the Site and Oakland Supply Well #5; therefore, the monitoring program will not only ensure that this residential well has not been impacted, but will also provide an early warning for the public water supply, should any past releases of contamination be migrating toward Well #5.

SUMMARY OF SITE CHARACTERISTICS

Witco contracted with Roy F. Weston, Inc. (Weston) to conduct an investigation to characterize the geology, ground water hydrology, and the chemical quality of the soil and ground water at the Site. The investigation included the installation of additional monitoring wells and piezometers, drilling of soil borings, collection of soil samples, and four rounds of ground-water samples. All samples were analyzed for volatile organic compounds, semi-volatile organic compounds, inorganic compounds, base-neutral and acid extractable organic compounds, pesticides and polychlorinated biphenyls (PCBs). The analytical results indicated no significant levels of site-related contaminants in Site soils or surface water, and although there were sporadic detections of contaminants in Site ground water, no discernible contaminant plume was found. The results of the investigation are summarized as follows.

The Site is located on a plateau composed of approximately 230 feet of glacial sediments on top of bedrock. The sediments contain two aquifer units separated by a relatively impermeable silt and clay unit (**Figure 3**). The ground water can be found at approximately 25 feet below ground surface throughout most of the Site. The direction of ground-water flow varies from approximately north to northwest in the shallow aquifer (**Figure 4**) and generally flows northwest in the deeper aquifer (**Figure 5**).

Four rounds of ground-water samples were collected from the ten on-site monitoring wells. Analyses of the data indicated that the majority of the compounds detected were determined to be representative of natural background conditions, upgradient conditions not related to the Witco Site, or were present at concentrations below Federal and State drinking water standards (**Tables 1A through 1D**).

Eight compounds were detected at levels which exceeded Federal and/or State standards and did not appear consistent with background conditions. These eight compounds consisted of one semi-volatile compound (bis(2-ethylhexyl)phthalate), and seven inorganic compounds (antimony, chromium, iron, manganese, nickel, sodium, thallium,).

Bis(2-ethylhexyl)phthalate was detected in six out of 31 downgradient samples in the upper aquifer, at concentrations ranging from 1 part per billion (ppb) to 120 ppb. The proposed drinking water standards or maximum contaminant levels (MCLs) for bis(2-ethylhexyl)phthalate are 30 ppb (Federal) and 4 ppb (New Jersey). Although it could not be conclusively determined that bis(2-ethylhexyl)phthalate was representative of background water quality, it was detected in two of the eight background samples (collected from the two monitoring wells at the upgradient edge of the Witco property). In addition, it was only detected at concentrations above proposed Federal and/or State drinking water standards in three out of 31 site-related ground-water samples.

Of the seven inorganics detected in the ground water above Federal and/or State standards, three compounds (antimony, chromium, nickel) were reduced to levels below the standards by filtering.

Antimony was detected in two out of 32 downgradient samples, at concentrations of 21.4 ppb and 37.2 ppb. The MCLs for antimony are 6 ppb (Federal) and 20 ppb (New Jersey proposed). Sample filtering was conducted during the fourth round of sampling. This reduced the antimony from 37.2 ppb to below the method detection limit.

Chromium was detected in 19 of 32 downgradient samples at concentrations ranging from 4.1 ppb to 985 ppb. The MCLs for chromium are 100 ppb (Federal) and 50 ppb (New Jersey). When sample filtering was conducted during the fourth round of sampling, chromium was reduced from concentrations ranging from 15.3 ppb to 985 ppb, to below the method detection limit. Chromium was also found in four of eight background samples.

Nickel was detected in 23 of 32 downgradient samples at concentrations ranging from 9.3 ppb to 146 ppb. The MCLs for nickel are 100 ppb (Federal) and 100 ppb (New Jersey proposed). When sample filtering was conducted during the fourth round of sampling, nickel was reduced from concentrations ranging from 12.8 ppb to 146 ppb, to below the method detection limit or 82.6 ppb, in one case.

The elimination or substantial reduction in the concentrations of these contaminants by filtering suggests that these contaminants are attached to the sediment present in the ground water, and therefore, may not be representative of the water that would likely reach the tap.

Thallium was detected twice during the first round of sampling, at 7 ppb and 13 ppb, and not detected in the last three rounds. The MCLs are 2 ppb (Federal) and 10 ppb (New Jersey proposed). However, thallium was also detected in the field blank for that round at a 4.1 ppb. Contamination in the field blank indicates that the thallium contamination was introduced into the sample during the sampling and analyses process and is likely unrelated to the Site.

Concentrations for the remaining three compounds (iron, manganese, sodium) remained elevated after filtering. However, these compounds exceeded secondary standards only, which are established for aesthetic purposes and do not pose a health risk. Iron was detected at concentrations ranging from 54.7 ppb to 67,500 ppb; the secondary MCL for iron is 300 ppb. Manganese was detected at concentrations ranging from 2.9 ppb to 1,900 ppb; the secondary MCL for manganese is 50 ppb. Sodium was detected at concentrations ranging from 9,610 ppb to 288,000 ppb; the secondary MCL for sodium is 50,000 ppb.

Surface and subsurface soil samples were taken in the area of the former seepage pits and from the monitoring wells during drilling. The contaminants detected included antimony, arsenic, beryllium, and iron. A summary of soil sample results can be found in **Tables 1E through 1G**. In the absence of promulgated Federal or State standards for soils, the concentrations of chemicals detected were evaluated in a site-specific Risk Assessment. As discussed below under "Summary of Site Risks", no significant current or future risk exists related to the chemicals detected in the soils on the Site.

One surface water sample was taken from Hoppers Lake for analysis. None of the compounds detected in that sample exceeded Federal or State standards (**Table 1H**).

SUMMARY OF SITE RISKS

EPA conducted a baseline Risk Assessment to evaluate the potential risks to human health and the environment associated with the Witco Chemical Corporation Site. The Risk Assessment focused on contaminants in the ground water, surface water, surface

soil and subsurface soil which are likely to pose significant risks to human health and the environment. The summary of the contaminants of concern (COC) in sampled matrices is listed in **Table 2**.

EPA's Risk Assessment identified several potential exposure pathways by which the public may be exposed to contaminant releases at the Site under current and future land-use conditions. Ground water, surface water, surface soil and subsurface soil exposures were assessed for both present and future land-use scenarios. The baseline Risk Assessment then evaluated the health effects which could result from current and future exposure to contamination as a result of ingestion of ground water and incidental ingestion of surface and subsurface soils. Although the Site is located in an industrial development, residential land use was considered for future exposure scenarios as a conservative assumption. Receptor populations considered for the Risk Assessment included the following: resident, on-site worker, excavation worker, utility worker, trespasser and recreational user.

Seven exposure pathways were chosen as pathways of maximum potential exposure and evaluated for both carcinogenic and non-carcinogenic risks. The exposure pathways considered under current and future uses are listed in **Table 3**. The reasonable maximum exposure was evaluated.

Under current EPA guidelines, the likelihood of carcinogenic (cancer causing) and non-carcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and non-carcinogenic risks associated with exposures to individual compounds of concern were summed to indicate the potential risks associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Non-carcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligrams per kilogram per day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared with the RfD to derive the hazard quotient for the contaminant in the particular medium. The hazard index is obtained by adding the hazard quotients for all compounds across all media that impact a particular receptor population. A hazard index greater than 1.0 indicates that the potential exists for non-carcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The reference doses for the compounds of concern at the Site are presented in **Table 4**. A summary of the non-carcinogenic risks associated with these chemicals across various exposure pathways is found in **Table 5**.

As shown on **Table 5**, only two use scenarios exceeded EPA's target level of 1.0 (future residential ingestion of ground water from the deep aquifer and future residential ingestion of surface soil). Although the Hazard Index for a future resident drinking from the deep aquifer is above 1.0, this is a sum composed mainly of the hazard quotients for iron and antimony, which are likely to be attached to the sediments in the water, and therefore, may not be representative of the water that would likely reach the tap. In addition, the antimony value is based on only one detection in four rounds of sampling. Furthermore, the Hazard Index assumes that the contaminants of concern have an additive effect on the human body, when in fact, antimony and iron have different critical effects on the human body and, therefore, should not be considered additive.

The Hazard Index for a future resident ingesting surface soil, although just at the target level, is a sum composed mainly of the hazard quotients for iron and arsenic, which were found at concentrations well within the natural background range for soils of the Eastern United States. In addition, iron and arsenic have different critical effects on the human body and, therefore, should not be considered to have an additive effect.

Furthermore, both of the above Hazard Indices are also based on the conservative assumption that there will be future residential use of the Site. No adverse health impacts would be expected based on the current industrial use of the Site.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of concern. Cancer slope factors (SFs) have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs, which are expressed in units of $(\text{mg/kg-day})^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SFs for the compounds of concern are presented in **Table 4**.

For known or suspected carcinogens, EPA considers excess upper bound individual lifetime cancer risks of between 10^{-4} to 10^{-6} to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year period under specific exposure conditions at the Site.

The pathway with the highest upper bound cancer risk at the Witco Site is residential ingestion of ground water from the upper aquifer, which was calculated to be 6.7×10^{-5} (6.7 in a hundred thousand) (**Table 6**). As is evident from **Table 6**, carcinogenic risk associated with each of the pathways falls within or below the acceptable risk range of 10^{-4} to 10^{-6} . The carcinogenic risk for the Site is almost primarily attributable to the occurrence of arsenic and bis(2-ethylhexyl) phthalate.

The ecological risk assessment first evaluated the site-related contaminants that could potentially pose risks to the associated ecological (non-human) receptors. Of potential concern in the Site's surface soils were iron and arsenic.

