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G-000-102.34

RCRA GROUNDWATER MONITORING REPORT; VOLUME 5 - ROUND 5 SAMPLING NOVEMBER 1987

11/30/87

DAMES & MOORE
REPORT

[redacted]

Department of Energy
Feed Materials Production Center

749

RCRA GROUNDWATER MONITORING REPORT

Volume 5 - Round 5 Sampling

NOVEMBER 1987

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1.0 Introduction

As part of a continuing RCRA ground water monitoring compliance effort, the Fifth Round of quarterly ground water samples was collected from 41 on-site and off-site wells at the Feed Materials Production Center (FMPC) in Fernald Ohio (Figure 1-1) on May 26 and 27, 1987. The FMPC is a uranium metal processing facility operated for the Department of Energy (DOE) by the Westinghouse Materials Company of Ohio (WMCO). The results of the Round 5 sampling are summarized in this report.

The First Round of quarterly ground water sampling was previously conducted in a series of three phases as described below:

- Phase 1 of Round 1 was performed on August 1, 1985. Four wells screened in the saturated portion of the glacial till were sampled as part of this work. Results of analytical testing were presented and interpreted in a Dames & Moore report dated December 19, 1985 (Reference 1).

- Phase 2 of Round 1 was completed three weeks later on August 27, 1985. Seven wells completed in the sand and gravel aquifer were sampled during this phase. Results were provided in a Dames & Moore report dated December 20, 1985 (Reference 2).

- Phase 3 of Round 1 took place in early January, 1986 and involved the sampling of 32 on-site and off-site monitoring wells. Results from this effort were presented and discussed in a Dames & Moore report dated June, 1986 (Reference 3).

Analytical results from all phases of Round 1 sampling are included in Appendix 4 of this report. Even though changes in water quality occur over time, a comparison between the results for the three phases of Round 1 and other Rounds can be made to estimate relative changes in overall ground water quality.

Round 2 RCRA sampling was completed in May, 1986. Results of Round 2 sampling are presented and discussed in a Dames & Moore report dated November, 1986 (Reference 4). Analytical results from Round 2 sampling also are included in Appendix 4 of this report.

Results of Round 3 sampling are presented and discussed in a Dames & Moore report dated March, 1987 (Reference 5). Analytical results from Round 3 are included in Appendix 4 of this report.

Round 4 RCRA sampling was completed in November, 1986. Results of Round 4 sampling are presented and described in a Dames & Moore report completed in May, 1987 (Reference 6). Analytical results from Round 4 are also included in Appendix 4 of this report.

Round 5 RCRA sampling was completed by WMCO personnel in May, 1987 and is the subject of this report. This is in conformance with USEPA Interim Status detection monitoring requirements (40 CFR Part 265). Students t-statistical comparisons are made and a recommendation is presented as to the status of future monitoring requirements.

2.0 Ground Water Monitoring

The ground water monitoring performed as part of this project was initiated to characterize ground water quality at the FMPC and to assist in identifying RCRA regulated hazardous and radionuclide constituents which may be present in the ground water. A previous study by Dames & Moore (Reference 7) has indicated that uranium is present in portions of the sand and gravel aquifer at levels above background.

To assist in identifying if RCRA regulated constituents have entered the ground water, a total of forty-one (41) on and off-site wells were selected for sampling. The location of each well is shown on Figure 2-1. The wells monitor two distinct water bearing units; a shallow clayey till layer and an underlying sand and gravel aquifer. The shallow till system is monitored by wells MW-12, MW-19TP, MW-20TP, MW-21TP, MW-22TP and OS-1A. The remaining 35 wells all are completed in the sand and gravel aquifer. The sand and gravel aquifer wells are completed at various depths in order to provide information on the potential vertical movement of identified above background constituents.

2.1 Selection of Background Wells

Characterization of background water quality at RCRA related facilities usually is performed by sampling a well hydraulically upgradient of the waste disposal area. The well is typically completed in the same hydrogeologic unit as the downgradient wells. At the FMPC this procedure was followed in selecting a background well for monitoring the glacial till but not for the sand and gravel aquifer. This was because of the geology of the site.

In order to discuss the rationale for the selection of the background wells, a basic understanding of the regional geology is required. A more detailed description of site geology may be found in Reference 7.

The sand and gravel aquifer beneath the FMPC is part of the New Haven Trough. This Trough is an east-west trending subsurface feature which has been filled with alluvially deposited sands and gravels which are covered with till. The northern

boundary of the feature corresponds roughly with the northern boundary of the FMPC. North of the Trough, till is deposited directly on bedrock.

Well MW-12, used as a background well for monitoring the till, is screened in the glacial till and weathered bedrock. It is located hydraulically upgradient from the four other shallow wells and is about 500 feet north of the Plant Production Area. The water level elevations in this upgradient well are more than 20 feet higher than the on-site shallow (till) wells. Being upgradient should hydrologically isolate this well from on-site sources of waste.

The background well for the sand and gravel aquifer at the FMPC should have been placed upgradient (north) of the waste disposal area. However, the sand and gravel aquifer north of the FMPC abruptly grades into a thick sequence of glacial till overlying shale bedrock. The chemistry of ground water in this till may be quite different than that of ground water in the sand and gravel. Ground water in clays tends to have different natural concentrations of many constituents than water in sand and gravel. If a well completed in the clay was used as the background well for the sand and gravel aquifer, non-representative background concentrations may have been identified for some of the constituents being analyzed.

Since an upgradient well screened in the till might not be representative of background water quality, a nearby water supply well was selected to characterize background ground water quality. The Southwestern Ohio Water Company operates a well which is completed in the sands and gravels of the New Haven Trough, approximately one mile east of the site. Although the well (SW-2) is believed to be in an adjacent ground water flow regime, the water from SW-2 will be more representative of the natural ground water conditions beneath the FMPC than a geographically closer well completed in the till. Hence, well SW-2 was selected for use as a background well for monitoring of the sand and gravel aquifer.

Samples of the ground water were taken by WMCO personnel on May 26 and 27, 1987 using the sampling procedures outlined in the "RCRA Sampling and Analysis Plan" (Appendix 1). The samples were then sent to Howard Labs Inc. in Dayton, Ohio for analysis according to USEPA approved protocols and procedures (Reference 8). Tests were performed for 95 specific parameters including numerous ions, metals, organic compounds and radionuclides. A list of the parameters that were analyzed is included in

Appendix 1 (Table 4-Section 5.0). Additionally, WMCO analyzed all ground water samples for natural uranium. The compounds that were detected in the sampled wells are included in Tables 3.1-3.4 of this report. A copy of the Laboratory Data Sheets is provided in Appendix 2. For ease of reading, the volatile organic compounds not detected have not been included in Tables 3.1-3.5. Appendix 3 contains copies of the chain-of-custody forms for the Round 5 samples.

A statistical comparison between upgradient and downgradient wells has been prepared and is described in Section 4.0 of this report. Cochran's approximation to the Behrens-Fisher Student's t-test was used to detect significant changes in concentrations of indicator parameters (pH, Total Organic Halogen (TOX), Total Organic Carbon (TOC) and Specific Conductance (SC)) in the upgradient RCRA wells and between the upgradient RCRA wells and the downgradient RCRA wells. Results of statistical comparisons are summarized in Table 2.2. A brief description of the t-test is provided in Section 4.1.

2.2 Water Table Configuration

Water level elevations were measured at most well locations. At some well locations the depth to water could not be measured due to the well's construction. Measurements from Round 5 sampling (Table 2.1) are included in this report and a ground water contour map for the sand and gravel aquifer is shown on Figure 2-2.

A water table elevation contour map on the sand and gravel aquifer underlying the FMPC site and its surrounding area is presented as Figure 2-2. These elevations are in general agreement with results previously reported for this site. Ground water flow direction in the sand and gravel aquifer are generally eastward and southeastward.

The ground water elevation at most of the measurement points are approximately 0.5 to 1.0 feet higher than those reported for November 18, 1986. This is to be expected due to the increased infiltration of water from the surface resulting from springtime snow melt.

Water table contours for the glacial till water bearing zone are not available due to the few wells completed in that zone. These contours are being developed as part of WMCO's ongoing RI/FS program for the Waste Pit Storage Area.

3.0 Water Quality

The ground water quality data developed from this fifth round of RCRA sampling has been divided into the following categories.

- Water quality data from the shallow (glacial till) ground water system.
- Water quality data from wells completed in the sand and gravel aquifer inside the Plant Production Area.
- Water quality data from the Plant Production wells.
- Water quality data from wells completed in the sand and gravel aquifer outside the Plant Production Area.

These categories have been used as an aid in evaluating the large number (over 4,000 values) of laboratory analytical results. The categories are consistent with the ground water flow systems present at the FMPC and, where appropriate, comparisons between categories have been made.

3.1 Shallow (Glacial Till) Ground Water Quality

Six wells are completed in the glacial till water bearing zone at the FMPC and have been sampled as part of the Round 5 work. These are MW-12 (upgradient well), MW-19TP, MW-20TP, MW-21TP, MW-22TP and OS-1A. Analytical data from these wells are presented in Table 3.1. These data indicate that:

- No pesticides/herbicides were detected in the Glacial Till water bearing zone
- Low concentrations (between 0.8 ppb and 25.8 ppb) of three VOC's (1,1-dichloroethane, chloroethene, and CIS-12-dichloroethene) were detected in

well MW-19TP*. This is the fourth time low concentrations of VOC's have been detected in this well. This is a clear indication that MW-19TP is receiving ground water containing low concentrations of VOC's from Pit 4.

- An elevated coliform level was reported from well OS-1A. Given the location of this well (near a dog house and cow pasture) and the near-surface nature of this water-bearing zone, a high coliform level is not unusual. High coliform and nitrate levels have consistently been detected in this well which is hydrologically isolated from shallow ground water underlying the FMPC.

- A very high coliform level was reported in well MW-20TP and a slightly elevated level was found in well MW-22TP. This is the second time a high coliform level has been found in MW-20TP. The significance of this result is unknown at this time. Sewage or septic wastes have not reportedly been disposed of in Pit 4 and these coliform levels may be artifacts of sampling/analytical procedures. Monitoring for this parameter will continue at these wells.

- Iron and manganese were elevated in all the glacial till wells including the background well and off-site well. These concentrations probably are indicative of regional variations in water quality for this water-bearing zone and are not related to FMPC waste management activities. Similar values have been reported from these same wells in the prior four rounds of sampling.

- TDS values are elevated in all but two of the glacial till wells (MW-20TP and OS-1A). This is another indication that leachate from Pit 4 may be influencing the glacial till water bearing zone.

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* Acetone and cyclohexane detected in well MW-12 are discussed in Section 3.5.

- An elevated TOX concentration was detected in well MW-22TP. However, no individual VOC's were detected in this well. This TOX value is probably related to the VOC's which had been detected in other nearby wells.

- Chloride has been reported as elevated in MW-19TP. Sulfates exceed secondary standards in MW-19TP, 21TP and 22TP. The presence of these constituents is another indication that Pit 4 may be influencing shallow ground water.

- The concentrations of other metals (lead, barium, etc.) and water quality indicators (pH, conductivity, etc.) were below or within drinking water standards.

- Uranium values in wells MW-19TP, 21TP and 22TP are the highest of all wells monitored. No uranium was detected in off-site glacial till monitoring wells. As with chloride and sulfates, this is another indication that Pit 4 is influencing shallow ground water.

3.2 Sand and Gravel Water Quality - Inside of Plant Production Area (including Waste Pit Area)

Within the Plant Production Area, the sand and gravel aquifer is monitored at varying depths by 14 wells. The majority of these wells are installed within the vicinity of the Waste Pit Storage Area. Analytical results of ground water samples from these wells are presented in Table 3.2. These data indicate that:

- No VOC's were detected in any of these wells with the exception of acetone and cyclohexane, which will be discussed in Section 3.5.

- The 15 different VOC's detected in well MW-19d in the Round 4 sampling were not detected in the Round 5 analysis. It appears that the former presence of these VOC's was the result of a mix-up in sample labeling. A corrected report has been issued by Howard Labs indicating that no VOC's were detected in the November, 1986 sampling of MW-19d (see Appendix 5). It should be noted that several wells (MW-1s, MW-3, MW-4 and MW-5) were not accessible to bailers and were not sampled for VOC's. VOC analyses would not be representative if pumped (i.e., aerated) water was used in the analysis.

- No pesticides/herbicides were detected in any of the wells. Low levels of the pesticide/herbicide 2,4-D and 2,4,5-TP silvex were found in well MW-8s during Round 2. These constituents were not detected in this well in Round 3, 4 or 5 sample analysis.

- Gross beta activity exceeded standards in wells MW-19s, MW-21s, and MW-22s. Gross alpha activity exceeded standards in wells MW-19s and MW-21s. Uranium was elevated in MW-21s. These are further indications that Pit 4 is influencing the sand and gravel aquifer. However, the final characterization of migration pathways and source identification based on these indications will be included as part of the ongoing RI/FS program at the FMPC.

- Coliform was detected at elevated levels in wells MW-3, MW-4 and MW-5. All of these wells are open to the atmosphere and coliform may be present as a result of bacteria growth in the well casing and/or associated pumps and piping. A well rehabilitation program is planned to install new well caps and sampling systems.

- Manganese and phenol concentrations exceeded recommended standards in ten wells each. Manganese also was reported as exceeding standards in the upgradient well (SW-2). The number of wells reporting elevated phenol concentrations has increased (from 1 to 10) since the last round of sampling. The significance of these findings is undetermined at present. Previous sampling data has indicated a wide fluctuation in the phenol concentrations of many different wells. Sampling for these constituents will continue.

- Sulfate exceeded standards in wells MW-13d and MW-19d. Nitrates exceeded standards in wells MW-10, MW-19s, MW-21s and MW-22s. These values are consistent with Rounds 2, 3 and 4 sampling results. For those wells located near Pit 4 (19s, 19d, 21s and 22s) these are additional indications that Pit 4 is influencing the ground water. The TDS value in MW-5 is only slightly above standards and probably represents a transient ground water quality fluctuation. There are two explanations for the elevated levels of these constituents in well

10 and cluster 13. WMCO personnel have observed surface water flowing under the surface cement seal of MW-10's well casing. This surface water was sampled by WMCO and elevated levels of nitrates, sulfates and uranium were detected. The water originates as storm water runoff from the northwest portions of the Plant Production Area and may be migrating down the annular space of the well. The proposed well rehabilitation program will correct this condition. Another possible explanation for the presence of these elevated values in these wells is that well 10 and well cluster 13 are located to the east and are hydrologically downgradient of the Waste Pit Storage Area (Figure 2-2). Elevated levels of these constituents are possible preliminary indications of a wider dispersion of leachate from the Waste Pit Storage Area and may be attributed to various other waste management activities of past FMPC operations. This will be evaluated further as part of the ongoing RI/FS program.