The ecological risk assessment then considered the effects of the above chemicals on the respective receptors that interplay with the surface soils. The risk of exposure to chemicals in the surface soils (iron and arsenic) would be to the several avian species observed in the vicinity of the Site (crows, swallows, sparrows, starlings, and Canada geese) and to the Eastern Cottontail rabbit, the only mammalian species observed on the Site, although others might be expected to occur.

The route of exposure for the potential uptake of these metals to both the bird species and the Eastern cottontail rabbit would be via their diet, which is largely not supplied by the Site proper. A large portion of the 9-acre site is a building and a parking lot; therefore, the Site does not provide high-quality habitat for the species observed. Additionally, the Site has only a small wooded area which, in conjunction with the fact that home ranges for both birds and rabbits are significantly larger than the Site itself, would act to greatly minimize the occurrence of exposure to these metals. In addition, the Canada goose and other birds are migratory species, and being absent from the region during several months of the year further reduces the likelihood of exposure to the metals. Although sampling was performed in Hopper's Pond, the RI later revealed that there are no significant pathways for migration of contaminants from the Site to the pond. Furthermore, the samples from the pond showed no significant levels of contaminants.

Based on the ecological risk assessment performed for the Witco Site, site-related contaminants should have no significant impact on the plant and animal species on and around the Site.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis error can

stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment Report.

DESCRIPTION OF THE "NO ACTION" REMEDY

Based on the results of the Remedial Investigation, it appears that the removal of the seepage pits and surrounding soil, undertaken by Witco in 1987, effectively remediated the contamination at the Witco Site. Therefore, EPA has determined that no further remedial action is necessary at the Site. However, because there was some evidence of past ground-water contamination and sporadic contamination was detected during the Remedial Investigation, a limited ground-water monitoring program will be implemented. EPA will monitor the residential well located at 18 Bailey Avenue, once a year for a period not less than five years. This well was selected because it is the only residential well downgradient of the Site which is located between the Site and Oakland Public Supply Well #5. In the unlikely event that site-related contamination has migrated off the Site, the monitoring program will not only ensure that this residential well has not been impacted, but will provide an early warning for the public water supply, should any such contamination migrate toward Oakland Public Supply Well #5.

STATE ACCEPTANCE

The State of New Jersey concurs with the No Action remedy. The State's letter of concurrence is attached to this Record of Decision as Appendix IV.

COMMUNITY ACCEPTANCE

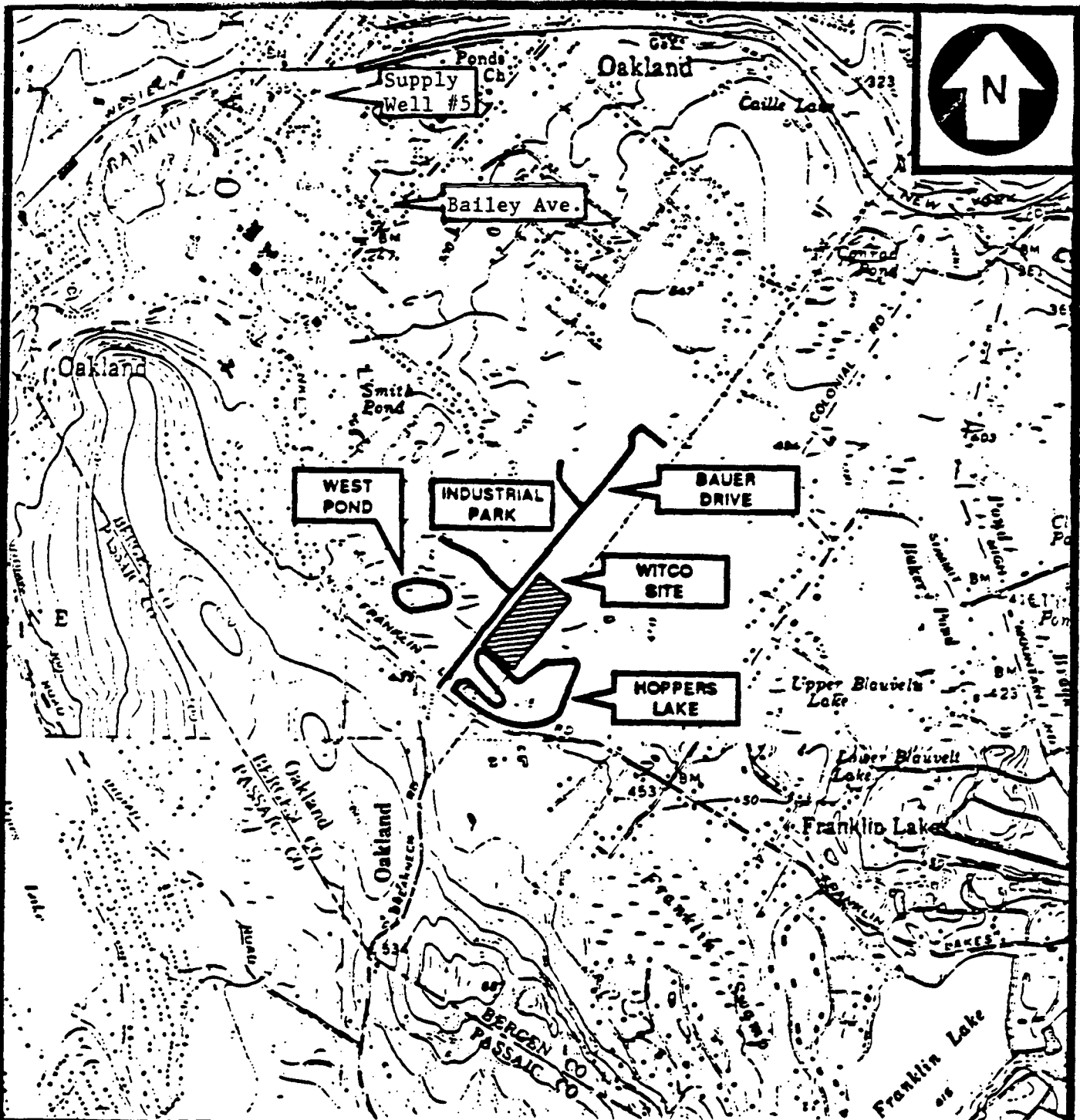
A summary of the comments received during the public comment period is provided in the Responsiveness Summary, which is attached to this Record of Decision as Appendix V.

EXPLANATION OF SIGNIFICANT CHANGES

There are no significant changes from the recommended alternative in the Proposed Plan. However, EPA will include monitoring of the residential well as discussed above.

ATTACHMENTS

APPENDIX I. FIGURES



BASE MAP IS A PORTION OF THE FOLLOWING 7.5 U.S.G.S. QUADRANGLE(S):
 RAMSEY, NJ-NY, 1955; PATTERSON, NJ, 1955, PHOTOREVISED 1981;
 POMPTON PLAINS, NJ, 1955, PHOTOREVISED 1981; WANAQUE, NJ, 1954, PHOTOREVISED 1971