- Iron exceeded drinking water standards in eight wells. This parameter also was reported as elevated in two off-site wells (OS-3 and HK-15d) and in one upgradient well (MW-12). This is an indication that iron concentrations may be related to regional water quality conditions within the aquifer.

- Other metals and water quality indicators analyzed in ground water from wells within the Plant Production Area were below or within USEPA Primary and Secondary Drinking Water Standards.

3.3 Plant Production Wells

Three wells provide the FMPC with necessary potable and production water. These wells (P-1, P-2 and P-3) are screened in the deeper portion of the sand and gravel aquifer and are discussed separately because of their specialized use and importance to the FMPC. Results of laboratory analysis are shown in Table 3.3. Based upon these results, the following statements can be made:

- Pesticides/herbicides were not detected in these wells.

- No radionuclides exceeded drinking water standards in ground water from these wells.

- Iron and manganese were above drinking water standards in wells P-1, P-2 and P-3. These parameters also exceeded standards in one background well (MW-12) and manganese exceeded standards in the other background well (SW-2). These same parameters also exceeded standards in both background wells in Round 4. Iron and manganese levels are probably indicative of the variability of regional ground water quality and not attributable to former or present FMPC activities.

- TDS from P-1 and P-2 exceeded standards. This is the third time that this has occurred for P-1 and the first occurrence for P-2. The value reported for P-2 exceeded standards by only 4 ppm. TOX, which had exceeded standards on two previous sampling rounds was below standards at this time. Monitoring for the parameters will continue. It should be noted that water from these wells is treated and filtered prior to being used as a water supply source at the FMPC. Above standard levels of these parameters have not been reported by WMCO personnel in their analysis of the treated water.

- Metals and other water quality indicators were below or within USEPA standards.

- VOC's were not tested for in ground water from these wells due to the inaccessibility of sampling equipment. However, both TOX and TOC analyses do not indicate the presence of potential organic constituents.

3.4 Sand and Gravel Aquifer Water Quality - Outside of Plant Production Area

Water quality within the sand and gravel outside the Plant Production Area is monitored at varying depths by 14 monitoring wells and 4 water supply wells. Sampling data from these wells is provided in Table 3.4 and shows that:

- Traces (<20 ppb) of two types of VOC's (1,1,1-trichloroethane and 1,1-dichloroethane) were detected in one well (MW-15s)*. 1,1,1-trichloroethane has been detected in the last four of the five rounds of sampling for MW-15s. Although present in the former two rounds of sampling for OS-1, it was not detected in that well at this time. It is difficult to interpret the significance of these findings, especially when such low concentrations are reported. However, the apparently consistent presence of these constituents in this well (even at the reported trace concentrations) may be an indication of a change in water quality. These wells will continue to be monitored in future sampling rounds.

- No pesticides/herbicides were detected in any of the wells outside the Plant Production Area.

- Elevated levels of coliform were detected in four wells (MW-9, MW-11, MW-20s, and OS-1). Two of these wells (OS-1 and MW-9) are open to the atmosphere and bacteria may be present as a result. Several wells which previously reported elevated coliform levels (e.g. wells 14s, 16s, 18s, and 20d) did not do so in this sampling round. Sampling of these wells will continue in order to further evaluate these results.

- Activities of gross alpha and gross beta above drinking water standards were reported from wells MW-15s, OS-1 and OS-2; and MW-15s and OS-2 respectively. This is the fourth time elevated activities have been reported in well MW-15s. This well (along with OS-1 and OS-2) is in the flow path for ground water known to contain (as a result fo a previous

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* The presence of acetone and/or cyclohexane detected in wells MW-9, MW-15s, MW-16s, MW-16d, MW-17d, MW-18s, SW-2, OS-1, and one of the two samples for OS-2 will be addressed in Section 3.5.

Dames & Moore study, (Reference 5) above-background levels of uranium. Elevated activities for MW-14s and MW-18d, which were found in Round 4 and were suspected of being due to suspended matter in the samples, were not observed in the present round of sampling.

- TDS exceeded the standard for the fourth time in MW-17s. Wells MW-11 and MW-14d had reported elevated TDS in Round 4 but now have returned to levels below drinking water standards.

- Manganese, phenols and iron concentrations exceeded DWS in eleven wells, eight wells and eleven wells, respectively. Manganese also was reported as elevated in the background well (SW-2) indicating regional variations in water quality may have influenced that result. Phenol and iron concentrations were reported as elevated in several wells inside the Plant Production Area. Additional monitoring is required to characterize the significance of these values, but it is suspected that these variations may be due to local differences in water quality within the aquifer.

- Total chromium, which had exceeded the standard in well MW-14s in the Round 4 Samples, did not exceed standards in any well in Round 5. Indications are that the previous result was due either to transient groundwater conditions or to analytical error. Monitoring for this parameter will continue.

- Other metals and water quality indicators were within or below drinking water standards for the remaining wells.

3.5 Other Organic Constituents

Concentrations of acetone and cyclohexane have been detected in fourteen ground water samples and one cleaning blank sample from the FMPC. Table 3.6 lists the concentrations of each detected constituent on a per well basis.

Acetone is a common laboratory reagent and was detected in all samples (except the cleaning blank) at concentrations ranging from 15.6 mg/l to 10,000 mg/l.

Cyclohexane is a solvent and was detected in 13 of the 15 samples (including the cleaning blank) at concentrations between 10.2 mg/l and 5000 mg/l.

These compounds are present in these samples not because FMPC waste management operations have affected the ground water but rather as a result of field sampling and laboratory analytical procedures. Data supporting this conclusion are provided below.

There is no pattern to the occurrence of these constituents in these samples. They are present in wells inside the Plant Production Area (both in the glacial till water-bearing zone and the sand and gravel aquifer), outside the Plant Production Area and off the FMPC site. If related to FMPC waste disposal operations, they would occur in a way related either to ground or surface water flow patterns.

This is the third time these constituents have been detected in five rounds of RCRA ground water sampling. Yet there have been no major changes in waste management practices at WMCO nor have there been releases to the environment which could account for the presence of these constituents in the ground water.

These constituents are present in materials used in the cleaning of sampling equipment, specifically the bailers. As described in the RCRA Sampling and Analysis Plan (Appendix 1), each bailer is cleaned with a non-phosphate detergent, rinsed in tap water rinsed with reagent grade hexane and then triple rinsed in distilled water. Cyclohexane, a hexane derivative was found in the cleaning blank which indicates that final field rinsing procedures were not effective in its removal.

This is further supported by the fact that these were no problems with acetone or cyclohexane contamination for other fractions of samples collected, such as TOC, metals and others. Some bottles within the same set of three samples collected for volatiles contained enough acetone and cyclohexane that dilutions were required in order to perform the analyses while other bottles for the same well did not (Reference 12). Cleaning procedures will be modified to prevent this from happening in future sampling activities.

In reviewing these analytical data, there are three important findings which have been developed:

(1) These values are the results of sampling and/or laboratory analytical error. They are not indicative of widespread ground water degradation.

(2) The presence of these constituents will not influence the detection of other constituents (Reference 8). As can be seen in Tables 3.1 - 3.4, trace concentrations of other types of VOC's have been detected in these same samples.

(3) Equipment cleaning and laboratory analytical procedures will be modified to prevent this from happening in future sampling rounds.

3.6 Results of QA/QC Analysis

As part of WMCO's ongoing QA/QC program, known spiked QA/QC samples (shipped with the ground water samples) were tested by Howard Lab as a check on the accuracy of chemical analysis. The results of these analyses are shown on Table 3.7.

Reported Values (as analyzed by Howard Labs) agree very closely with Actual Values (contained in the spiked samples). The average difference in metals (QC #1 and QC #2) analysis was -0.08 mg/l and 0 mg/l respectively. The average difference in indicators (QC #3) and purgeables (QC #4 and QC #5) was -1.4 mg/l, -0.45 ug/l and -1.22 mg/l, respectively. Reported volatiles analyses for samples QC #6 and QC #7 averaged 0.18 ug/l and 0.067 ug/l. Reported QA/QC results were within the acceptable range for the actual values, as reported in the USEPA Environmental Monitoring and Support, Laboratory Water Pollution Quality Control Check Samples.

4.0 STATISTICAL ANALYSES

This section describes both the statistical test used and the results of statistical comparisons for the Pit 4 RCRA wells. These analyses were done in accordance with procedures described in the RCRA TEGD (Reference 13) and Appendix IV of 40 CFR Part 264 (Reference 14) and as required by 40 CFR 265, Subpart F.

4.1 Description of Statistical Test

The procedure used to compare the background and monitoring values for each well was Cochran's Approximation to the Behrens-Fisher Student's T-Test. This statistical analytical procedure is described in detail in 40 CFR 264, Appendix IV.

The test consists of the following steps:

- Compute the background and monitoring means.
- Compute the background and monitoring variances.
- Compute the t-statistic (T^*) for each comparison. The t-statistic is derived by dividing the difference in the monitoring and background means by the square root of the difference between the ratio of variance to number of results for background and monitoring values.
- Calculation of special weightings for background and monitoring data sets. The special weighting is the ratio of the variance to the number of samples.
- Calculation of the comparison t-statistic (Tc). The formula for the comparison t-statistic is:

$$Tc = \frac{W_b\, t_b + W_m\, t_m}{W_b + W_m}$$

Where W is the special weighting and t is taken from standard T-Tables at the 0.05 level of significance.

A decision as to whether or not there has been a statistically significant intense (or change in the case of pH) between the two sets of values is made by comparing the T* and Tc values as follows:

- If T* is larger than Tc, there most likely has been a significant increase.
- In the case of pH, if the absolute value of T* is larger than Tc, a significant change is indicated, with negative values of T* indicating a decrease and positive values indicating an increase.

4.2 Background Means and Variances

As described in Section 2.1, because of the hydrogeologic conditions present at the FMPC, two upgradient wells are being used in the ground water monitoring efforts. One of these wells (MW-12) provides upgradient water quality data for the glacial till water bearing zone. The other well (SW-2) provides upgradient water quality data for the sand and gravel aquifer.

Means and variances of indicator parameters tested on a quarterly basis over the past year for these two wells are provided in Table 4.1.

Calculated variances for pH, specific conductance and TOC are within ranges typical for these types of measurements. TOX variances are very large and can be related to the two order of magnitude increase in TOX concentration recorded in Round 3 sample data.

4.3 Results of Statistical Analyses

Results of statistical comparisons are summarized in Table 4.2. Appendix 6 contains a listing of calculated T* and tc statistics as well as monitoring means and variances for each well.

From this table it can be seen that for the glacial till water bearing zone:

- TOX did not significantly increase for either the upgradient well (MW-12) or any of the downgradient wells in the Round 5 sampling.

- TOC concentrations significantly increased in all downgradient wells. PH significantly increased in the upgradient well and significantly decreased in all downgradient wells. Specific conductance did not significantly change in the upgradient well and significantly increased in two of the three downgradient wells.

Round 5 analytical data for the wells completed in the glacial till water bear zone demonstrate that pH, TOC and TOX are within typical ground water ranges (Reference 11). Significant changes detected by the statistical comparison for these parameters are probably related to natural fluctuations in ground water quality.

Specific conductance for some of the wells completed in the glacial till are elevated when compared to the upgradient well, but are more consistent with values reported for an offsite well (OS-1A) completed in the glacial till.

For the sand and gravel aquifer, Table 4.2 illustrates that:

- pH, TOC, TOX and specific conductance did not significantly change in the 5th round of ground water sampling within the upgradient well.

- TOC and TOX did not significantly change in the downgradient wells in the 5th round of ground water sampling.

- Specific conductance significantly increased in all the downgradient wells and pH significantly decreased in one downgradient well.

The range of values for pH, TOC and TOX for the downgradient wells are within typical ground water ranges. Significant changes reported by the statistical comparisons are probably related to natural fluctuations in water quality.

Specific conductance values reported in the downgradient wells completed in the sand and gravel aquifer are clearly elevated when compared to the upgradient well.

5.0 Conclusions

This report has presented the analytical results of Round 5 RCRA ground water sampling at the FMPC. From these results, the following conclusions can be made:

(1) Statistical comparisons required by 40 CFR Part 265.93(b) have been completed for the designated RCRA wells around Pit 4. These comparisons indicate that significant changes in certain indicator parameters have occurred. The FMPC should notify the USEPA Regional Administrator of this finding and follow the subsequent regulatory requirements of 40 CFR 265.93 (d).

(2) Additional statistical tests could be used to further evaluate indicator data. Different statistical methodologies (e.g., nonparametric tests, stochastic process methods) could be used to test for false positives. However, empirical examination of non-indicative ground water quality data (e.g., uranium concentrations) for the Pit 4 RCRA wells tends to support findings developed by the statistical comparisons.

(3) Changes to the field sampling procedures should be implemented for the next round of sampling. This includes cleaning of bailers and the sampling equipment with only a non-phosphate wash and distilled water rinse. Additionally, the well rehabilitation program should be implemented before the next round of sampling. This would include the re-development and installation of locking caps on certain wells plus other miscellaneous well-head improvements which would improve sampling efficiency.

(4) Ground water sampling should be continued on a regular basis. Round 6 RCRA sampling is scheduled for November, 1987

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(11) Davis, Stanley N. and DeWiest, Roger J. M., 1966. Hydrogeology. John Wiley & Sons, New York.

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(13) USEPA, 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD) Pub. No. OSWER-9950.1.

(14) Code of Federal Regulations, 1985, Part 264.97 General Ground-Water Monitoring Requirements.