0 1000 2000 3000 feet



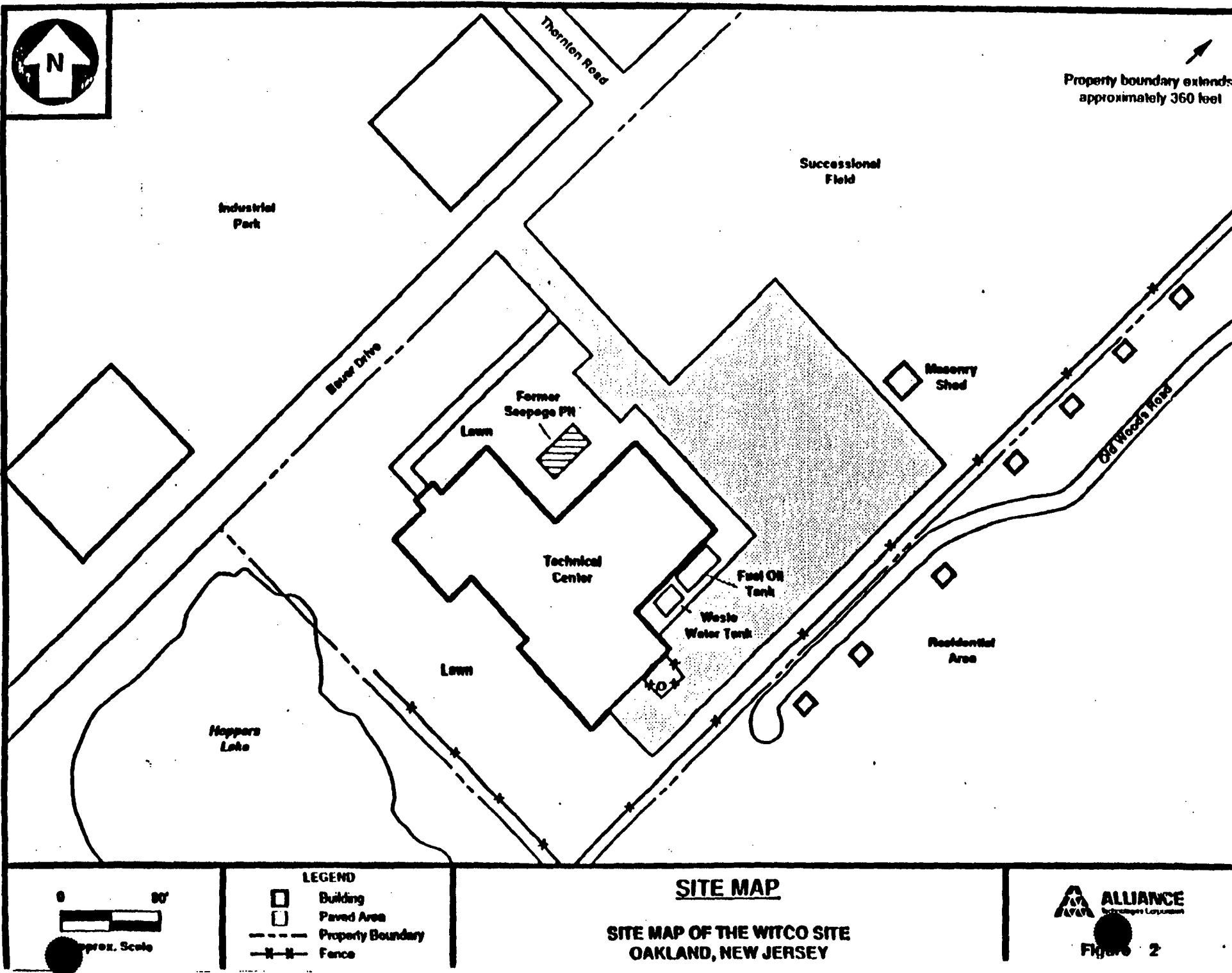
QUADRANGLE LOCATION

LOCATION MAP

LOCATION OF THE WITCO SITE
 OAKLAND, NEW JERSEY



Figure 1



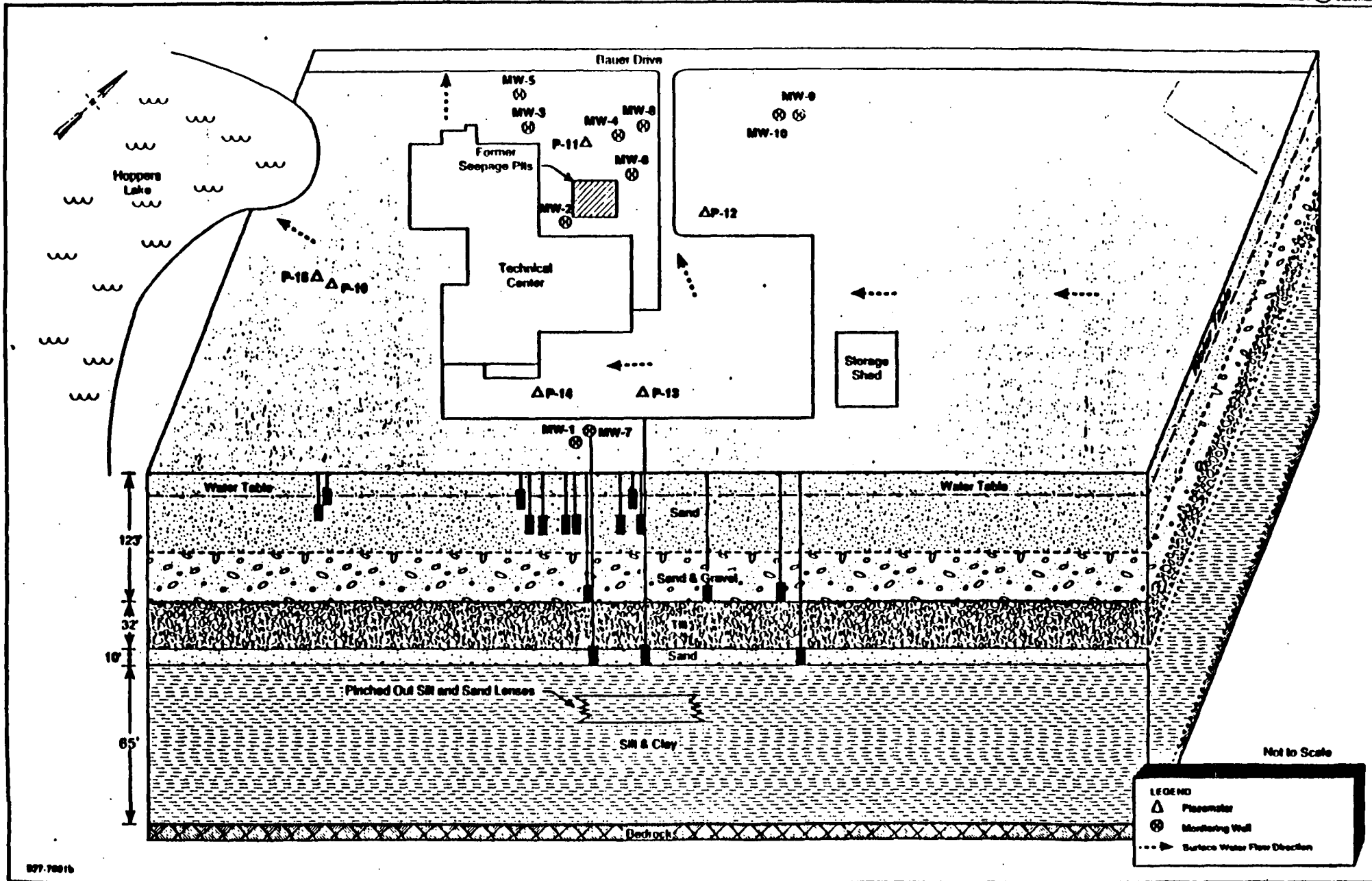
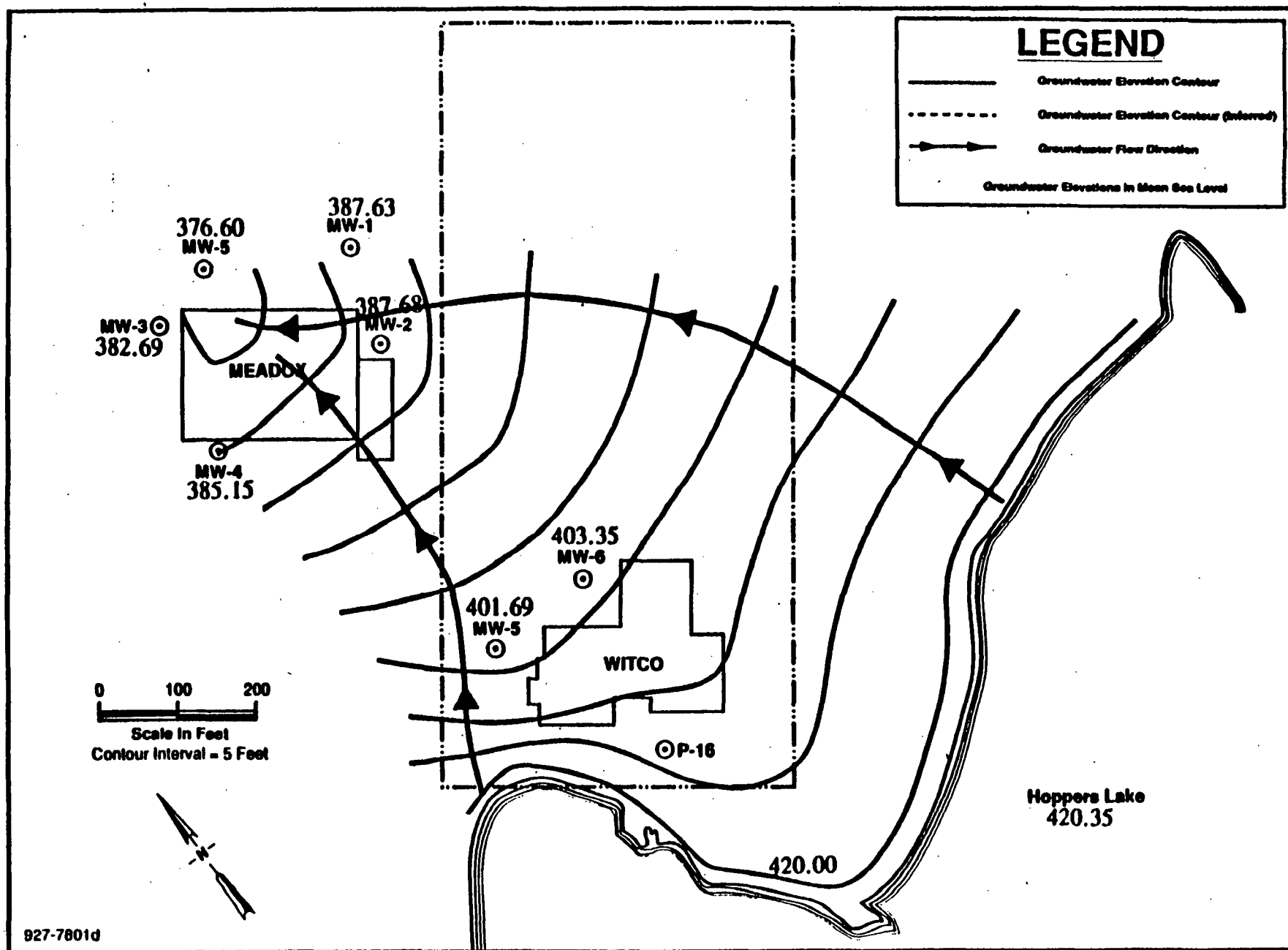
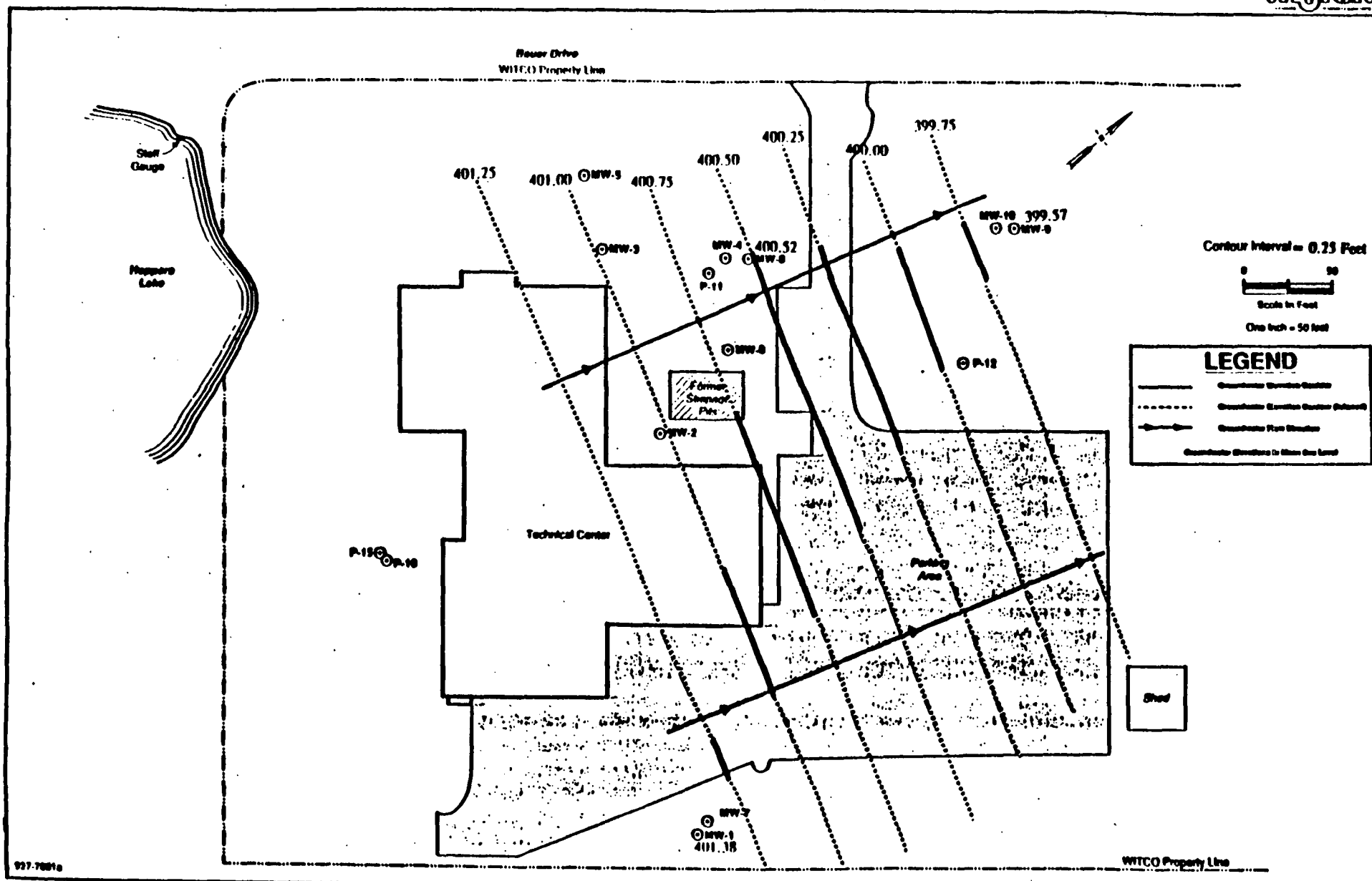