List of Abbreviations and Acronyms

CFR	Code of Federal Regulations
D & M	Dames & Moore
DOE	U.S. Department of Energy
DWS	Drinking Water Standards
EPA	Environmental Protection Agency
FMPC	Feed Materials Production Center
MSL	Mean Sea Level
MW	Monitoring Well
NLO	National Lead of Ohio
OS	Off-site
pCi/l	Picocurie per liter
PDWS	Primary Drinking Water Standards
ppb	Parts per billion
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SDWS	Secondary Drinking Water Standards
SW-2	Southwest Ohio - Collector Well No. 2
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TOX	Total Organic Halogens
TP	Test Pit
VOC	Volatile Organic Compounds
WMCO	Westinghouse Materials Company of Ohio

TABLE 2.1
Round 5 Water Level Elevation

Well #	Depth to Water (ft)	Casing Elev. (MSL)	Grade (MSL)	Water Table Elev. (MSL)
P-1	NA	578.66	576.66	NA
P-2	NA	579.16	577.16	NA
P-3	NA	579.36	577.36	NA
1S	NA	585.55	583.47	NA
1d	63.17	585.31	583.81	522.14
3	NA	560.86	559.30	NA
4	NA	556.85	556.15	NA
5	NA	557.09	555.53	NA
8s	54.33	576.60	574.90	522.27
8d	54.83	576.62	574.82	521.79
9	33.10	557.23	555.31	524.13
10	66.92	588.39	586.56	521.47
11	62.69	585.78	583.64	523.09
12	31.83	639.67	637.48	607.84
13s	70.06	590.37	588.71	520.31
13d	70.08	590.36	588.72	520.28
14s	14.04	535.79	533.76	521.75
14d	14.06	535.99	533.71	521.93
15s	58.85	579.53	577.80	520.68
15d	NA	579.41	577.80	NA
16s	20.15	542.28	540.47	522.13
16d	20.13	542.13	540.50	522.00
17s	14.42	536.19	534.43	521.77
17d	14.54	536.35	534.83	521.81
18s	50.50	573.36	571.31	522.86
18d	NA	573.88	571.56	NA
19s	63.17	585.38	583.26	522.21
19d	63.08	585.25	583.20	522.17
TP-19	7.00	584.96	582.98	577.96
20s	53.81	574.44	573.42	520.63
20d	53.10	574.71	573.31	521.61
TP-20	4.69	574.73	573.21	570.04
21s	63.58	586.02	594.42	522.44
TP-21	4.58	585.61	584.06	581.03
22s	65.29	587.95	587.93	522.66
TP-22	6.83	588.91	587.93	582.08
SW-2	NA	NA	NA	NA
OS-1	NA	581.83	581.35	NA
OS-2	NA	NA	NA	NA
OS-3	NA	NA	NA	NA
OS-1A	NA	581.83	581.83	NA
*IT-1	63.38	579.93	577.93	516.55
*IT-2	75.00	595.58	593.22	520.58
*IT-5A	74.23	594.22	592.17	519.99
*IT-6	55.50	576.02	574.07	520.52

* Not Sampled
NA - Not Available
MSL - Mean Sea Level

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	(DUP) MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Chloride	93.0	104.0	562.0	3.0	14.0	13.0	30.0
Iron	6.070	11.600	2.550	7.060	0.948	1.970	<0.050
Manganese	0.158	0.228	1.230	0.872	2.090	0.690	0.033
Phenols	0.016	<0.005	<0.005	0.018	0.006	<0.005	0.008
Sodium	226.000	255.000	135.000	4.510	13.600	14.800	33.300
Sulfate	9.0	5.0	480.0	60.0	250.0	1050	120.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.0025	<0.005	0.003	0.004	0.004	<0.0025	<0.0025
Barium	<0.200	<0.200	<0.200	<0.200	0.235	<0.200	<0.200
Calcium	34.200	48.700	379.000	110.000	154.000	391.000	149.000
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Chromium							
-Total	0.006	0.011	0.005	0.007	<0.005	<0.005	<0.005
-Hexavalent	<0.006	<0.010	<0.005	<0.007	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	0.032	<0.025	<0.025	<0.025
Fluoride	1.18	1.04	0.24	0.21	0.50	0.52	0.30
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	15.800	16.700	1.610	2.200	1.490	5.770	32.600
Magnesium	8.900	10.900	121.000	36.900	70.000	118.000	48.000
Nickel	<0.005	0.010	<0.005	<0.005	<0.005	0.008	<0.005
Nitrates	<0.02	<0.02	<0.02	<0.02	<0.02	1.24	4.40
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus	<0.02	<0.02	0.07	0.13	0.04	0.07	0.03

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	(DUP) MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	0.056	0.032	<0.020	0.123	<0.020	0.030	0.034
T.D.S	592	672	2,736	448	928	2,390	662
C.O.D.	17	15	17	12	11	13	<10
pH (1)(2)	7.81	7.81	6.73	7.08	7.18	7.02	7.12
Conductivity (1)(3)	877	974	2520	596	969	2020	1040
T.O.C. (1)	<1	2.50	5.5	2	3	3.75	1.75
T.O.X. (1)	<10	<10	<10	<10	<10	37.5	16.08
Coliform (7)	<2	<2	<2	1,400	<2	8	16
Alachlor (4)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D(4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's							
Acetone (4)	84.4	694.0					
Cloroethene (4)			0.8				
Cyclohexane (4)	15.0	10.2					
cis-1,2-Dichloroethene (4)			25.8				
1.1 Dichloroethane (4)			15.5				
Gross Alpha (5)	<1	<1	27	2	100	296	<1
Gross Beta (5)	11	7	102	8	640	998	28
Radium (5)	<1	<1	<1	<1	<1	<1	<1
Uranium, (11)	0.0005		0.9	0.019	3.76	5.42	0.0019

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Chloride	14.0	19.0	23.0	30.0	15.0	18.0	10.0	83.0	25	65.0
Iron	4.710	2.150	1.420	1.620	2.510	5.810	2.220	0.289	2.57	6.710
Manganese	0.345	0.552	0.405	0.023	0.487	0.547	0.357	4.000	0.194	0.380
Phenols	0.011	0.015	0.009	<0.005	<0.005	<0.005	0.011	0.023	<0.005	0.007
Sodium	15.100	10.600	10.800	12.200	8.340	10.600	9.900	129.000	12.8	47.600
Sulfate	76.0	10.0	88.0	84.0	76.0	20.0	9.0	52.0	112.000	310.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.0025	<0.0025	<0.0025	<0.005	<0.013	<0.005	<0.005	<0.0025	<0.0025
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	88.500	96.600	85.000	86.900	106.000	24.200	82.500	354.000	108.000	202.000
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.24	0.21	0.21	0.19	0.26	0.05	0.21	0.19	0.340	0.42
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	0.936	2.680	2.560	2.990	3.000	2.660	1.170	21.200	2.190	4.560
Magnesium	25.000	26.500	25.000	22.600	28.400	24.800	21.700	65.000	27.900	65.000
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrates	<0.02	<0.02	<0.02	1.42	<0.02	<0.02	<0.02	118.00	0.510	<0.02
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005
Phosphorus	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	0.040	<0.020	<0.020	<0.020	<0.020
T.D.S.	468	384	420	415	532	233	372	2488	488	916
C.O.D.	<10	<10	<10	<10	<10	12	<10	<10	<10	<10
pH (1)(2)	7.48	7.37	7.49	7.49	7.36	7.71	7.42	6.97	7.36	7.13
Conductivity (1)(3)	577	549	524	535	614	300	463	2,280	636	1,130
T.O.C. (1)	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.50
T.O.X. (1)	<10	<10	<10	<10	12	<10	<10	<10	<10	<10
Coliform (7)	<2	<2	46	12	19	<2	<2	<2	<2.0	<2
Alachlor (4)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's										
Acetone (4)		15.6		580.0		40.0	21.3	10,000	1800	34.2
Cyclohexane (4)		20.0		600.0		22.0	12.0	5,000.0	300	
Gross Alpha (5)	<1	3	<1	1	<1	<1	<1	3	<1	2
Gross Beta (5)	4	<3	4	3	3	<3	29	24	3	6
Uranium (11)	0.013	0.0001	0.0043	0.0074	0.0062	0.0011	0.0011	0.019	0.0013	0.017
Radium (5)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Chloride	58.0	43.0	46.0	70.0
Iron	<0.050	<0.050	0.119	0.163
Manganese	<0.015	1.850	0.016	<0.015
Phenols	0.027	0.041	0.015	0.022
Sodium	33.900	51.200	51.000	29.400
Sulfate	116.0	290.0	88.0	96.0
Silver	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.0025	<0.0025	<0.0025	<0.005
Barium	<0.200	<0.200	<0.200	<0.200
Calcium	146.000	187.000	189.000	134.000
Cadmium	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	<0.005	<0.005
Chromium				
-Total	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025
Fluoride	0.23	0.14	0.20	0.58
Mercury	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	6.660	7.020	10.000	4.860
Magnesium	34.400	23.300	23.900	41.400
Nickel	<0.005	0.006	<0.005	<0.005
Nitrates	44.40	3.22	63.00	40.00
Lead	<0.005	<0.005	<0.005	<0.005
Phosphorus	<0.02	<0.02	<0.02	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Selenium	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.020	<0.020	<0.020	<0.020
T.D.S.	900	968	1,040	904
C.O.D.	<10	<10	<10	<10
pH (1)(2)	7.33	7.05	7.29	7.31
Conductivity (1)(3	1,040	1,090	1,100	1,060
T.O.C. (1)	<1	<1	<1	<1
T.O.X. (1)	12.25	<10	<10	<10
Coliform (7)	<2	<2	<2	<2
Alachlor (4)	<2.0	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0
2,4,5-TP- Silvex	<0.5	<0.5	<0.5	<0.5
Gross Alpha (5)	16	4	51	3
Gross Beta (5)	559	17	1,560	72
Uranium (11)	0.0018	0.067	0.0018	0.0042
Radium (5)	<1	<1	2	<1

TABLE 3.3

GROUNDWATER SAMPLING RESULTS PLANT PRODUCTION WELLS (FMPC)
(ALL RESULTS IN PPM EXCEPT AS NOTED)

	P - 1	P - 2	P - 3
Chloride	36.0	23.0	14.0
Iron	5.870	3.520	2.590
Manganese	0.422	0.378	0.392
Phenols	0.006	0.013	0.019
Sodium	38.900	16.000	7.100
Sulfate	120.0	28.0	48.0
Silver	<0.030	<0.030	<0.030
Arsenic	<0.0025	0.003	0.003
Barium	<0.200	<0.200	<0.200
Calcium	130.000	99.400	92.400
Cadmium	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	<0.005
Chromium			
- Total	<0.005	<0.005	<0.005
- Hexavalent	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025
Fluoride	0.16	0.20	0.17
Mercury	<0.0002	<0.0002	<0.0002
Potassium	4.610	1.800	1.750
Magnesium	35.700	27.700	21.600
Nickel	<0.005	<0.005	<0.005
Nitrate	<0.02	<0.02	<0.02
Lead	<0.005	<0.005	<0.005
Phosphorus	0.09	0.11	0.06

TABLE 3.3 (Continued)

GROUNDWATER SAMPLING RESULTS PLANT PRODUCTION WELLS (FMPC)
(ALL RESULTS IN PPM EXCEPT AS NOTED)

	P-1	P-2	P-3
Selenium	<0.0025	<0.0025	<0.0025
Zinc	<0.020	<0.020	<0.020
T.D.S.	677	504	376
C.O.D.	<10	<10	<10
pH (1)(2)	7.38	7.51	7.38
Conductivity (1)(3)	907	635	536
T.O.C. (1)	<1	<1	<1
T.O.X. (1)	<10	<10	<10
Coliform (7)	<2	<2	<2
Alachlor (4)	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0
2, 4, 5-TP, Silvex (4)	<0.5	<0.5	<0.5
Gross Alpha (5)	<1	<1	<1
Gross Beta (5)	5	4	<3
Radium (5)	<1	<1	<1
Uranium (11)	0.0023	0.0011	0.0003

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-15d	MW-16s	MW-16d	MW-17s	MW-17d
Chloride	20.0	18.0	19.0	21.0	20.0	24.0	23.0	25.0	34.0	22.0
Iron	0.188	2.280	0.813	<0.050	2.120	2.570	6.180	<0.050	13.900	1.430
Manganese	0.070	0.179	<0.015	<0.015	0.060	0.326	0.214	<0.015	0.635	0.305
Phenols	<0.005	<0.005	0.016	0.011	<0.005	0.016	<0.005	<0.005	0.005	<0.005
Sodium	11.800	9.800	11.400	12.700	11.200	7.090	14.200	10.900	9.000	8.900
Sulfate	80.0	88.0	72.0	72.0	56.0	92.0	76.0	64.0	112.0	84.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.003	0.003	<0.025	0.006	<0.0025
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	81.800	97.200	83.500	79.300	89.300	98.000	114.000	83.600	207.000	94.600
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.009	<0.005	0.024	<0.005
-Hexavalent	<0.005	<0.005	<0.008	<0.005	<0.005	<0.005	<0.009	<0.005	<0.010	<0.005
Copper	<0.025	<0.025	0.065	<0.025	<0.025	<0.025	0.044	<0.025	0.080	<0.025
Fluoride	0.22	0.24	0.32	0.21	0.46	0.26	0.43	0.21	0.18	0.14
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002
Potassium	2.230	1.080	3.490	2.540	3.610	1.700	4.070	2.300	4.290	2.100
Magnesium	23.300	27.900	22.300	21.000	24.000	26.900	34.900	24.200	64.000	21.100
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	0.009	<0.005
Nitrate	1.54	<0.02	1.56	1.53	1.79	<0.02	1.90	2.42	<0.02	<0.02
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005
Phosphorus	<0.020	<0.02	0.09	0.03	0.24	<0.02	0.08	<0.02	<0.02	<0.02

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3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-15d	MW-16s	MW-16d	MW-17s	MW-17d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.013	<0.0025	<0.0025
Zinc	<0.020	<0.020	0.049	<0.020	<0.020	0.073	0.074	<0.020	0.068	<0.020
T.D.S.	344	376	423	404	392	398	400	380	556	428
C.O.D.	<10	<10	<10	<10	14	<10	<10	<10	<10	<10
pH (1)(2)	7.60	7.50	7.59	7.69	7.60	7.46	7.58	7.58	7.31	7.33
Conductivity (1)(3)	493	579	493	493	487	524	528	493	699	524
T.O.C. (1)	<1	<1	2	1.25	<1	<1	<1	<1	<1	<1
T.O.X. (1)	<10	<10	<10	13.0	19.30	<10	<10	<10	<10	<10
Coliform (7)	4,200	8	<2	<2	<2	<2	<2	<2	<2	<2
Alachlor (4)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2, 4, 5-TP- Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's										
Acetone (4)	29.8				104.0		930.0	40.8		1,040
Cyclohexane (4)	10.2				20.0			60.0		5,000
1,1,1 Trichloroethane (4)					18.9					
1,1 Dichloroethane (4)					2.3					
Gross Alpha (5)	2	<1	10	5	27	<1	4	<1	<1	<1
Gross Beta (5)	9	3	19	14	50	3	6	7	6	3
Radium (5)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Uranium (11)	0.0021	0.0006	0.085	0.038	0.2	0.0003	0.02	0.01	0.0051	0.0008

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results in ppm except as noted)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	OS-2	(DUP) OS-2	OS-3
Chloride	15.0	4.0	22.0	21.0	31.0	31.0	24.0	23.0	26.0
Iron	34.700	22.900	0.166	1.230	0.110	<0.050	<0.050	<0.050	1.280
Manganese	1.090	0.783	0.034	0.187	0.167	<0.015	<0.015	<0.015	0.348
Phenols	0.008	<0.005	<0.005	<0.005	<0.005	0.008	0.016	0.019	<0.005
Sodium	4.280	5.060	9.400	9.200	15.300	19.700	11.800	12.200	10.900
Sulfate	52.0	68.0	72.0	88.0	72.0	60.0	64.0	60.0	64.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	0.023	0.010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.003
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	141.000	98.700	82.600	93.100	93.600	94.200	95.500	88.600	89.300
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	0.011	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.010	<0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	0.039	0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.26	0.29	0.36	0.22	0.21	0.59	0.24	0.27	0.26
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	<0.0002
Potassium	1.750	0.764	3.090	2.300	2.630	3.170	3.620	3.640	2.930
Magnesium	35.500	37.600	21.500	23.400	28.700	27.000	22.200	22.800	22.800
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	2.53	<0.02	2.51	<0.02	2.36	2.83	2.40	2.32	<0.02
Lead	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results in ppm except as noted)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	OS-2	(DUP) OS-2	OS-3
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.013
Zinc	0.052	0.074	<0.020	<0.020	<0.020	0.148	0.051	0.045	<0.020
T.D.S.	444	423	388	454	400	408	396	419	431
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10
pH (1)(2)	7.39	7.31	7.41	7.37	7.39	7.46	7.47	7.45	7.42
Conductivity (1)(3)	588	585	547	553	597	570	529	526	575
T.O.C.(1)	1	<1	<1	<1	<1	<1	<1	<1	<1
T.O.X. (1)	<10	<50	<10	<10	26.50	<10	<10	<10	<10
Coliform (7)	<2	<2	3	<2	<2	37	<2	<2	<2
Alachlor (4)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP- Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's									
Acetone (4)	24,500.0				30.8	34.2		40.5	
Cyclohexane (4)	900.0				12.0		42	12.5	
1,1,1 Trichloroethane (4)							87		
Gross Alpha (5)	<1	<1	<1	<1	<1	29	42	43	3
Gross Beta (5)	<3	4	16	4	4	30	87	69	18
Radium (5)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Uranium (11)	0.001	0.0029	0.0008	0.0013	0.0	0.37	0.33	551	0.054

Table 3.5
Water Quality Standards

	Primary (9)	Secondary (10)	Recommended (11)
Chloride	- - -	250	- - -
Iron	- - -	0.3	- - -
Manganese	- - -	0.05	- - -
Phenols	- - -	- - -	0.001
Sodium	- - -	- - -	- - -
Sulfate	- - -	250	- - -
Silver	0.05	- - -	- - -
Arsenic	0.05	- - -	- - -
Barium	1.0	- - -	- - -
Calcium	- - -	- - -	- - -
Cadmium	0.010	- - -	- - -
Cyanide	- - -	- - -	0.05
Chromium			
- Total	0.05	- - -	- - -
- Hexavalent	- - -	- - -	- - -
Copper	- - -	1.0	- - -
Fluoride	1.4-2.4	- - -	- - -
Mercury	0.002	- - -	- - -
Potassium	- - -	- - -	- - -
Magnesium	- - -	- - -	- - -
Nickel	- - -	- - -	- - -
Nitrates	10.0	- - -	- - -
Lead	0.05	- - -	- - -
Phosphorous, Total	- - -	- - -	- - -
Selenium	0.01	- - -	- - -
Zinc	- - -	5.0	- - -
T.D.S.	- - -	500	- - -
C.O.D.	- - -	- - -	- - -
pH-lab (2)	- - -	6.5-8.5	- - -
Conductivity-lab (3)	- - -	- - -	- - -
T.O.C.	- - -	- - -	- - -
T.O.X.	- - -	- - -	- - -
Coliform (7)	1	- - -	- - -
Lindane (4)	4	- - -	- - -
Endrin (4)	0.2	- - -	- - -
Methoxychlor (4)	100	- - -	- - -
Toxaphene (4)	5	- - -	- - -
2,4-D (4)	10	- - -	- - -
2,4,5-TP, Silvex (4)	10	- - -	- - -
Gross Alpha (5)	15	- - -	- - -
Gross Beta (5)	30 (8)	- - -	- - -
Radium, Total (5)	5 (6)	- - -	- - -

NOTES FOR TABLE 3.1 THROUGH 3.5

(DUP) Results from replicate sample

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Standard is for Radium -226 Plus Radium -228

(7) Reported in per 100 ml

(8) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

(9) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B -Maximum Contaminant Levels, July 1, 1984.

(10) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.

(11) Uranium values measures by FMPC in mg/l.

Table 3.6

Other Organic Constituents
Detected in FMPC Samples
(Results in Mg/l)

Well #	Parameters	
	Acetone	Cyclohexane
MW-1d	15.6	20.0
MW- 4	580	600.0
MW-8s	40.0	22.0
MW-8d	21.3	12.0
MW - 9	29.8	10.2
MW-10	10,000	5,000
MW-12	84.4	15.0
MW-12 (Dup)	694.0	10.2
MW-13s	1800	300
MW-13d	34.2	- -
MW-15s	104.0	20.0
MW-16s	930.0	- -
MW-16d	40.8	60.0
MW-17d	1,040	5000
Cleaning Blank	- -	50

Table 3.7
Results of QA/QC Analysis

Metals QC #1 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
Nickel	0.098	0.0999	-0.0019
Lead	0.096	0.0996	-0.0036
Arsenic	0.100	0.992	-0.892
Selenium	0.024	0.0231	-0.0009
Cadmium	0.021	0.0238	-0.0028
Chromium	0.095	0.0981	-0.0031
Mercury	0.0054	0.049	0.0005
Manganese	0.103	0.0992	0.0038
Copper	0.100	0.1002	-0.0002
Iron	0.098	0.1009	-0.029
Zinc	0.092	0.1007	-0.0087
	Average Difference =		-0.08

Metals QC #2 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
Silver	0.0049	0.0049	0
	Average Difference =		0

Indicators QC #3 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
COD	216	218	- 2
TOC	91	91.8	-0.8
	Average Difference =		-1.4

Purgeables QC #4 ug/l	Reported Value	Actual Value	Difference (Reported-Actual)
M-Dichlorobenzene	99.3	100	-0.7
P-dichlorobenzene	99.4	100	-0.6
O-Dichlorobenzene	100	100	0
1,2,4 Trichlorobenzene	99.5	100	-0.5
	Average Difference =		-0.45

Table 3.7
Results of QA/QC Analysis (continued)

Purgeables QC #5 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
Hexachloroethane	10	10	0
Hexachlorobutadiene	9.97	10	-0.03
2-chloronaphthalene	95.1	100	-4.9
Hexachlorobenzene	9.96	10	0.04
	Average Difference =		-1.22

Volatiles QC #6 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
Chloroform	15.6	15	0.6
1,1,1-Trichloroethane	2.1	1.9	0.2
1,2 Dichloroethane	3.3	3.1	0.2
Carbon Tetrachloride	5.7	5.6	0.1
Trichloroethene	1.6	1.5	0.1
Bromodichloromethane	1.6	1.5	0.1
Dibromochloromethane	3.2	3.2	0
Tetrachloroethene	2.6	2.5	0.1
Bromoform	4.1	3.9	0.2
	Average Difference =		0.18

Volatiles QC #7 mg/l	Reported Value	Actual Value	Difference (Reported-Actual)
Chloroform	60.4	58.4	2
1,1,1 Trichloroethane	7.8	7.7	0.1
1,2 Dichloroethane	14.1	12.6	1.5
Carbon Tetrachloride	14.7	14	0.7
Trichloroethene	8.2	8.6	-0.4
Bromodichloromethane	11.2	10.3	0.9
Dibromochloromethane	38.5	41.5	- 3
Tetrachloroethene	8.5	9.5	- 1
Bromoform	14.6	14.8	-0.2
	Average Difference =		0.067

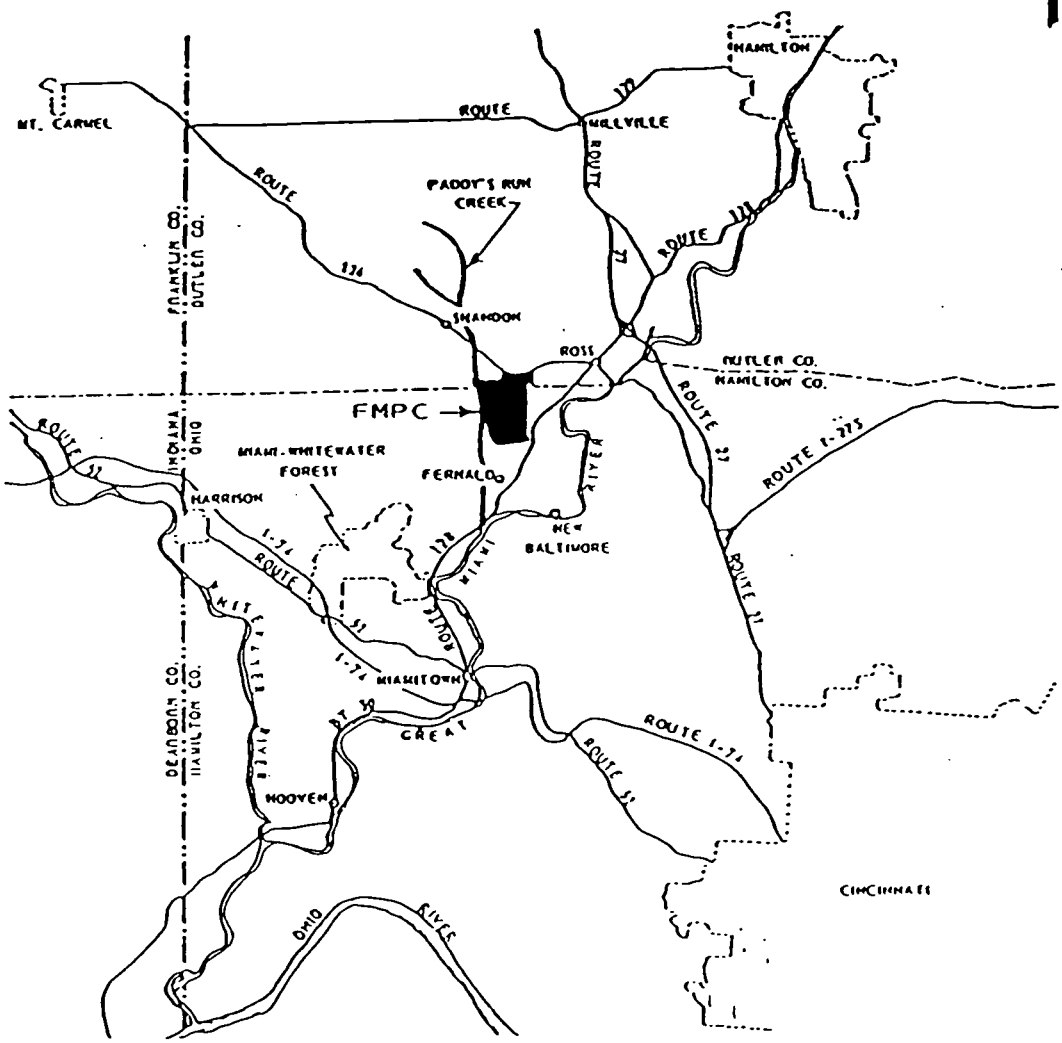
Table 4.1
Background Means and Variances for Upgradient Wells

		MW-12 Glacial Till Well	SW-12 Sand and Gravel Well
pH			
	Mean	7.68	7.33
	Var	1.36 E -2	7.53 E -3
S.C.			
	Mean	1001.5	655.9
	Var	5339.7	397.2
TOX			
	Mean	1672.3	1631.7
	Var	1.15 E 7	8.62 E 6
TOC			
	Mean	(<) 1	(<) 1
	Var	0.0	0.0

Table 4.2
Statistical Comparision Summary

Glacial Till Wells	pH	Specific Cond.	TOC	TOX
		Parameters		
MW-12	Increase	No Change	No Change	No Change
MW-19TP	Decrease	Increase	Increase	No Change
MW-21TP	Decrease	No Change	Increase	No Change
MW-22TP	Decrease	Increase	Increase	No Change

Sand and Gravel Wells	pH	Specific Cond.	TOC	TOX
		Parameters		
SW-2	No Change	No Change	No Change	No Change
MW-19s	No Change	Increase	No Change	No Change
MW-19d	Decrease	Increase	No Change	No Change
MW-21s	No Change	Increase	No Change	No Change
MW-22s	No Change	Increase	No Change	No Change