FIGURE 3 CONCEPTUAL SITE MODEL
WITCO FACILITY - OAKLAND, NEW JERSEY



927-7801d

**FIGURE 4 GROUNDWATER EQUIPOTENTIAL MAP
 WATER TABLE ZONE 11/20/90**



927-7001a

GROUNDWATER EQUIPOTENTIAL MAP
DEEP ZONE 3/21/92
Figure 5

APPENDIX II.

TABLES

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. TABLE 1A

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPH=Ground Water - Upper Aquifer -----									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V 1,2,4-TRICHLOROBENZENE	1	24	0.70	0.70	20 003 N001	0.17	0.24	0.20	0.50
ACETONE	3	8	9.00	240.00	20 010 N002	2.35	175537.14	0.50	17.00
CARBON DISULFIDE	1	24	1.00	1.00	20 002 N003	0.08	0.13	0.10	0.20
CHLOROPOM	1	24	0.40	0.40	20 005 N001	0.13	0.17	0.20	0.60
TETRACHLOROETHENE	1	24	0.25	0.25	20 005 N001	0.05	0.06	0.10	0.10
TRICHLOROFLUOROMETHANE	5	24	0.80	2.00	20 002 N001	0.17	0.69	0.10	0.50
D BIS(2-ETHYLHEXYL)PHTHALATE	4	23	1.00	17.00	20 005 N003	4.79	6.63	10.00	12.00
DI-N-BOUYLPHTHALATE	5	23	1.00	3.00	20 004 N002	3.96	6.12	10.00	11.50
I ALUMINUM, TOTAL	22	24	151.00	31300.00	20 002 N004	6639.08	244309.67	77.00	96.00
AMMONIA, AS N	7	24	0.10	1.40	20 003 N002	0.10	0.36	0.10	0.10
ANTIMONY, TOTAL	1	24	37.20	37.20	20 010 N004	13.59	10.81	19.00	35.00
ARSENIC, TOTAL	5	13	2.30	4.80	20 004 N001	1.64	3.22	2.00	2.00
BARIUM, TOTAL	24	24	19.00	304.00	20 002 N002	127.31	320.50	.	.
BERYLLIUM, TOTAL	14	24	1.10	2.40	20 002 N004	1.07	1.04	1.00	1.00
CALCIUM, TOTAL	24	24	9330.00	144000.00	20 002 N001	44396.93	79097.83	.	.
CHLORIDE	24	24	17.20	701.00	20 002 N001	67.80	153.97	.	.
CHROMIUM VI	7	24	0.02	0.24	20 010 N001	0.02	0.05	0.02	0.02
CHROMIUM, TOTAL	17	24	4.10	905.00	20 006 N004	23.10	902.21	3.00	823.00
COBALT, TOTAL	10	24	6.15	61.40	20 006 N002	14.78	42.46	4.00	10.00
COPPER, TOTAL	22	24	6.50	97.20	20 006 N002	26.55	64.71	7.00	10.00
IRON, TOTAL	10	10	138.00	67500.00	20 003 N002	11965.63	867400.92	.	.
LEAD, TOTAL	16	21	2.90	35.60	20 004 N004	5.44	22.08	2.00	3.00
MAGNESIUM, TOTAL	24	24	1290.00	53300.00	20 002 N001	13704.48	26697.87	.	.
MANGANESE, TOTAL	22	24	2.90	1900.00	20 003 N002	314.86	9495.13	3.00	15.00
NICKEL, TOTAL	22	24	9.30	146.00	20 006 N004	22.21	49.53	10.00	10.00
NITRATE, AS N	23	24	0.12	41.90	20 005 N001	2.52	24.95	0.10	0.10

TABLE 1A
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE-Ground Water - Upper Aquifer -----									
(continued)									
C NAME	Min. Times Detected	Min. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
POTASSIUM, TOTAL	24	24	2040.00	46300.00	20 010 M001	5115.73	9916.46	.	.
SELENIUM, TOTAL	2	6	1.00	1.30	20 002 M002	0.66	1.17	1.00	1.00
SILVER, TOTAL	1	13	4.00	4.00	20 003 M002	2.66	3.32	4.00	10.00
SODIUM, TOTAL	24	24	9610.00	288000.00	20 002 M002	37760.99	84970.76	.	.
SULFATE	24	24	10.00	63.50	20 003 M004	24.46	34.24	.	.
THALLIUM, TOTAL	2	14	7.00	13.00	20 006 M001	7.62	26.66	2.00	50.00
TOTAL DISSOLVED SOLIDS	24	24	170.00	1710.00	20 002 M001	301.02	619.72	.	.
Vanadium, TOTAL	22	24	7.90	80.10	20 005 M004	31.46	80.89	0.00	10.00
ZINC, TOTAL	24	24	9.00	145.00	20 002 M004	55.94	102.66	.	.

TABLE 1 B
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE-Background Ground Water - Upper Aquifer -----									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
D BIS(2-ETHYLHEXYL)PHTHALATE	1	4	2.00	2.00	20 001 N004	4.07	12.06	10.00	11.00
DI-N-BUTYLPHTHALATE	1	4	2.00	2.00	20 001 N003	4.07	12.06	10.00	11.00
I ALUMINUM, TOTAL	4	4	13200.70	28600.00	20 001 N003	20660.47	37313.66	.	.
AMMONIA, AS N	4	4	0.40	0.61	20 001 N004	0.55	0.63	.	.
BARIUM, TOTAL	4	4	213.00	266.00	20 001 N003	229.03	263.30	.	.
BERYLLIUM, TOTAL	4	4	1.00	2.70	20 001 N004	2.30	3.03	.	.
CADMIUM, TOTAL	1	4	3.40	3.40	20 001 N004	2.41	3.64	4.00	5.00
CALCIUM, TOTAL	4	4	13400.00	18600.00	20 001 N001	16429.30	20073.77	.	.
CHLORIDE	4	4	25.00	52.70	20 001 N004	37.52	75.06	.	.
CHROMIUM VI	1	4	0.03	0.03	20 001 N003	0.01	0.04	0.02	0.02
CHROMIUM, TOTAL	1	4	29.30	29.30	20 001 N004	5.00	254707.99	3.00	34.40
COBALT, TOTAL	4	4	29.00	53.00	20 001 N003	30.31	50.07	.	.
COPPER, TOTAL	4	4	36.50	65.50	20 001 N004	53.09	81.89	.	.
IRON, TOTAL	3	3	81200.00	160000.00	20 001 N003	109705.60	446765.90	.	.
LEAD, TOTAL	3	3	5.10	21.90	20 001 N004	12.36	4056.50	.	.
MAGNESIUM, TOTAL	4	4	7060.00	10100.00	20 001 N003	9089.64	10530.64	.	.
MANGANESE, TOTAL	4	4	596.00	850.00	20 001 N002	754.23	951.55	.	.
NICKEL, TOTAL	4	4	16.40	35.50	20 001 N003	25.07	46.90	.	.
NITRATE, AS N	2	4	0.29	0.32	20 001 N002	0.12	14.04	0.10	0.10
POTASSIUM, TOTAL	4	4	2510.00	3640.00	20 001 N003	3124.99	3949.53	.	.
SELENIUM, TOTAL	1	1	1.10	1.10	20 001 N002	1.10	1.10	.	.
SILVER, TOTAL	1	2	7.20	7.20	20 001 N002	4.24	7.20	5.00	5.00
SODIUM, TOTAL	4	4	12100.00	21900.00	20 001 N001	16150.79	26243.94	.	.
SULFATE	1	4	7.00	7.00	20 001 N002	4.57	43.02	5.00	20.00
TOTAL DISSOLVED SOLIDS	4	4	85.00	150.00	20 001 N001	121.50	107.30	.	.