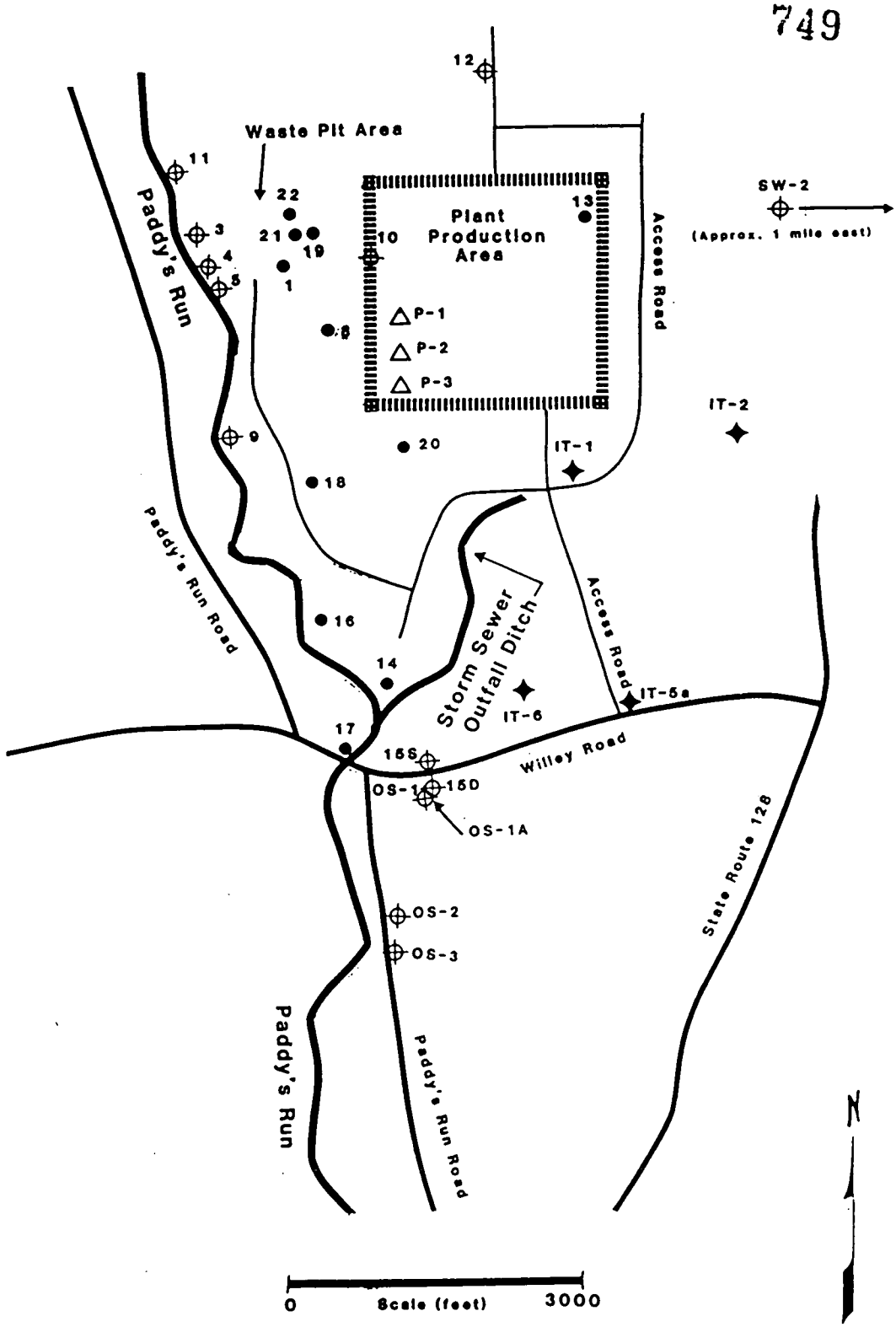
0 1 2 3 4 MILES

SCALE

SITE LOCATION MAP

Dames & Moore

FIGURE 1-1

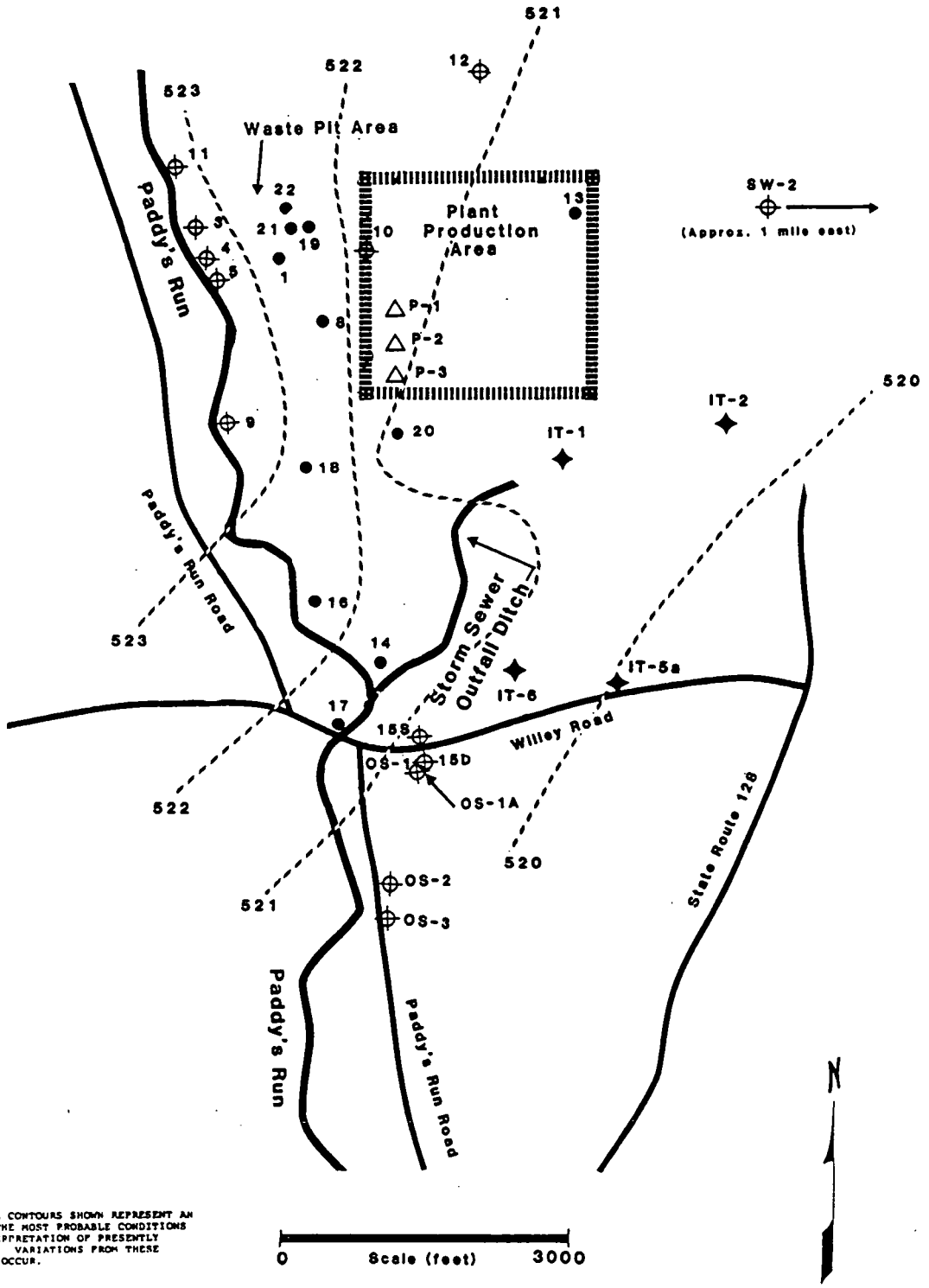


Explanation:

- Single Well Location
- Cluster Well Location
- Production Well Location
- IT Well Location

WELL LOCATIONS

Figure-2-1



THE WATER LEVEL CONTOURS SHOWN REPRESENT AN EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. VARIATIONS FROM THESE CONDITIONS MAY OCCUR.

Explanation:

- Single Well Location
- Cluster Well Location
- Production Well Location
- IT Well Location
- WATER TABLE CONTOURS

RCRA ROUND 5

WATER TABLE CONTOURS
MAY 5, 1987

Figure 2-2

APPENDIX

RCRA SAMPLING AND ANALYSIS PLAN

FOR

WASTE PIT #4

LOCATED AT THE

FEED MATERIALS PRODUCTION CENTER

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R*

TABLES

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2 Containers and Preservatives Used for RCRA Groundwater Sampling

3 Preservation of Groundwater Samples Prior to Laboratory Analysis

4 Analytical Methods and Detection Limits for Groundwater Samples - Water Quality Indicators

5 Analytical methods and Detection Limits for Groundwater Samples - Volatiles

6 Analytical Methods and Detection Limits for Groundwater Samples - Radionuclides

FIGURES

1 Field Sampling Record

2 Chain of Custody Record

1.0 Introduction

Waste Pit #4 at the Feed Materials Production Center in Fernald, Ohio is subject to regulations of the Resource Conservation and Recovery Act (RCRA). Interim status regulations (as described in Task B.5 of the Federal Facilities Compliance Agreement (FFCA)) are addressed by this Response which presents a Sampling and Analysis Plan (SAP) prepared in conformance with 40 CFR 265.92.

The SAP presents information on:

- Groundwater sample collection from both monitoring and water supply wells.
- Sample preservation and shipment procedures.
- Analytical procedures and chain of custody controls.

The groundwater sampling program at the FMPC is a dynamic one. As such, field procedures described herein, may from time to time be modified based on weather and other conditions at the well. However, all sampling procedures utilized are designed to be consistent with USEPA/OEPA objectives and guidelines.

2.0 Scope of Plan

This document presents the Sampling and Analysis Plan required by Subpart F, Section 265.92 of the Resource Conservation and Recovery Act (RCRA).

This plan has been developed in accordance with specific regulations and guidelines. The following references have been used in its preparation:

(1) Procedures Manual for Ground Water Monitoring at Solid Wastes Disposal Facilities, 1979, U.S. EPA-530/SW-611 (reprinted 1980).

(2) Manual of Ground Water Sampling Procedures, 1981, Marion R. Scalf, et. al., NWWA/EPA Series.

(3) Standard Methods for Analysis of Water and Wastewater, 1985, 20th Edition, APHA-AWWA-WPCF.

(4) RCRA Ground - Water Monitoring Technical Enforcement Guidance Document, 1986, U.S. EPA, OSWER-9950.1. R

As required by the referenced regulation, this plan for groundwater monitoring contains procedures for sample collection, sample preservation and shipment, analytical procedures and chain of custody controls.

3.0 SAMPLE COLLECTION

This section of the sampling and analysis plan presents procedures use to evacuate, sample and preserve groundwater samples collected from the FMPC monitoring well networks.

3.1 Sampling Order

In order to minimize the possibility for cross contamination, samples will be collected beginning at the well least likely to contain elevated levels of hazardous wastes or their constituents (upgradient well) and ending at the well most likely to contain elevated levels of hazardous wastes or their constituents. The sampling order for monitor well locations is indicated in Table 1. During field sampling activites, wells are grouped into on-site and off-site locations. Each sampling team then samples its series of wells in the prescribed order.

3.2 Sampling Technique

The sampling technique can be divided into three separate stages:

- Pre-sampling measurements
- Well evacuation
- Sample acquisition

Figure 1 is an example of a Field Sampling Record, used during the well sampling activities. This form follows the three stages mentioned above and is completed for each well sampled.

Prior to pre-sampling measurements, the following information is recorded in permanent ink on the Field Sampling Record.

TABLE 1

Monitoring Well Sampling Order

Sampling Order	Well Number	Location
1	12	Off North access road
2	SW-2	Southwest collector
3	P-1	West side production area
4	P-2	West side production area
5	P-3	Water treatment Plant
6	OS-1 deep	Farm house on Willey Road
7	OS-1 dug	Farm house on Willey Road
8	15s	Pasture on Willey Road
9	16d	Guard training area
10	16s	Shooting range
11	17d	Willey Road Bridge
12	17s	Willey Road Bridge
13	18d	South of production area
14	18s	South of production area
15	20d	Southwest of production area
16	20s	Southwest of production area
17	20TP	Southwest of production area
18	14d	Confluence of SSOD with Paddy's Run
19	14s	Confluence of SSOD with Paddy's Run
20	9	Paddy's Run-East bank
21	11	North of production area
22	13d	East of scrap metal site
23	13s	East of scrap metal site
24	8d	South of waste pit storage area
25	8s	South of waste pit storage area
27	3	East of pit 3 area
28	4	South of pit 3
29	5	South of pit 3
30	1d	North of K-65 tanks
31	1s	North of K-65 tanks
32	19d	East of pit 4
33	19s	East of pit 4
34	19TP	East of pit 4
35	21s	South of pit 4
36	21TP	South of pit 4
37	22s	West of pit 4
38	22TP	West of pit 4
39	OS-1	Exterior tap in yard of farm house off Willey Road
40	OS-2	East side of Paddy's Run Road
41	OS-3	East side of Paddy's Run Road

DAMES & MOORE
FIELD SAMPLING RECORD

Job _____ Date _____
Job # _____

Well # _____ Well Diameter _____
Location _____

I Water Level Measurements (From Top of Casing) in Feet.
Total Well Depth:
Depth to Water:
Height of Water Column:
Volume Conversion Factor:
Gallons in Well:

Conversion Factor
0.16 = 2" ID
0.65 = 4" ID
1.47 = 6" ID

II Well Evacuation
Pumping: Submersible
Nitrogen
Centrifugal

Bailing: Kemmerer
Bucket Bailer
: Other (Describe)

Pump On:
Pump Off:
Pumping Time:
Pumping Rate:
Gallons Removed:

Bailing Started:
Bailing Stopped:
Gallons Removed:

III Sampling
Withdrawal: Pumped (describe)
Bailed (describe)

Time: Date:
Sample I.D. #:
Trip Blank #:
No. of containers filled (primary lab):
No. of containers filled (replicate samples):
Physical appearance and odor:

Refrigerated: Date:
Time:

Field Tests (Before After Evacuation)
Temperature (°C/°F):
pH:
Spec Cond (umhos/cm):
Dissolved oxygen (mg/l):

Weather:

Comments:

FIGURE 1

- o Facility Name
- o Name of sampling personnel, affiliation, date and time of sampling
- o Well number, location and well diameter
- o Short description of weather conditions

3.2.1 Pre-sampling measurements

Pre-sampling measurements consist of recording total depth of the well, depth to water, well diameter and other well characteristics as indicated on the Field Sampling Record.

Measurement of total well depth is made with a weighted tape, divided into feet, inches and tenths of an inch. The accuracy of the measurement is to the 0.01 ft.

The water level measurement is made with a water level indicator model 51453 made by Slope Indicator Co. (or equivalent). The accuracy of this measurement is also to the nearest 0.01 ft.

Both measurements are made from the same chisel mark on the top of the outer protective (metal) well casing.

Subtracting the depth to the water table from the total well depth, the height of the water column in the well can be calculated. Multiplying this by the well conversion factor (based on well diameter) the number of gallons of water in the well can be estimated.

In addition, field measurements such as pH, conductivity, and temperature are made initially and are observed continuously throughout the well evacuation process prior to sampling in order to determine if the chemistry of the produced water has stabilized (see Section 3.2.2). R*

3.2.2 Well Evacuation

The composition of the water within the well casing and in close proximity to the well (e.g. the gravel pack) is usually not representative of the overall ground water quality at the sampling site. This is because important geochemical conditions such as the oxidation-reduction potential may differ drastically near the well from those in the surrounding water bearing materials. For this reason it is essential that a well be pumped or bailed until the well is thoroughly flushed of standing water and contains fresh water from the aquifer. Conductivity, temperature, and pH measurements are continuously observed during the well evacuation process in order to adequately determine when the chemistry of the produced water has stabilized. R*

The recommended amount of water required to be pumped or bailed from the well before sampling is dependent on many factors including the characteristics of the well, the hydrogeological nature of the aquifer, the type of evacuation equipment being used, and the parameters being sampled. The time required may range from the time needed to pump or bail one casing volume to the time needed to pump several casing volumes. At the FMPC, between 3 and 5 casing volumes of water are normally removed prior to sampling the well. A minimum of one casing volume is removed from low yielding wells and at least three casing volumes are evacuated from wells with higher yields. Well water will be evacuated either by purge pumping or bailing. R*

<u>Pumping</u>

The majority of monitoring wells currently in place at the FMPC have dedicated 3.75" submersible pumps and discharge tubing installed in them. These pumps are used to purge the wells. As each of these pumps are dedicated to a single R

well, no special cleaning at the pump or discharge tubing prior to or after sampling is required.

Purge water withdrawn from the wells within the plant production area is collected in a tank truck and eventually fed into the FMPC's wastewater treatment system. Purge water withdrawn from outside the plant production area is discharged onto the ground surface and directed away from the casing.

For those wells that do not have a dedicated pump, a 3.5" portable submersible pump is used to purge the wells. The pump and associated tubing is cleaned after each use by pumping water with a non-phosphate detergent, tap water and then distilled water through the pump and tubing prior to its use in another well (see Section 3.2.5). R*

The pumping start time is marked on the field sampling record and the pumping rate is monitored with a flow meter or by the time needed to fill a vessel (bucket) of known volume. Based on the pumping rate, pumping time is established to typically remove 3 to 5 volumes of water from the well. R*

Bailing

There are several shallow wells in the surficial till layer which have recoveries too slow to allow for continuous pumping. In this case, wells are evacuated using a 2 foot long, 1.75 inch i.d. stainless steel bailer with a teflon check valve. If the well is bailed dry prior to removing the required volumes it is allowed to reach 80% of recovery and then immediately sampled.

New nylon weave rope is used in the manipulation of the bailer and separate lengths are dedicated to each well. The rope is bagged and disposed after use on the site.

A biodegradable, non-phosphate cleaning solution (e.g., ALCONOX) is used to clean the bailers upon completion of well evacuation. The bailer is triple rinsed with tap water, distilled water, and acetone prior to rinsing with pesticide quality hexane and wrapping with aluminum foil before reuse (see Section 3.2.5). Bailed water from wells within the plant production area is collected in a tanker and disposed in the FMPC's wastewater treatment system. Bailed water from wells outside the plant production area, as well as wash and rinse water is discharged to the nearby ground surface. R*

3.2.3 Sample Collection

After removal of the required volumes from the well, the sample bottles are clearly labelled in permanent ink.

For collection of samples from pumps, the pump discharge tubing is placed near the bottom of the sample bottle and gradually withdrawn as the container fills. All sample bottles are filled to the top without overflowing, and the caps are firmly hand tightened to prevent leakage. Because of the relatively low turbidity of the ground water at this site, no field filtering of samples is performed. Only samples for non-volatile, inorganic constituents are collected using the dedicated pumping equipment. R*

In the case of sampling with a bailer, the water sample from the bailer is minimally handled and transferred immediately to the sample bottle. Bailing is used to collect samples for volatile organic constituents and total coliform. Bailing takes place subsequent to inorganic sampling; however, sufficient time is allowed to let the water stabilize prior to bailing. R*

As each full set of samples is collected from each monitoring point, they are stored in sampling kits comprised of an insulated container containing ice and appropriate shipping and handling instructions.

3.2.4 Field Blanks

As part of the ongoing QA program, samples are accompanied to the lab by field blanks. Field blanks are divided into cleaning blanks and trip blanks.

Cleaning blanks are made prior to each round of sampling, at least one each day of sampling. They consist of distilled, deionized water which is collected from the bailers after cleaning. They are analyzed and values are used to interpret the effectiveness of the cleaning procedures and bottle handling procedures.

In addition to the cleaning blanks, two types of trip blanks accompany the samples. These consist of sample bottes filled with distilled, deionized water and capped in the laboratory. One trip blank remains capped and accompanies the sample at all times until returning to the laboratory where it is opened and tested along with the other samples. The other trip blank is set aside during the sampling of the wells and left open to the atmosphere. The purpose of these trip blanks is to ensure that proper sample bottle preparation and handling techniques have been employed, and to evaluate the potential for atmospheric influences on sampling equipment.

3.2.5 Decontamination Procedures

Sampling equipment such as bailers, metering probes, and non-dedicated pumps and associated tubing used for RCRA groundwater monitoring at the FMPC are thoroughly cleaned and dried prior to reuse. Since organics are of concern with the FMPC detection monitoring efforts, the following procedure is practiced: clean with a non-phosphate detergent (e.g. ALCONOX); and rinse with tap water, distilled water, acetone, and pesticide quality hexane. If organics are of prime concern, then the following procedure would be followed: clean with a non-phosphate detergent; and rinse with 0.1N hydrochloric or nitric acid, tap water, and distilled water. R*

4.0 Sample Preservation and Shipment

In order that laboratory results be representative of the actual sample condition at the time of collection, it is important that proper methods be used for the preservation and transport of the samples prior to their delivery to the lab. These procedures are summarized below and are consistent with USEPA requirements as described in References 1 and 2.

4.1 Sample Containers

Proper types and materials must be utilized for the sample containers (bottles) in order to ensure that the samples, and in particular the parameters to be analyzed from that particular bottle, do not react with the container material and alter the concentration or values of the parameter. Sample bottles are supplied by the subcontracted laboratory and have been carefully selected to meet these performance objectives. A variety of materials, such as amber glass, clear glass, and polyethylene are employed as required. Where necessary, specialized sample bottles are utilized, such as for VOC measurements. Table 2 provides a more detailed description of the types of sample bottles used during RCRA groundwater monitoring at the FMPC. R*

4.2 Sample Preservation

In addition to selection of proper container materials, other methods are often required in order to reduce the possibility of chemical reactions and/or precipitations occuring within the container which could alter analytical results. Those sample bottles which require chemical perservatives (e.g. acid) have the preservatives added by the laboratory prior to shipment of the bottles to the site. In addition, all sample bottles are placed in iced thermal coolers and kept as close to 4°C as possible during the period of time

TABLE 2

CONTAINERS AND PRESERVATIVES USED FOR RCRA GROUNDWATER SAMPLING

Parameter	Recommended Container	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
		Indicators of Groundwater Contamination		
•pH	Plastic	Field determined	None	25 ml
•Specific conductance	Plastic	Field determined	None	100 ml
•TOC	Amber glass (teflon-lined cap)	Cool, 4°C	28 days	4 x 15 ml
•TOX	Amber glass (teflon-lined cap)	Cool, 4°C	7 days	4 x 15 ml
		Groundwater Quality Characteristics		
•Chloride	Plastic	Cool, 4°C	28 days	50 ml
•Iron Manganese Sodium	Plastic	Field acidified to pH <2 with HNO_3	6 months	200 ml

TABLE 2 (CONTINUED)

CONTAINERS AND PRESERVATIVES USED FOR RCRA GROUNDWATER SAMPLING

Parameter	Recommended Container	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
*Phenols	Glass	4°C plus field acidified to pH <2 with HNO_3	28 days	500 ml
*Sulfate	Plastic	Cool, 4°C	28 days	50 ml
EPA Interim Drinking Water Characteristics				
*Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Plastic	Field Acidified to pH <2 with HNO_3	6 months	1000 ml
*Fluoride	Plastic	Cool, 4°C	28 days	300 ml
*Nitrate/ nitrite	Plastic	4°C plus field acidified with with H_2SO_4	14 days	1000 ml
*Endrin Lindane Methoxychlor Toxaphene 2, 4 D	Glass	Cool, 4°C	7 days	2000 ml

TABLE 2 (CONTINUED)

CONTAINERS AND PRESERVATIVES USED FOR RCRA GROUNDWATER SAMPLING

Parameter	Recommended Container	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
2, 4, 5 TP Silvex				
*Uranium, total Gross alpha Gross beta Radium 226, 228 Potassium 40 Technetium 99 Thorium 228,230, 232 Cesium 137 Strontium 90 Ruthenium 106 Neptunium 237 Plutonium 238, 239, 240	Plastic	Cool, 4°C plus lab acidified with HNO_3 or HCl	6 months	4 liters
*Coliform bacteria	Polypropylene	Cool, 4°C	6 hours	200 ml
Other Groundwater Characteristics of Interest				
*Cyanide	Plastic	Cool, 4°C plus Na OH to pH >12	14 days	500 ml

TABLE 2 (CONTINUED)

CONTAINERS AND PRESERVATIVES USED FOR RCRA GROUNDWATER SAMPLING

Parameter	Recommended Container	Preservative	Maximum Holding Time	Minimum Volume Required for Analysis
•Semivolatile, nonvolatile organics	Glass	Cool, 4°C	7 days	1000 ml
•Volatiles	Glass (teflon-lined cap)	Cool, 4°C	14 days	1000 ml

between collection and delivery to the lab. This refrigeration aids in the suppression of bacterial growth in the samples. Tables 2 and 3 list various preservatives and their applications. R*

TABLE 3

Preservation of Groundwater Samples Prior to Laboratory Analysis

Preservative	Action	Applicable to:
$HgCl_2$	Material Inhibitor	Nitrogen forms, Phosphorous forms
Acid (HNO_3)	Metals solvent, prevents precipitation	Metals
Acid (H_2SO_4)	Bacterial Inhibitor	Organic samples (COD, oil & grease, organic carbon)
	Salt formation with organic bases	Ammonia, amines
Alkali (NaOH)	Salt formation with volatile compounds	Cyanides, organic acids
Refrigeration	Bacterial Inhibitor	Acidity-alkalinity, organic materials, BOD, color, odor, organic Phosphorous, organic Nitrogen, carbon, etc. biological organisms (coliform, etc.)

4.3 Sample Shipment

In order to minimize the potential for loss, destruction, or tampering, all samples are delivered personally to the lab by a member of the sampling team. Sample bottles in their coolers are loaded onto a truck. The truck is kept locked with only the sampling team possessing a key. The bottles are then delivered directly to the lab and turned over to lab personnel. Chain-of-custody control is exercised throughout the sampling and sample shipment process as described in Section 6.0.

5.0 Analytical Procedures

All analyses of ground water samples in connection with RCRA groundwater sampling is conducted by Howard Labs, Inc. of Dayton, Ohio. Howard Labs is certified by both USEPA and OEPA to conduct such analyses. Analyses are conducted according to USEPA protocols and procedures as outlined below.

5.1 Constituents Being Monitored

A list of constituents that should be tested for in the FMPC groundwater was developed prior to the initiation of expanded monitoring in August, 1985 to meet RCRA requirements. This list addresses five (5) types of parameters:

- o Parameters used to evaluate general water quality. These include chloride, iron, manganese, phenols, sodium and sulfate.
- o Indicators of groundwater contamination. These include pH, specific conductance, total organic carbon and total organic halogen. These parameters are tested in quadruplicate as required by 40 CFR Part 264.90.

- o Constituents evaluating drinking water suitability. These include 11 metals, 3 radionculides, 6 pesticides/herbicides and coliform bacteria.

- o Parameters related specifically to past or current FMPC operations. This list includes 8 metals, 31 synthetic organic compounds, total dissolved solids and chemical oxygen demand (COD).

- o Radionuclides related to past or current FMPC operations. Fifteen are analyzed, including isotopes of uranium, radium, thorium and plutonium.

A complete list of all parameters being tested for in the FMPC groundwater is provided in Table 4. Appendix IX of 40 CFR 264 parameters are to be analyzed for selected RCRA wells as part of the Weston Characterization Investigation Study (CIS) for the Waste Pit Storage Area in support of the Environmental Impact Statement (EIS) at the FMPC. This sampling, along with additional monitoring well installation, will be conducted as expeditiously as possible. R*

5.2 Analytical Methods

Chemical analysis of the samples is conducted according to methods specified in EPA-600/4-79-020, "Methods for Chemical Analysis of Water and Wastes". Radiological analyses are performed in accordance with procedures specified in EPA-600/4-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water." Where no EPA-approved method exists, analyses are conducted according to generally accepted standards and practices of the analytical profession under direct supervision of a chemistry Ph.D. The parameters analyzed, detection limits and the methods utilized are summarized in Tables 4, 5, 6 and 7.

TABLE 4

PARAMETERS TO BE ANALYZED

A. For General Water Quality [1]

1. Chloride
2. Iron
3. Manganese
4. Phenols
5. Sodium
6. Sulfate

B. For Indicators of Contamination (Quadruplicate Analysis) [1]

1. pH
2. Specific Conductance
3. Total Organic Carbon (TOC)
4. Total Organ Halogen (TOX)

C. For Drinking Water Suitability [1]

1. Arsenic
2. Barium
3. Cadmium
4. Chromium - Hexavalent
   - Total
5. Fluoride
6. Lead
7. Mercury
8. Nitrate
9. Selenium
10. Silver
11. Gross Alpha
12. Gross Beta
13. Radium

TABLE 4 (Con't.)

14. Endrin
15. Lindane
16. Methoxychlor
17. Toxaphene
18. 2,4-D
19. 2,4,5-TP
20. Coliform Bacteria

D. Site Specific Parameters [2]

1. Nickel
2. Cyanide
3. Copper
4. Zinc
5. Magnesium
6. Calcium
7. Phosphorus
8. Chlorobenzene
9. Chlorodibromomethane
10. Chloroethane
11. 2-chloroethylvinyl
12. Chloroform
13. Dichlorobromomethane
14. Dichlorodifluoromethane
15. Total Dissolved Solids (TDS)
16. Total Potassium
17. Chemical Oxygen Demand (COD)
18. per Chloroethylene
19. cis 1,2 Dichloroethylene
20. Tributylphosphate
21. Acrolein
22. Acrylonotrille
23. Benzene
24. bis (chloromethyl) Ether
25. Bromoform
26. Bromodichloromethane
27. Bromomethane
28. Carbon tetrachloride
29. Chloromethane
30. 1,2 Dichlorobenzene
31. 1,3 Dichlorobenzene
32. 1,4 Dichlorobenzene

Table 4 (Con't.)

33. 1,1 Dichloroethane
34. 1,2 Dichloroethane
35. 1,1 Dichloroethylene
36. 1,2 Dichloropropane
37. 1,2 Dichloropropylene
38. Ethylbenzene
39. Methylbromide
40. Methylchloride
41. trans-1,2 Dichloroethylene
42. 1,3 Dichloropropene
43. 1,1,2,2 Tetrachloroethane
44. Tetrachloroethylene
45. Toulene
46. 1,1,1 Trichloroethane
47. 1,1,2 Trichloroethane
48. Trichloroethylene
49. Trichlorofluoromethane
50. Vinyl Chloride

E. Radionuclide [2]

1. Potassium 40
2. Total Uranium
3. Radium 226
4. Radium 228
5. Technetium 99
6. Thorium 228
7. Thorium 230
8. Thorium 232
9. Cesium 137
10. Strontium 90
11. Ruthenium 106
12. Neptunium 237
13. Plutonium 238
14. Plutonium 239
15. Plutonium 240

F. Schedule - Quarterly for one (1) year, semiannual thereafter (or as necessary according to regulations).

[1]Required for RCRA and analyzed for each sample.

[2]Not required for RCRA, but also analyzed for each sample.