TABLE 1B
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE-Background Ground Water - Upper Aquifer -----									
(continued)									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
VANADIUM, TOTAL	4	4	32.90	106.00	20 001 M001	67.50	237.29	.	.
ZINC, TOTAL	4	4	50.70	111.00	20 001 M003	70.41	173.76	.	.

TABLE 1C

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE=Ground Water - Lower Aquifer -----									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Occur. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V 1,2-DICHLOROBENZENE	1	8	0.80	0.80	20 000 N002	0.11	0.60	0.10	0.30
1,3-DICHLOROBENZENE	1	8	0.80	0.80	20 000 N002	0.11	0.60	0.10	0.30
1,4-DICHLOROBENZENE	1	8	0.90	0.90	20 000 N002	0.19	0.43	0.30	0.30
ACETONE	1	4	160.00	160.00	20 000 N003	2.04	1.6922849715810	0.50	13.00
B BIS(2-ETHYLHEXYL)PHTHALATE	2	8	0.00	120.00	20 000 N003	6.87	103.30	3.00	11.00
DI-N-BUTYLPHTHALATE	2	8	2.00	2.00	20 000 N003	3.33	7.07	2.00	11.00
DIBUTYLPHTHALATE	1	8	1.00	1.00	20 000 N004	4.14	8.38	10.00	11.00
I ALUMINUM, TOTAL	5	8	106.00	6780.00	20 000 N002	240.15	135621.30	77.00	124.00
AMMONIA, AS N	3	8	0.11	0.17	20 000 N001	0.07	0.13	0.10	0.10
ANTIMONY, TOTAL	1	8	21.40	21.40	20 000 N002	14.24	24.46	19.00	55.00
BARIUM, TOTAL	7	8	0.00	53.10	20 000 N002	13.53	37.02	16.00	16.00
CALCIUM, TOTAL	8	8	27100.00	36800.00	20 000 N002	30417.45	32069.72	.	.
CHLORIDE	2	8	5.20	20.50	20 000 N001	3.56	10.62	5.00	5.00
CHROMIUM, TOTAL	2	8	9.20	25.80	20 000 N001	3.70	23.21	3.00	10.90
COBALT, TOTAL	1	8	6.60	6.60	20 000 N002	3.67	5.60	4.00	10.00
COPPER, TOTAL	2	8	15.90	24.00	20 000 N002	4.90	20.74	5.00	10.00
IRON, TOTAL	5	8	54.70	11800.00	20 000 N002	250.69	5490599.41	55.00	55.00
LEAD, TOTAL	2	8	6.70	12.10	20 000 N004	2.38	32.94	2.00	3.00
MAGNESIUM, TOTAL	8	8	1330.00	5780.00	20 000 N002	2791.11	4306.62	.	.
MANGANESE, TOTAL	8	8	7.10	269.00	20 000 N002	45.54	430.24	.	.
NICKEL, TOTAL	1	8	10.90	10.90	20 000 N002	5.11	7.17	7.00	11.00
NITRATE, AS N	4	8	0.11	0.82	20 000 N001	0.11	0.07	0.10	0.10
POTASSIUM, TOTAL	6	8	1040.00	32700.00	20 000 N001	1795.89	45505.34	862.00	1010.00
SODIUM, TOTAL	8	8	9830.00	31800.00	20 000 N001	13515.13	19534.38	.	.
SULFATE	8	8	13.40	43.80	20 000 N001	16.00	24.77	.	.

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. ^{TABLE 1C} (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA
all in units of ppb

----- TYPE-Ground Water - Lower Aquifer -----

(continued)

C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
SURFACTANT	1	0	0.11	0.11	30 000 M003	0.06	0.07	0.10	0.10
TOTAL DISSOLVED SOLIDS	0	0	119.00	236.00	20 000 M001	133.52	164.03	.	.
VANADIUM, TOTAL	0	0	10.10	20.50	20 000 M001	0.14	20.50	0.00	10.00
SINC, TOTAL	7	0	6.70	51.40	20 000 M004	14.06	106.91	0.00	4.00

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

TABLE 1D

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA

all in units of ppb

----- TYPE-Background Ground Water - Lower Aquifer -----

C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V 1,2,4-TRIMETHYLBENZENE	2	4	0.50	2.00	20 007 N001	0.39	274.00	0.30	0.30
1,3,5-TRIMETHYLBENZENE	1	4	1.00	1.00	20 007 N001	0.14	753.55	0.10	0.30
ACETONE	1	2	55.00	55.00	20 007 N001	3.71	55.00	0.50	0.50
CARBON DISULFIDE	1	4	5.00	5.00	20 007 N003	0.22	33776006.00	0.10	0.20
D BIS(2-ETHYLBUTYL)PHTHALATE	1	4	3.00	3.00	20 007 N004	4.51	7.17	10.00	11.00
I ALUMINUM, TOTAL	4	4	137.00	1000.00	20 007 N002	305.20	127321.17	.	.
AMMONIA, AS N	4	4	0.13	0.50	20 007 N001	0.19	1.22	.	.
ARSENIC, TOTAL	1	2	2.30	2.30	20 007 N002	1.52	2.30	2.00	2.00
BARIUM, TOTAL	3	4	15.20	25.00	20 007 N001	15.13	46.06	16.00	16.00
CALCIUM, TOTAL	4	4	11200.00	14000.00	20 007 N003	12563.26	15161.22	.	.
CHLORIDE	1	4	9.90	9.90	20 007 N001	3.53	29.25	5.00	5.00
CHROMIUM, TOTAL	3	4	6.90	29.10	20 007 N001	10.29	97.50	12.40	12.40
COPPER, TOTAL	2	4	7.00	11.00	20 007 N004	5.33	20.47	6.00	7.00
IRON, TOTAL	3	3	224.00	2160.00	20 007 N002	574.55	440577354.27	.	.
LEAD, TOTAL	1	4	14.70	14.70	20 007 N004	2.17	2060.23	2.00	3.00
MAGNESIUM, TOTAL	4	4	319.00	1220.00	20 007 N002	604.92	2079.44	.	.
MANGANESE, TOTAL	4	4	6.90	64.90	20 007 N002	14.20	1301.06	.	.
NITRATE, AS N	3	4	0.12	1.00	20 007 N001	0.20	210.46	0.10	0.10
POTASSIUM, TOTAL	4	4	10600.00	91200.00	20 007 N001	21519.65	1509635.15	.	.
SODIUM, TOTAL	4	4	22000.00	80400.00	20 007 N001	37527.15	105340.64	.	.
SULFATE	4	4	5.70	35.20	20 007 N001	10.94	105.79	.	.
SURFACTANT	1	4	0.13	0.13	20 007 N003	0.06	0.19	0.10	0.10
TOTAL DISSOLVED SOLIDS	4	4	121.00	416.00	20 007 N001	170.55	017.60	.	.
VANADIUM, TOTAL	4	4	12.20	34.30	20 007 N001	19.06	52.61	.	.
ZINC, TOTAL	4	4	24.50	44.00	20 007 N003	25.49	129.20	.	.