Analytical Methods and Detection Limits for Groundwater Samples
Water Quality Indicators

Parameter	Detection Limit	Analytical Method**
Chloride	1 ppm	325.3
Iron	50 ppb	236.2
Manganese	20 ppb	243.2
Phenols (total)	5 ppb	420.3
Sodium	50 ppb	273.2
Sulfate	1.0 ppb	375.2
pH	0.1 std./units	150.1
Specific Conductance	1 umho/cm	120.1
Total Organic Carbon (TOC)	1 ppb	415.1
Total Organic Halogen (TOX)	10 ppb	*
Arsenic	5 ppb	206.2
Barium	200 ppb	208.2
Cadmium	2 ppb	213.2
Chromium-Hexavalent	5 ppb	218.4
Chromium-Total	5 ppb	218.2
Fluoride	10 ppb	340.2
Lead	5 ppb	239.2
Mercury	2 ppb	245.2
Nitrate (as N)	20 ppb	352.1
Selenium	2.5 ppb	270.2
Silver	30 ppb	272.2
Gross alpha	15 pCi/l	900.0
Gross beta	5 pCi/l	900.0
Radium	5 pCi/l	900.1
Endrin	0.2 ppb	608
Lindane	0.2 ppb	608
Methoxychlor	0.2 ppb	608
Toxaphene	0.5 ppb	608
2,4-D	0.2 ppb	608
2,4,5-TP Silvex	0.2 ppb	608
Coliform Bacteria	2/100 ml	*
Nickel	5 ppb	249.2
Cyanide	5 ppb	335.3
Copper	25 ppb	220.2
Zinc	25 ppb	289.2
Magnesium	10 ppb	242.1
Calcium	50 ppb	215.1
Phosphorus	20 ppb	365.4
Total Dissolved Solids (TDS)	10 ppb	*
Total Potassium	50 ppb	258.1

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

** As described in References 3, 4 and 5.

Analytical Methods and Detection Limits for Groundwater Samples - Volatiles

	Detection Limit	Analytical Method
Chlorobenzene	2.0 ppb	1624
Chlorodibromomethane	2.0 ppb	1624
Chloroethane	2.0 ppb	1624
2-Chloroethlvinyl Ether	2.0 ppb	1624
Chloroform	2.0 ppb	1624
Dichlorobromomethane	2.0 ppb	1624
Dichlorodifluoromethane	2.0 ppb	1624
Chemical Oxygen Demand (COD)	10 ppb	405.1
per Chloroethlyene	2.0 ppb	*
cis 1,2 Dichloroethylene	2.0 ppb	1624
Tributylphosphate	2.0 ppb	*
Acrolein	2.0 ppb	*
Acrylonitrille	2.0 ppb	*
Benzene	2.0 ppb	1624
bis (Chloromethyl)Ether	2.0 ppb	*
Bromoform	2.0 ppb	1624
Bromodichloromethane	2.0 ppb	1624
Bromomethane	2.0 ppb	1624
Carbon tetrachloride	2.0 ppb	1624
Chloromethane	2.0 ppb	1624
1,2 Dichlorobenzene	2.0 ppb	1625
1,3 Dichlorobenzene	2.0 ppb	1625
1,4 Dichlorobenzene	2.0 ppb	1625
1,1 Dichloroehtane	2.0 ppb	1624
1,2 Dichloroethane	2.0 ppb	1624
1,1 Dichloroethylene	2.0 ppb	1624
1,2 Dichloropropane	2.0 ppb	1624
1,2 Dichloropropylene	2.0 ppb	*
Ethylbenzene	2.0 ppb	1624
Methylbromide	2.0 ppb	1624
Methylchloride	2.0 ppb	1624
Trans 1,2 Dichloroethylene	2.0 ppb	1624
1,3 Dichloropropene	2.0 ppb	*
1,1,2,2 Tetrachloroethane	2.0 ppb	1624
Tetrachloroethylene	2.0 ppb	1624
1,1,1 Trichloroethane	2.0 ppb	1624
1,1,2 Trichloroethane	2.0 ppb	1624
Trichloroethylene	2.0 ppb	1624
Trichlorofluoromethane	2.0 ppb	1624
Vinyl Chloride	2.0 ppb	1624

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

TABLE 7

Analytical Methods and Detection Limits for Groundwater Samples - Radionuclides

Parameter	Detection Limit	Analytical Method
Cesium 137	5 pCi/l	901.0
Strontium 90	5 pCi/l	905.0
Ruthenium 106	5 pCi/l	*
Neptunium 237	5 pCi/l	*
Plutonium 239	5 pCi/l	*
Plutonium 240	5 pCi/l	*
Potassium 40	5 pCi/l	*
Radium 226	5 pCi/l	903.1
Radium 228	5 pCi/l	904.0
Technetium 99	5 pCi/l	*
Thorium 228	5 pCi/l	*
Thorium 230	5 pCi/l	*
Thorium 232	5 pCi/l	*
Uranium 233/234	5 pCi/l	*
Uranium 235	5 pCi/l	*
Uranium 238	5 pCi/l	*

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

6.0 Chain of Custody Control

A chain-of-custody control program is employed in order to provide for tracing of possession and handling of individual samples from the field collection through laboratory analysis. The various components of that program are summarized below.

6.1 Sample Labels

In order to avoid misidentification of the sample containers, each container has an adhesive label attached which indicates the sample identification number (well number), date and time of collection, and identification of the facility from which the sample was taken.

6.2 Sample Seals

As each thermal cooler is filled with sample bottles it is sealed by placing an adhesive band entirely around the cooler. This seal is then signed by the member of the collection team emplacing it. The seal is placed and signed such that opening of the cooler will result in obvious disruption of the seal.

6.3 Chain-of-Custody Records

In order to establish the documentation necessary to trace sample possession from time of collection, chain of custody information is recorded for each sample on a standard Chain-of-Custody form.

These data includes:

- o Sample I.D. number
- o Reason for sampling
- o Witnesses

- o Collection Procedure
- o Method of Preservation
- o Name, Signature, and Affiliation of each person taking possession of sample
- o Date and time of each transfer
- o Purpose of each transfer
- o Other pertinent remarks

An example of the Chain-of-Custody record presently in use is provided in Figure 2.

6.4 Field Sampling Records

In addition to the Chain-of-Custody forms, additional dates regarding the circumstances of sample collection are recorded in the Field Sampling Records. These were discussed in Section 3.2.

References

1. Manual of Ground Water Sampling Procedures, 1981, Marion R. Scalf, James F. McNabb, William J. Dunlap, Roger L. Cosby, John Fryberger, NWWA/EPA Series.

2. Procedures Manual for Ground Water Monitoring at Solid Waste Disposal Facilites, USEPA, 1980 #SW-611.

3. USEPA, 1983, Methods For Chemical Analysis Of Water and Wastes, Publication Number 600/4-79-020.

4. USEPA, 1980, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, Publication Number 600/4-80-032.

5. Howard Laboratories, Inc. 1986, Quality Assurance/Quality Control Program, Publication Number HLI-QC.EF.

6. USEPA, 1986, RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD), OSWER-9950.1. R

ATTACHMENT 1

HOWARD LABS QA/QC PROGRAM

HOWARD LABORATORIES. INC.
Quality Assurance/Quality Control Program

INTRODUCTION: The Quality Assurance/Quality Control Program (QA/QC) utilized by Howard Laboratories, Inc., is a comprehensive program which utilizes the same concept in each of the different departments within the lab. Each department, however, differs in their QC portion due to the different parameters analyzed in each of the different departments.

Basically, the QA program insures that the chemicals utilized for different standards are consistent and correct within strict limitations. All standards are prepared or purchased such that at least two different sources of standards are utilized to insure the precision of the standard(s) utilized in all analyses. Due to the vast number of parameters which are determined by HLI, not all standards are directly tracable to NBS standards or US EPA standards. All standards which are available from regulatory agencies are utilized within the QA program to insure precision in preparation and control of internally prepared or externally purchased standards. All standards are stored per regulatory recommendations, or where no such recommendations exist, storage has been limited to insure reliability. Further, instruments utilized in the analysis at HLI are calibrated continuously, not just on a day-to-day basis, but throughout the day and throughout the analytical run. These instruments are all state-of-the-art and are automated to reduce human error. Most instruments are controlled by computers. Calibration of these instruments includes the recommendations by the manufacturer and/or regulatory agencies.

The QC program consists of utilizing the standards described above, calibration of instruments on a multi-level calibration curve within a linear range of the instrument being utilized and comparing this response to previous calibration curves and standards. Due to the different departmental requirements, all samples and/or standards are analyzed in at least duplicate. Many are run in triplicate.

For example, the AA Department for metals determines all metals in triplicate. The MS department determines all samples in duplicate and some in quadruplicate, as required by the parameter. Each department has determined the specific acceptance criteria for each parameter. These acceptance criteria have been determined to be those recommended by regulatory agencies where applicable. Where regulatory agencies do not recommend an acceptance criteria, HLI has determined its own acceptance criteria based upon three levels of QC. These include percent recovery of spiked samples, reproducibility of replicate analyses and recovery of known standards. The following are specific QC/QA criteria:

WET CHEMISTRY -

pH	Instrument standardized three to four times daily with commercially purchased buffer standards plus HLI Stds.
Residue	Precision and accuracy data are not applicable to these tests. However, periodic replicates of samples are run for evaluation purposes.
Color	No precision or accuracy data are applicable to this test. Color standards are prepared according to Standard Methods, 15'th edition, method 204.A.
Fecal Coliform	3 dilutions per sample set are employed. Quarterly count comparisons are performed. Records are kept for incubator temperature, pH, autoclave use, and water suitability.
Bromide	One quality control sample per five samples analyzed. Acceptable limits are +/- 10% of true value.
Chloride	One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
1 - 10 mg/L	+/- 15

10 - 50	+/- 10
50 - 125	+/- 5

Cyanides

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.005 - 0.050 mg/L	+/- 20
0.050 - 0.300	+/- 10

Fluorides

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.02 - 0.05 mg/L	+/- 20
0.05 - 2.00	+/- 10

Ammonia

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.250 mg/L	+/- 20
0.250 -25.000	+/- 10

TKN

One quality control sample per five samplea analyzed. Acceptable limits:

Conc. Range	% True Value
0.10 - 0.25 mg/L	+/- 20
0.25 - 25.00	+/- 10

Nitrate/ Nitrite

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.250 mg/L	+/- 20
0.250 -25.000	+/- 10

Phosphorus

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.500 mg/L	+/- 20
0.500 - 2.000	+/- 10

Sulfate

One quality control sample per five samples analyzed. Acceptable limits not established by US. EPA.

COD	One quality control sample per five samples analyzed. Acceptable limits: Low level +/- 20% High level +/- 10%
BOD	Controls, blanks and standards run with each lot. Acceptable limits: +/- 10% of True Value
PHENOLS	One quality control sample per five samples analyzed. Acceptable limits: Conc. Range % True Value 0.005 - 0.050 mg/L +/- 20% 0.050 - 0.250 +/- 10%

METALS

Three levels of quality control samples are employed over the linear working range of the parameter. One entire series is run with each lot analysis. Acceptable limits:

Furnace range	+/- 20%
Flame range	+/- 10%

One calibration check sample is performed every sixth analysis to verify calibration curve. Acceptable range:

Furnace	+/- 20%
Flame	+/- 10%

Out of limit condition requires re-standardization of instrument.

Exceptions -

Mercury - One quality control check every nine samples. Acceptable limits +/- 20% of true value. Analysis of all samples run in triplicate.

Arsenic & Selenium - Three levels of quality control are run twice per lot analysis. Acceptable results are +/- 20%. All analysis are run with spike. Acceptable limits of recovery +/- 20%

In addition to the above procedures, samples analyzed for

EP Toxicity are run by the method of additions, which entails running each sample at three levels of spike addition. The results of expected versus observed values are calculated in a linear regression analysis, and the slope of the line expressed as a percent. Acceptable limits are between the values of 80 to 120 % for all EP Toxic metals.

ORGANIC ANALYSIS

Standards are maintained in groups for purgibles, acid extractable, base/neutral, and pesticide/PCB's. These groups are subdivided into lower groups to facilitate identification and reduce costs in standard preparation.

The quality control procedures listed in the December 3, 1979 Federal register are utilized to maintain instrument specifications. These procedures utilize deuterated anthracene and purgibles not on the priority pollutant list. In addition Howard Laboratories utilizes the following procedures to further improve upon detection limits and quality control:

1. Each sample is duplicated where required
2. A standard of known value is analyzed at least every ten samples along with a blank
3. In the case of PCB's, quantitation is duplicated on a second column.
4. Acceptable limits of recovery must meet the following:

   a. Recovery of known standards:

      80% at a level 5 times the detection limit
      50% at a level 2 times the detection limit

   b. Recovery of spike values:

      80% at a level 5 times the detection limit
      50% at a level 2 times the detection limit

   NOTE: PCB analysis have more stringent requirements.

PCB ANALYSIS

a. Recovery of known standards:

1. Aqueous standards -

0.01 - 0.05	+/- 0.005
0.05 - 0.50	+/- 0.01
0.50 - 5.00	+/- 0.05
Above 5.00	+/- 0.50

2. Oil standards -

Below 1.00	as appropriate
1.0 - 10.0	+/- 0.2 to +/- 2.0
10.0 - 50.0	+/- 2.0 to +/- 5.0
50.0 -500.0	+/- 5.0 to +/- 50.0
Above 500.0	as appropriate

b. Recovery of Spike values:

1. Aqueous -

0.01 - 0.05	>50%
0.05 - 0.50	>80%
0.50 - 5.00	>80%
Below 1.0	as appropriate
1.0 - 10.0	20%
10.0 - 50.0	10 to 20%
50.0 -500.0	10%
Above 500.0	10%

Duplication of samples

Duplicate samples must be reproducible at the same dilution by the following factors:

1. Aqueous -

0.01 - 0.05	+/- 0.005 - 0.01
0.05 - 0.50	+/- 0.01 - 0.05
0.50 - 5.00	+/- 0.05 - 0.10
Above 5.00	+/- 0.10

2. Oils -

Below 1.0	as appropriate
1.0 - 10.0	+/- 0.2 to 1.0
10.0 - 50.0	+/- 1.0 to 5.0
50.0 -500.0	+/- 5.0 to 50.0
Above 500.0	+/- 50.0 for each 500.0

GCSCAN ANALYSES:

GCSCAN is a code for multiple analyses utilizing gas chromatography along with a specified methodology. That methodology may be ASTM, EPA, NIOSH, AOAC or other method widely recognized in the analytical field. The specific method is specified with the results when applicable. The same QA/QC is provided as for PCBs and when peaks cannot be identified, GC/MS is utilized. Quantitation is by GC using multiple level calibration.

GCMS ANALYSES:

GCMS is a code for multiple methods of analyses utilizing a gas chromatograph equipped with mass spectrometer detector. This method identifies compounds and quantitates the same with external or internal standards, as appropriate. Specific methods will be specified when such methods are recognized by the scientific community or regulatory agencies. Since not all procedures are specified, the use of GCMS for organic analyses will be performed by an academically trained analyst with experience in the application of GC and ability to interpret data which may not be found on NBS or other recognized spectral libraries. The operation of GCMS will be under the direct supervision of a Ph.D.

PRIORITY POLLUTANT ANALYSES:

Priority pollutants, TTO's or fractions of these compounds will be by the method described in the December 3, 1979 Federal Register. Exact specifications for all parameters will be by protocol. QA includes recovery of spiked samples, reproducibility of the same sample, duplicate standards and at least one other source of comparison standards derived from the US EPA, NBS, or other recognized source.

Base Neutral Fraction: Method 1625 (capillary column use of Method 625) will be utilized. Internal standards will include D-10 Anthracene or D-10 Phenanthrene, with other recognized internal standards to determine retention times,

insure proper spectral retrival and maintain quality control on the internal standards themselves. Quantitation will be based upon each individual parameter and not grouped or quantitated based upon area of a known amount of internal standard. The charge/mass ratio of the internal standards is not the same for the internal standards as it is for the compounds in question; therefore internal standards will be utilized to determine recovery while quantitation will be based upon known standards when recoveries have been met satisfactorily.

Acid Fraction: Method 1625 will be utilized and the same information as that utilized for Base Neutrals will be followed.