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

TABLE 1 E

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA

all in units of ppb

----- TYPE-Surface Soil -----

C NAME	Max. Times Detected	Max. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V CHLOROFORM	2	3	2.00	4.00	20 001 B003	2.00	9.55	6.00	6.00
TETRACHLOROETHYLENE	2	3	2.00	3.00	20 001 B003	2.62	4.83	6.00	6.00
B 4-NITROPHENOL	1	3	77.00	77.00	20 001 B001	446.37	2012663224932.3	2100.00	2200.00
BENZO(A)ANTHRACENE	1	3	59.00	59.00	20 001 B003	130.00	26011.64	420.00	425.00
BENZO(A)PYRENE	1	3	56.00	56.00	20 001 B003	135.70	40955.03	420.00	425.00
BENZO(B)FLUORANTHENE	1	3	69.00	69.00	20 001 B003	145.40	8362.11	420.00	425.00
BENZO(K)FLUORANTHENE	1	3	53.00	53.00	20 001 B003	133.23	65270.37	420.00	425.00
BIS(2-ETHYLBENYL)PHTHALATE	3	3	81.00	90.00	20 001 B003	90.05	90.00	.	.
BUTYLBENZYLPHthalate	1	3	520.00	520.00	20 001 B001	200.55	3605.95	420.00	440.00
CHRYSENE	1	3	79.00	79.00	20 001 B003	152.20	3470.99	420.00	425.00
DI-N-BUTYLPHthalate	3	3	440.00	575.00	20 001 B001	510.20	706.40	.	.
FLUORANTHENE	1	3	150.00	150.00	20 001 B003	100.66	304.03	420.00	425.00
PHENANTHRENE	2	3	63.00	63.00	20 001 B003	141.14	16142.59	420.00	425.00
PYRENE	1	3	100.00	100.00	20 001 B003	164.64	1005.06	420.00	425.00
P 4,4'-DDO	1	3	530.00	530.00	20 001 B003	35.34	6.7062322141824	10.00	10.50
4,4'-DDT	1	3	480.00	480.00	20 001 B003	34.19	4.0917960913823	10.00	10.50
X ALUMINUM, TOTAL	3	3	2020000.00	14700000.00	20 001 B003	4010270.64	079570722030.15	.	.
ARSENIC, TOTAL	3	3	510.00	8000.00	20 001 B003	1477.17	2661299526723.1	.	.
BARIUM, TOTAL	3	3	2800.00	60400.00	20 001 B003	8313.40	1.0403354506810	.	.
BERYLLIUM, TOTAL	1	3	790.00	790.00	20 001 B003	205.12	130790199.10	190.00	230.00
CALCIUM, TOTAL	3	3	116000.00	2680000.00	20 001 B003	376730.05	0.9092313904817	.	.
CHROMIUM, TOTAL	3	3	2900.00	14200.00	20 001 B003	5141.23	9943135.20	.	.
COBALT, TOTAL	3	3	930.00	7100.00	20 001 B003	1442.95	567156006795.65	910.00	910.00
COPPER, TOTAL	3	3	1300.00	12400.00	20 001 B003	3044.16	6807698013.69	.	.
IRON, TOTAL	3	3	4140000.00	16400000.00	20 001 B003	7406093.75	1027767409.75	.	.
LEAD, TOTAL	3	3	2500.00	16400.00	20 001 B003	6662.57	11055054645522	.	.

TABLE 1E
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE-Surface Soil -----									
(continued)									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
MAGNESIUM, TOTAL	3	3	49400.00	2600000.00	20 001 B003	200431.40	4.6460397252B25	.	.
MANGANESE, TOTAL	3	3	8050.00	404000.00	20 001 B003	36375.04	2.2274809343E23	.	.
MERCURY, TOTAL	1	3	200.00	200.00	20 001 B003	97.40	337627.50	110.00	120.00
NICKEL, TOTAL	3	3	1500.00	10800.00	20 001 B003	2340.92	140301901240.46	1600.00	1600.00
POTASSIUM, TOTAL	1	3	359000.00	359000.00	20 001 B003	126593.96	300300056.99	137000.00	165000.00
SELENIUM, TOTAL	3	3	300.00	500.00	20 001 B003	330.50	3673.05	300.00	300.00
SODIUM, TOTAL	3	3	29750.00	79400.00	20 001 B003	40231.02	490263.06	.	.
VANADIUM, TOTAL	3	3	3000.00	24700.00	20 001 B003	6221.50	6754693777.45	.	.
ZINC, TOTAL	3	3	3100.00	31600.00	20 001 B003	12909.05	3050090604340.4	.	.

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

TABLE 1F

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA

all in units of ppb

TYPE-Subsurface Soil

C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Occur. Nsan Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V ACETONE	1	7	490.00	490.00	20 SD3 B002	53.02	974330.34	16.00	7200.00
TETRACHLOROETHYLENE	1	7	3.00	3.00	20 SD1 B001	2.70	3.00	5.00	6.00
D BIS(2-ETHYLHEXYL)PHTHALATE	4	4	640.00	2400.00	20 SD3 B003	1424.07	3840.20	.	.
DI-N-BUTYLPHTHALATE	1	7	82.00	82.00	20 SD1 B001	103.07	272.63	390.00	480.00
PHENOL	1	7	59.00	59.00	20 SD1 B001	175.42	319.60	390.00	480.00
P 4,4'-DDO	2	7	2.20	7.20	20 SD1 B001	9.02	117.31	17.00	190.00
4,4'-DDO	4	7	3.60	46.00	20 SD2 B001	11.10	41.79	17.00	10.00
4,4'-DDP	3	7	11.00	47.00	20 SD2 B001	12.93	33.06	17.00	10.00
DIELDRI	1	7	4.30	4.30	20 SD1 B001	11.16	77.90	17.00	190.00
I ALUMINUM, TOTAL	3	3	1490000.00	6130000.00	20 SD3 B003	3393882.77	647416776.01	.	.
ANTIMONY, TOTAL	1	7	12700.00	12700.00	20 SD2 B002	3060.36	7535.97	4600.00	5200.00
ARSENIC, TOTAL	6	7	440.00	1300.00	20 SD3 B003	594.56	1201.70	450.00	450.00
BARION, TOTAL	7	7	1000.00	40000.00	20 SD1 B001	14270.74	111476.94	.	.
BERYLLIUM, TOTAL	5	7	290.00	470.00	20 SD1 B001	274.40	652.25	230.00	230.00
CALCIUM, TOTAL	7	7	64500.00	2390000.00	20 SD3 B003	920802.64	10386263.77	.	.
CHROMIUM, TOTAL	7	7	2500.00	16900.00	20 SD1 B001	7124.03	20947.04	.	.
COBALT, TOTAL	6	7	1600.00	7800.00	20 SD2 B002	3491.47	29372.00	940.00	940.00
COPPER, TOTAL	6	7	3900.00	19400.00	20 SD1 B001	7944.91	171641.41	1200.00	1200.00
IRON, TOTAL	7	7	4570000.00	17100000.00	20 SD2 B002	10640485.91	19949385.52	.	.
LEAD, TOTAL	3	3	1400.00	2000.00	20 SD3 B002	1714.52	2634.55	.	.
MAGNESIUM, TOTAL	7	7	34300.00	3770000.00	20 SD2 B002	1080834.61	203759789.03	.	.
MANGANESE, TOTAL	7	7	7600.00	324000.00	20 SD3 B003	116705.40	3599043.05	.	.
NICKEL, TOTAL	6	7	4000.00	33100.00	20 SD2 B002	5773.70	36646.47	1600.00	1600.00
POTASSIUM, TOTAL	2	3	450000.00	660000.00	20 SD3 B003	292777.51	32094196123.93	169000.00	169000.00
SILVER, TOTAL	3	7	820.00	1700.00	20 SD1 B001	671.51	1250.54	620.00	700.00

TABLE 1F
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE-Subsurface Soil -----									
(continued)									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
SODIUM, TOTAL	7	7	42700.00	245000.00	20 SD3 D003	110335.20	253379.43	.	.
VANADIUM, TOTAL	7	7	2600.00	25900.00	20 SD2 D002	11727.75	52085.06	.	.
ZINC, TOTAL	7	7	4100.00	31400.00	20 SD1 D001	16005.97	54325.00	.	.

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

TABLE 1 G

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA

all in units of ppb

----- TYPE=Deep - Subsurface Soil -----

C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Occur. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
V ACETONE	4	23	61.00	100.00	20 SD1 D006	62.74	319.71	24.00	11000.00
CARBON DISULFIDE	2	23	1.00	3.00	20 MW8 D002	2.74	3.07	5.00	6.00
METHYLENE CHLORIDE	2	23	23.00	35.00	20 SD2 D007	13.32	17.36	10.00	65.50
TOLUENE	1	23	1.00	1.00	20 SD3 D006	2.74	3.07	5.00	6.00
B BENZOIC ACID	1	23	190.00	190.00	20 MW7 D001	993.60	1220.29	1900.00	3500.00
BIS(2-ETHYLNXYL)PHTHALATE	6	12	110.00	2000.00	20 SD1 D004	339.06	1369.60	390.00	470.00
DI-N-BUTYLPHTHALATE	3	21	69.00	140.00	20 MW8 D001	107.94	226.63	300.00	490.00
P 4,4'-DDH	1	23	5.00	5.00	20 SD1 D004	0.95	9.70	9.30	21.00
I ALUMINUM, TOTAL	9	9	2730000.00	16100000.00	20 MW7 D002	5467619.03	11130109.10	.	.
ANTIMONY, TOTAL	1	23	12100.00	12100.00	20 MW5 D001	2650.70	3200.47	4200.00	5600.00
ARSENIC, TOTAL	15	23	450.00	1200.00	20 MW7 D002	462.20	725.41	330.00	510.00
BARIUM, TOTAL	23	23	11500.00	90000.00	20 MW8 D002	22099.05	32265.63	.	.
BERYLLIUM, TOTAL	20	23	250.00	1100.00	20 MW8 D002	334.47	497.71	330.00	240.00
CADMIUM, TOTAL	2	23	770.00	1100.00	20 MW8 D002	300.22	446.23	620.00	935.00
CALCIUM, TOTAL	23	23	1020000.00	3040000.00	20 MW7 D002	1545690.00	1020497.05	.	.
CHROMIUM, TOTAL	23	23	1100.00	40000.00	20 MW7 D002	7992.91	15300.22	.	.
CORALY, TOTAL	23	23	3300.00	10000.00	20 MW8 D002	6450.75	0567.13	.	.
COPPER, TOTAL	23	23	7400.00	35700.00	20 MW8 D002	13996.26	10002.07	.	.
CYANIDE, TOTAL	1	23	602.00	602.00	20 MW8 D002	333.09	455.27	530.00	5000.00
IRON, TOTAL	10	10	6300000.00	27400000.00	20 MW7 D002	12237260.32	15609006.90	.	.
LEAD, TOTAL	10	10	1300.00	0300.00	20 MW8 D002	2756.30	5177.41	.	.
MAGNESIUM, TOTAL	23	23	1195000.00	5010000.00	20 MW8 D002	2115962.24	2550034.42	.	.
MANGANESE, TOTAL	23	23	53700.00	409000.00	20 MW8 D002	119024.20	202770.70	.	.
MERCURY, TOTAL	2	20	100.00	240.00	20 MW5 D001	59.04	76.93	50.00	330.00
NICKEL, TOTAL	23	23	4050.00	19600.00	20 MW7 D002	0000.30	11524.35	.	.

TABLE 1G
SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT. (continued).

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA									
all in units of ppb									
----- TYPE=Deep - Subsurface Soil -----									
(continued)									
C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
POTASSIUM, TOTAL	13	13	359000.00	1380000.00	20 MW8 D002	415976.07	846091.23	104000.00	104000.00
SELENIUM, TOTAL	1	13	620.00	620.00	20 MW9 D001	230.81	259.82	330.00	510.00
SILVER, TOTAL	5	13	780.00	930.00	20 SD2 D003	445.05	559.65	620.00	1250.00
SODIUM, TOTAL	13	13	82000.00	269000.00	20 SD2 D003	146461.54	172409.41	.	.
THALLIUM, TOTAL	1	13	910.00	910.00	20 MW6 D001	614.45	1250.50	650.00	9500.00
VANADIUM, TOTAL	13	13	7100.00	51700.00	20 MW7 D002	20495.37	27920.30	.	.
ZINC, TOTAL	13	13	13600.00	49200.00	20 MW8 D002	24982.69	30000.13	.	.

SUMMARY STATISTICS FOR THE WITCO SITE RISK ASSESSMENT.

TABLE 1 II

SUMMARY STATISTICS FOR SITE, BY CHEMICAL AND MEDIUM/AREA all in units of ppb

----- TYPE=Surface Water-Nopper Pond -----

C NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Opp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
I BARIUM, TOTAL	1	1	4.90	4.90	20 001 W001	4.90	4.90	.	.
CALCIUM, TOTAL	1	1	16100.00	16100.00	20 001 W001	16100.00	16100.00	.	.
CHLORIDE	1	1	63.50	63.50	20 001 W001	63.50	63.50	.	.
IRON, TOTAL	1	1	222.00	222.00	20 001 W001	222.00	222.00	.	.
LEAD, TOTAL	1	1	3.50	3.50	20 001 W001	3.50	3.50	.	.
MAGNESIUM, TOTAL	1	1	4670.00	4670.00	20 001 W001	4670.00	4670.00	.	.
MANGANESE, TOTAL	1	1	30.20	30.20	20 001 W001	30.20	30.20	.	.
NITRATE, AS N	1	1	0.31	0.31	20 001 W001	0.31	0.31	.	.
POTASSIUM, TOTAL	1	1	1230.00	1230.00	20 001 W001	1230.00	1230.00	.	.
SODIUM, TOTAL	1	1	33000.00	33000.00	20 001 W001	33000.00	33000.00	.	.
SULFATE	1	1	10.60	10.60	20 001 W001	10.60	10.60	.	.
TOTAL DISSOLVED SOLIDS	1	1	169.00	169.00	20 001 W001	169.00	169.00	.	.
VANADIUM, TOTAL	1	1	7.00	7.00	20 001 W001	7.00	7.00	.	.
ZINC, TOTAL	1	1	3.10	3.10	20 001 W001	3.10	3.10	.	.

TABLE 2 LIST OF CONTAMINANTS OF CONCERN AT THE WITCO SITE

CONTAMINANT	GROUND WATER			
	UPPER AQUIFER	LOWER AQUIFER	SURFACE SOILS	SUBSURFACE SOILS
VOLATILES				
Acetone	X	X		X
Chloroform			X	
1,2-Dichlorobenzene		X		
1,3-Dichlorobenzene		X		
1,4-Dichlorobenzene		X		
Tetrachloroethylene			X	X
Trichlorofluoromethane	X			
SEMIVOLATILES				
Benzo(a)anthracene			X	
Benzo(a)pyrene			X	
Benzo(b)fluoranthene			X	
Benzo(k)fluoranthene			X	
Bis(2-ethylhexyl)phthalate	X	X	X	X
Butyl benzyl phthalate			X	
Chrysene			X	
Di-n-butylphthalate	X	X	X	X
Diethylphthalate		X		
Fluoranthene			X	
4-Nitrophenol			X	
Phenanthrene			X	
Phenol				X
Pyrene			X	
PESTICIDES				
4,4'-DDD				X
4,4'-DDE			X	X
4,4'-DDT			X	X
Dieldrin				X

**TABLE 2 LIST OF CONTAMINANTS OF CONCERN AT THE WITCO SITE
(CONTINUED)**

CONTAMINANT	GROUND WATER			
	UPPER AQUIFER	LOWER AQUIFER	SURFACE SOILS	SUBSURFACE SOILS
INORGANICS				
Aluminum		X	X	X
Antimony		X		X
Arsenic	X		X	X
Barium			X	X
Beryllium			X	X
Chromium, VI	X			
Chromium, total	X		X	X
Cobalt		X	X	X
Copper			X	X
Iron		X	X	X
Lead			X	X
Magnesium	X	X	X	X
Manganese		X	X	X
Mercury			X	
Nickel	X	X	X	X
Selenium			X	
Silver				X
Vanadium			X	X
Zinc			X	X

TABLE 3

WITCO SITE: SUMMARY OF EXPOSURE PATHWAYS

Pathway	Receptor	Time-Frame Evaluated		Degree of Assessment		
		Present	Future	Quant.	Qual.	Rationale for Selection or Exclusion
Ground Water						
Ingestion of Ground Water	Resident	No	Yes	X		Adjacent areas are zoned residential and some town residents currently obtain drinking water from local wells. Wells currently in use are over one mile downgradient.
Inhalation of Ground Water Contaminants During Showers	Resident	No	No			This pathway was not evaluated because concentrations of volatiles are low in ground water.
Inhalation of Contaminants that Volatilize from Ground Water and Seep into Basements	Resident	No	No			This pathway was not evaluated because the ground water table is 20-31 feet below the surface and concentrations of volatiles in ground water are low.
Dermal Contact with Ground Water	Resident	No	No			Considered insignificant compared to ingestion of ground water.
Surface Soils						
Incidental Ingestion of Onsite Surface Soils	Onsite Worker	Yes	No	X		Site is currently in use by Witco Chemical onsite workers.
	Trespasser	Yes	No	X		
	Adult Resident	No	Yes	X		Adjacent property is zoned residential.
	Child Resident	No	Yes	X		
Dermal Contact with Onsite Surface Soils	Onsite Worker	No	No			The three contaminants with sufficient toxicity data to complete a quantitative assessment were not detected at the Witco site.
	Trespasser	No	No			
	Adult Resident	No	No			
	Child Resident	No	No			

TABLE 3

WITCO SITE: SUMMARY OF EXPOSURE PATHWAYS (CONTINUED)

Pathway	Receptor	Time-Frame Evaluated		Degree of Assessment		Rationale for Selection or Exclusion
		Present	Future	Quant.	Qual.	
Inhalation of VOC and Particulate Emissions from Surface Soils	Onsite Worker Resident	No No	No No			Contaminant concentrations in surface soils are low. The site is paved and covered with vegetation, limiting releases.
Subsurface Soils						
Incidental Ingestion of Onsite Subsurface Soils	Utility Worker	Yes	Yes	X		Routine maintenance of buried utilities may be necessary.
Dermal Contact with Onsite Subsurface Soils	Utility Worker	No	No			The three contaminants with sufficient toxicity data to complete a quantitative assessment were not detected at the Witco site.
Incidental Ingestion of Onsite Subsurface Soils	Excavation Worker	No	Yes	X		Future development may involve excavation.
Dermal Contact with Onsite Subsurface Soils	Excavation Worker	No	No			The three contaminants with sufficient toxicity data to complete a quantitative assessment were not detected at the Witco site.
Surface Water						
Dermal Contact with Surface Water in Hoppers Lake	Recreational User	Yes	No		X	This pathway was not evaluated quantitatively because only low levels of inorganics were detected in surface water, and other potential sources of contamination exist near the site.

TABLE 4 TOXICITY VALUES FOR CONTAMINANTS OF CONCERN AT THE WITCO SITE

Contaminants of Concern	Oral Slope Factor (mg/kg-day) ⁻¹	Oral RfD (mg/kg/day)	Subchronic Oral RfD (b) (mg/kg/day)	1-Day Health Advisory (a) (mg/l)	Longer-Term Health Advisory (a) (mg/l)
VOLATILES					
Acetone	--	1.00E-01	1.00E+00	--	--
Chloroform	6.10E-03	1.00E-02	1.00E-02	4.00E+00	5.00E-01
1,2-Dichlorobenzene	--	9.00E-02	9.00E-01	9.00E+00	3.00E+01
1,3-Dichlorobenzene	--	3.00E-02	--	9.00E+00	3.00E+01
1,4-Dichlorobenzene	2.40E-02 b	1.00E-01	--	1.00E+01	4.00E+01
Tetrachloroethylene	5.10E-02 b	1.00E-02	1.00E-01	2.00E+00	5.00E+00
Trichlorofluoromethane	--	3.00E-01	7.00E-01	--	--
SEMIVOLATILES					
Benzo(a)anthracene	5.79E+00 c	--	--	--	--
Benzo(a)pyrene	5.79E+00 c	--	--	--	--
Benzo(b)fluoranthene	5.79E+00 c	--	--	--	--
Benzo(k)fluoranthene	5.79E+00 c	--	--	--	--
Bis(2-Ethylhexyl)phthalate	1.40E-02 b	2.00E-02	2.00E-02	--	--
Buryl benzyl phthalate	--	2.00E-01	2.00E+00	--	--
Chrysene	5.79E+00 c	--	--	--	--
Di-n-buryl phthalate	--	1.00E-01	1.00E+00	--	--
Diethylphthalate	--	8.00E-01	8.00E+00 b	--	--
Fluoranthene	--	4.00E-02	4.00E-01	--	--
4-Nitrophenol	--	--	--	8.00E-01	3.00E+00
Phenanthrene	--	--	--	--	--
Phenol	--	6.00E-01	6.00E-01 j	6.00E+00	2.00E+01
Pyrene	--	3.00E-02	3.00E-01	--	--
PESTICIDES/PCBS					
4,4' DDD	2.40E-01	--	--	--	--
4,4' DDE	3.40E-01	--	--	--	--
4,4' DDT	3.40E-01	5.00E-04	5.00E-04	--	--
Dieldrin	1.60E+01	5.00E-05	5.00E-05	5.00E-04	2.00E-03

TABLE 4 TOXICITY VALUES FOR CONTAMINANTS OF CONCERN AT THE WITCO SITE (CONTINUED)

Contaminants of Concern	Oral Slope Factor (mg/kg-day) ⁻¹	Oral RfD (mg/kg/day)	Subchronic Oral RfD (b) (mg/kg/day)	1-Day Health Advisory (a) (mg/l)	Longer-Term Health Advisory (a) (mg/l)
INORGANICS					
Aluminum	--	--	--	--	--
Antimony	--	4.00E-04	4.00E-04	1.50E-02	1.50E-02
Arsenic	1.75E+00 g	3.00E-04	1.00E-03	--	--
Barium	--	5.00E-02 d	5.00E-02	--	--
Beryllium	4.30E+00	5.00E-03	5.00E-03	3.00E+01	2.00E+01
Chromium, III	--	1.00E+00 b	1.00E+01	--	--
Chromium, VI	--	5.00E-03	2.00E-02	1.40E+00 b	8.40E-01
Chromium, total	--	8.76E-01 k	8.75E+00 k	1.00E+00	8.00E-01
Cobalt	--	-- i	--	--	--
Copper	--	4.00E-02 i	--	--	--
Iron	--	5.00E-01 i	--	--	--
Lead	-- e	-- e	--	--	--
Magnesium	--	--	--	--	--
Manganese	--	1.00E-01	1.00E-01	--	--
Mercury	--	3.00E-04 b	3.00E-04	--	2.00E-03
Nickel	--	2.00E-02 f	2.00E-02	1.00E+00	6.00E-01
Selenium	--	5.00E-03	--	--	--
Silver	--	5.00E-03 a	3.00E-03	2.00E-01	2.00E-01
Vanadium	--	7.00E-03 b	7.00E-03	8.00E-02	1.10E-01
Zinc	--	2.00E-01 b	2.00E-01	4.00E+00	9.00E+00

Note: Unless otherwise indicated, all data are from IRIS.

- Not available (missing slope factors indicate that available data suggest that substance is noncarcinogenic or that data is inadequate to assess carcinogenicity).
- (a) U.S. EPA, *Drinking Water Regulations and Health Advisories*, Office of Drinking Water, April 1991. One-Day HAs are for a 10kg child; Longer-Term HAs are for a 70kg adult.
- (b) U.S. EPA, *Health Effects Assessment Summary Tables (HEAST)*, Annual, FY 1991, December.
- (c) Per EPA guidance, the benzo(a)pyrene slope factor is used as a surrogate for other PAHs where sufficient evidence of carcinogenicity exists, as designated in IRIS or HEAST.
- (d) At the request of EPA, the Oral RfD from HEAST, rather than IRIS, is being used for barium.
- (e) Given the current knowledge of lead pharmacokinetics, CAG recommends that a numerical estimate not be used for carcinogenic risk.

**TABLE 4 TOXICITY VALUES FOR CONTAMINANTS OF CONCERN AT THE WITCO SITE
(CONTINUED)**

The RfD Work Group considered the development of an RfD for lead inappropriate because there is essentially no threshold. OSWER Directive #9355.4-02 ("Interim Guidance on Establishing Soil Clean-up Levels at Superfund Sites") states that the soil clean-up level should be at 500-1000 ppm.

(f) RfD value for soluble salts.

(g) Oral Slope Factors for arsenic were calculated from Unit Risks provided in IRIS by the following equations:

ORAL: slope factor(mg/kg/day) - 1 = unit risk(μ g/liter)-1 x 70kg x 1/2 liters/day x 1/10⁻³ mg/ μ g.
(U.S. EPA, Risk Assessment Guidance for Superfund, Vol. 1: Human Health Evaluation Manual (Part A), p. 7-13, EPA 540/1-89/002, Dec. 1989)

(h) 1-day Health Advisory does not exist; value is a 10-day Health Advisory; EPA recommends using this value in place of 1-day Health Advisory.

(i) Interim values provided by ECAO for Region II Superfund Sites in letters from Kenneth A. Poirier, Director, Superfund Health Risk Technical Support Center, to John Osolin, U.S. EPA Region II (November 19, 1991) and Mike Walters, U.S. EPA Region II (January 24, 1992).

(j) Developmental effects have been used as the basis of this calculation.

(k) Chronic and subchronic oral RfDs for total chromium were calculated based on the assumed ratio of seven parts trivalent chromium and one part hexavalent chromium (Personal communication between Alliance and EPA Region II on October 18, 1991).

(l) No chronic oral RfD for cobalt is provided by ECAO as described in a letter from Kenneth A. Poirier, Director, Superfund Health Risk Technical Support Center, to John Osolin, U.S. EPA Region II (March 2, 1992).

TABLE 5 SUMMARY OF NONCARCINOGENIC HAZARD INDICES (HI) FOR THE WITCO SITE

Scenario	Receptor	Present/Future	Acute HI	Chronic HI
Ground Water - Upper Aquifer				
Ingestion	Resident	F	2.7E-01	4.7E-01
Ground Water - Lower Aquifer				
Ingestion	Resident	F	4.1E-01	2.4E+00*
Surface Soil				
Ingestion	Onsite Worker	P	2.5E-03	3.5E-02
Ingestion	Trespasser	P	6.9E-03	4.6E-02
Ingestion	Adult and Child Resident	F	5.1E-02	1.0E+00
Subsurface Soil				
Ingestion	Utility Worker	P/F	1.3E-02	2.6E-03
Ingestion	Excavation Worker	F	6.0E-02	3.1E-01 a

*Hazard Index exceeds one (1).

a - Subchronic HIs were calculated for this scenario.

TABLE 6 SUMMARY OF CARCINOGENIC RISK ESTIMATES FOR THE WITCO SITE

Scenario	Receptor	Present/Future	Incremental Risk
Ground Water - Upper Aquifer			
Ingestion	Resident	F	6.7E-05*
Ground Water - Lower Aquifer			
Ingestion	Resident	F	1.7E-05*
Surface Soil			
Ingestion	Onsite Worker	P	3.4E-06*
Ingestion	Trespasser	P	1.8E-06*
Ingestion	Adult and Child Resident	F	3.1E-05*
Subsurface Soil			
Ingestion	Utility Worker	P/F	6.1E-08
Ingestion	Excavation Worker	F	7.7E-08

*Exceeds 10^{-6} risk but falls within EPA's acceptable risk range.

APPENDIX IV.
STATE LETTER OF CONCURRENCE



State of New Jersey
Department of Environmental Protection and Energy
Office of the Commissioner
CN 402
Trenton, NJ 08625-0402
Tel. # 609-292-2885
Fax. # 609-984-3962

Scott A. Weiner
Commissioner

SEP 21 1992

Mr. Constantine Sidamon-Eristoff
USEPA Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Sidamon-Eristoff:

Re: Record of Decision (ROD)
Witco Chemical Corporation Site
Oakland Township, Bergen County

The NJDEPE has reviewed the Record of Decision (ROD) dated August 21, 1992, for the Witco Chemical Corporation Site located in Oakland Township and we concur with the proposed "No Further Action" alternative.

The Remedial Investigation and subsequent Risk Assessment have provided significant documentation of this site and the protectiveness of the previously performed remedial actions in regard to human health and the environment.

Sincerely,

Scott A. Weiner
Commissioner

Post-it™ brand fax transmittal memo 7571		# of pages > 1	
To: JANET FELDMAN		From: IAN CURTIS	
Co: USEPA		Co: BFCM	
Dept: REGION II		Phone: 633-1455	
Fax: 212-264-7611		Fax: 633-1454	



State of New Jersey
Department of Environmental Protection and Energy
Office of the Commissioner
CN 402
Trenton, NJ 08625-0402
Tel. # 609-292-2885
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Scott A. Weiner
Commissioner

CS-E
Muzynski-
cc: Callahan
Blair

SEP 21 1992

Mr. Constantine Sidamon-Eristoff
USEPA Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Sidamon-Eristoff:

Re: Record of Decision (ROD)
Witco Chemical Corporation Site
Oakland Township, Bergen County

The NJDEPE has reviewed the Record of Decision (ROD) dated August 21, 1992, for the Witco Chemical Corporation Site located in Oakland Township and we concur with the proposed "No Further Action" alternative.

The Remedial Investigation and subsequent Risk Assessment have provided significant documentation of this site and the protectiveness of the previously performed remedial actions in regard to human health and the environment.

Sincerely,

Scott A. Weiner
Commissioner

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US EPA