Volatile Fraction: Method 1624, utilizing cryogenic purge and trap will be utilized for the volatile parameters. The entire system is automated to reduce human error, and each sample group will be spiked to determine recovery and acceptability of the data. We have found that Method 624, which utilizes a packed column will not satisfactorily quantitate the very volatile purgibles, and for that reason, have chosen to use liquid nitrogen trap to collect the sample. This method also allows the detection of more compounds than that listed in the volatile fraction.

Pesticide/PCB Fraction: GC/ECD will be utilized to screen the Pesticide/PCB (PESTPP) fraction, utilizing US EPA Method 608. This method is more than 10 times as sensitive as the GC/MS method. If compounds are detected, GC/MS analyses are utilized to identify such compounds. Quantitation will be by GC.

Special Parameters: Although the above methods are recognized for all priority pollutant parameters, the detection limits for certain of these parameters is quite high (e.g. 2,3,7,8-Dioxin). The recommended US EPA procedure of utilizing GC for screening of this parameter will be utilized.

8000 SERIES METHODS:

SW 846 Manual covers the analyses of hazardous wastes. The methods cited in SW 846 for organic analyses have not been approved by US EPA but are only recommended at this time. This firm has spent many weeks performing such analyses and in determining recoveries of each of the parameters under the 8000 series recommended procedures. We have been unsuccessful in finding 13 of the compounds for standards. All others are available. We have further modified (added to) the methods of analyses in SW 846 to better determine certain parameters. These methods are being prepared to submit to US EPA for their information. Certain methods of preparation have been reversed in addition to normal extraction procedures. For example, base neutral/acid fraction normally requires the base fraction be extracted first, then the acid fraction. In addition to this normal method, we include the acid extraction first followed by base neutral. This allows confirmation of certain organic salts by GCMS which are not normally capable of being analyzed by GC or GC/MS.

SUMMARY:

This firm maintains all of the equipment listed for US EPA methods. This includes GC/MS, GC, HPLC and all of the special detectors required for these analyses. Further, we maintain automatic equipment which operates on a 24 hour basis, 7 days per week. Such automation and continued operation have proven to provide better data (free of human error) and better operation of equipment. We have found that startup and shutdown of equipment promotes poor operation of the equipment and causes greater problems in stability of that equipment.

Organic analyses are conducted by protocol where recommended protocol exists. Otherwise, scientifically recognized procedures are utilized for such analyses. All organic analyses are performed under the direction of a Ph.D., with many years of experience, and well over 100,000 analyses.

Data is provided on formats utilizing the largest laboratory data management system available. Such data

is stored on 9 track mag tapes and archived per US EPA requirements.

Specific questions concerning these methods and data should be directed to the Laboratory Director.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

08/14/87 16:39:52

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O.Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01 #13-S
01 #13-S B.#74741
02 #13-D
02 #13-D B.#74742
03 #11
03 #11 B.#74743
04 #9
04 #9 B.#74744
05 #SW-2
05 #SW-2 B.#74745

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus,Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
TDSI	Total Dissolved Solids
TOCOL	Total Coliform,Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD
ZN	Zinc

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	3 pCi/L	CA	108.000 mg/L
CD	<0.001 mg/L	CLI	25.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.34 mg/L	FE	2.570 mg/L	HG	<0.0002 mg/L	K	2.190 mg/L	MG	27.900 mg/L
MN	0.194 mg/L	NA	12.800 mg/L	NI	<0.005 mg/L	NO3I	0.51 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	112.0 mg/L	TDSI	488 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 05/28/87 DATE INJECTED 06/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24765

DATE INJECTED 06/01/87

ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	1,800.0	ug/L
Cyclohexane	300.0	ug/L

NOTE: No other compounds were present with a detection limit for most of the HSL compounds of <0.5 ug/L. The acetone and cyclohexane are probably from the use of these compounds as washing agents for bailing equipment between wells.

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	98.5 %	S1V
toluene-d6	103.0 %	S2V
bromofluorobenzene	103.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT

LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.35	7.35	7.37	7.36	7.36	0.010
CONDUCTIVITY	632	632	632	649	636	8.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-S B.#74741 SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #13-D SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	2 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	6 pCi/L	CA	202.000 mg/L
CD	<0.001 mg/L	CLI	65.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.42 mg/L	FE	6.710 mg/L	HG	<0.0002 mg/L	K	4.560 mg/L	MG	65.000 mg/L
MN	0.380 mg/L	NA	47.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	310.0 mg/L	TDSI	916 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-D FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 05/28/87 DATE INJECTED 06/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-D FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT LAB # 87-05-C11

Results by Sample

SAMPLE ID #13-D

FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24766

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	34.2	ug/L
No other compounds detected above 0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	102.0 %	S1V
toluene-d6	104.0 %	S2V
bromofluorobenzene	100.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-D FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.12	7.13	7.13	7.14	7.13	0.008
CONDUCTIVITY	1,100	1,140	1,140	1,140	1,130	22.0
TOTAL ORGANIC CARBON	1	1	<1	<1	0.50	0.500

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #13-D B.#74742 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #11 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	3 pCi/L	CA	97.200 mg/L
CD	<0.001 mg/L	CLI	18.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	2.280 mg/L	HG	<0.0002 mg/L	K	1.080 mg/L	MG	27.900 mg/L
MN	0.179 mg/L	NA	9.800 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	88.0 mg/L	TDSI	376 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #11 FRACTION Q3A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 05/28/87 DATE INJECTED 06/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #11 FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

LAB # 87-05-C11

Results by Sample

SAMPLE ID #11

FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24767

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected with a detection limit of <0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	91.1 %	S1V
toluene-d6	105.0 %	S2V
bromofluorobenzene	99.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C11

SAMPLE ID #11

FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.52	7.50	7.51	7.49	7.50	0.013
CONDUCTIVITY	579	579	579	579	579	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #11 B.#74743

SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL 8 /100ml

SAMPLE ID #9

SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG <0.030 mg/L	ALPHA 2 pCi/L	AS <0.0025 mg/L	BA <0.200 mg/L	BETA 9 pCi/L	CA 81.800 mg/L
CD <0.001 mg/L	CLI 20.0 mg/L	CN <0.005 mg/L	CODI <10 mg/L	CR <0.005 mg/L	CR6 <0.005 mg/L
CU <0.025 mg/L	F 0.22 mg/L	FE 0.188 mg/L	HG <0.0002 mg/L	K 2.230 mg/L	MG 23.300 mg/L
MN 0.070 mg/L	NA 11.800 mg/L	NI <0.005 mg/L	NO3I 1.54 mg/L	PB <0.005 mg/L	PHNLI <0.005 mg/L
PTI <0.02 mg/L as P	RADIUM <1 pCi/L	RAD_SC SEE TEXT pCi/L	SE <0.0025 mg/L	SO4I 80.0 mg/L	TDSI 344 mg/L
ZN <0.020 mg/L					

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #9 FRACTION 04A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 05/28/87 DATE INJECTED 06/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #9 FRACTION 04A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #9

FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24768

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	29.8	ug/L
Cyclohexane	10.2	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	101.0 %	S1V
toluene-d6	98.6 %	S2V
bromofluorobenzene	103.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #9 FRACTION Q4C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.59	7.59	7.60	7.60	7.60	0.006
CONDUCTIVITY	491	491	491	500	493	4.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT LAB # 87-05-C11

Results by Sample

SAMPLE ID #9 B.#74744 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL 4,200 /100ml

SAMPLE ID #SW-2 SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	4 pCi/L	CA	93.600 mg/L
CD	<0.001 mg/L	CLI	31.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	0.110 mg/L	HG	<0.0002 mg/L	K	2.630 mg/L	MG	28.700 mg/L
MN	0.167 mg/L	NA	15.300 mg/L	NI	<0.005 mg/L	NO3I	2.36 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	400 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #SW-2 FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/08/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #SW-2 FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	25.0	26.0	27.0	28.0	26.5	1.29

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #SW-2 FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24769 VERIFIED BY CMH

DATE INJECTED 06/01/87 ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	30.8	ug/L
Cyclohexane	12.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	84.5 %	S1V
toluene-d6	91.7 %	S2V
bromofluorobenzene	111.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #SW-2 FRACTION 05C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.36	7.39	7.40	7.39	7.39	0.017
CONDUCTIVITY	596	596	596	601	597	2.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C11

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #SW-2 B.#74745

SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

HOWARD LABS INC REPORT

LAB # 87-05-C11

RECEIVED: 05/27/87

08/14/87 16:39:52

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

08/14/87 16:43:50

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01	#12	
01	#12	B. #74746
02	#HKS	
02	#HKS	B. #74747
03	#HKD	
03	#HKD	B. #74748
04	#16-S	
04	#16-S	B. #74749
05	#16-D	
05	#16-D	B. #74750

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus, Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
SSTUDY	Special Study
TDSI	Total Dissolved Solids
TOCOL	Total Coliform, Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD
ZN	Zinc

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,I

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	11 pCi/L	CA	34.200 mg/L
CD	<0.001 mg/L	CLI	93.0 mg/L	CN	<0.005 mg/L	CODI	17 mg/L	CR	0.006 mg/L	CR6	<0.006 mg/L
CU	<0.025 mg/L	F	1.18 mg/L	FE	6.070 mg/L	HG	<0.0002 mg/L	K	15.800 mg/L	MG	8.900 mg/L
MN	0.158 mg/L	NA	226.000 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.016 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	9.0 mg/L	SSTUDY	07/21/87 Date Completed
TDSI	592 mg/L	ZN	0.056 mg/L								

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24770

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	84.4	ug/L
Cyclohexane	15.0	ug/L
No other compounds detected above 0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	103.0 %	S1V
toluene-d6	83.2 %	S2V
bromofluorobenzene	95.8 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.80	7.81	7.81	7.80	7.81	0.006
CONDUCTIVITY	877	877	877	877	877	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 B.#74746 SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #HKS SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	29 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	30 pCi/L	CA	94.200 mg/L
CD	<0.001 mg/L	CLI	31.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.59 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	3.170 mg/L	MG	27.000 mg/L
MN	<0.015 mg/L	NA	19.700 mg/L	NI	<0.005 mg/L	NO3I	2.83 mg/L	PB	<0.005 mg/L	PHNLI	0.008 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	60.0 mg/L	TDSI	408 mg/L
ZN	0.148 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #HKS FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #HKS FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

LAB # 87-05-C12

Results by Sample

SAMPLE ID #HKS

FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24771

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	34.2	ug/L
No other compounds detected with a detection limit of <0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	102.0 %	S1V
toluene-d6	104.0 %	S2V
bromofluorobenzene	100.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #HKS FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.45	7.45	7.46	7.46	7.46	0.006
CONDUCTIVITY	570	570	570	570	570	0.0
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C12

SAMPLE ID #HKS B.#74747

SAMPLE # 02 FRACTIONS: H,I

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 Date Completed TOCOL 37 /100ml

SAMPLE ID #HKD

SAMPLE # 03 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 05/27/87 Category

AG <0.030 mg/L	ALPHA <1 pCi/L	AS 0.003 mg/L	BA <0.200 mg/L	BETA 3 pCi/L	CA 98.000 mg/L
CD <0.001 mg/L	CLI 24.0 mg/L	CN <0.005 mg/L	CODI <10 mg/L	CR <0.005 mg/L	CR6 <0.005 mg/L
CU <0.025 mg/L	F 0.26 mg/L	FE 2.570 mg/L	HG <0.0002 mg/L	K 1.700 mg/L	MG 26.900 mg/L
MN 0.326 mg/L	NA 7.090 mg/L	NI <0.005 mg/L	NO3I <0.02 mg/L	PB <0.005 mg/L	PHNLI 0.016 mg/L
PTI <0.02 mg/L as P	RADIUM <1 pCi/L	RAD_SC SEE TEXT pCi/L	SE <0.0025 mg/L	SO4I 92.0 mg/L	TDSI 398 mg/L
ZN 0.073 mg/L					

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #HKD FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #HKD FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C12

SAMPLE ID #HKD

FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.46	7.47	7.44	7.46	7.46	0.013
CONDUCTIVITY	526	518	518	535	524	8.0
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

LAB # 87-05-C12

Results by Sample

SAMPLE ID #HKD B.#74748

SAMPLE # 03 FRACTIONS: G

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #16-S

SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	4 pCi/L	AS	0.003 mg/L	BA	<0.200 mg/L	BETA	6 pCi/L	CA	114.000 mg/L		
CD	<0.001 mg/L	CLI	23.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	0.009 mg/L	CR6	<0.009 mg/L		
CU	0.044 mg/L	F	0.43 mg/L	FE	6.180 mg/L	HG	0.0003 mg/L	K	4.070 mg/L	MG	34.900 mg/L		
MN	0.214 mg/L	NA	14.200 mg/L	NI	0.006 mg/L	NO3I	1.90 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	0.08 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	76.0 mg/L	TDSI	400 mg/L		
ZN	0.074 mg/L												

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-S FRACTION 04A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-S FRACTION 04A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

LAB # 87-05-C12

Results by Sample

SAMPLE ID #16-S

FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24772

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	930.0	ug/L
No other compounds detected with a detection limit of <0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	95.0 %	S1V
toluene-d6	107.0 %	S2V
bromofluorobenzene	105.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-S FRACTION Q4C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.58	7.58	7.58	7.59	7.58	0.005
CONDUCTIVITY	526	526	526	535	528	4.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-S B.#74749 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #16-D SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	7 pCi/L	CA	83.600 mg/L
CD	<0.001 mg/L	CLI	25.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	2.300 mg/L	MG	24.200 mg/L
MN	<0.015 mg/L	NA	10.900 mg/L	NI	<0.005 mg/L	NO3I	2.42 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.013 mg/L	SO4I	64.0 mg/L	TDSI	380 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-D FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-D FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-D

FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24773

DATE INJECTED 06/01/87

ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	40.8	ug/L
Cyclohexane	60.0	ug/L
No other compounds detected with a detection limig of <0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	97.4 %	S1V
toluene-d6	102.0 %	S2V
bromofluorobenzene	114.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT

LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-D

FRACTION 05C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.57	7.58	7.60	7.57	7.58	0.014
CONDUCTIVITY	491	491	491	500	493	4.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C12

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #16-D B.#74750 SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2
/100ml

HOWARD LABS INC REPORT

LAB # 87-05-C12

RECEIVED: 05/27/87

08/14/87 16:43:50

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	667	<1.0	<1.0	<1.0
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

08/14/87 16:47:13

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01	#17-S
01	#17-S B.#74751
02	#17-D
02	#17-D B.#74752
03	#3
03	#3 B.#74753
04	#4
04	#4 B.#74754
05	#8-S
05	#8-S B.#74755

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus, Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
SSTUDY	Special Study
TDSI	Total Dissolved Solids
TOCOL	Total Coliform, Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD
ZN	Zinc

HOWARD LABS INC REPORT

LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-S SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	0.006 mg/L	BA	<0.200 mg/L	BETA	6 pCi/L	CA	207.000 mg/L
CD	<0.001 mg/L	CLI	34.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	0.024 mg/L	CR6	<0.010 mg/L
CU	0.080 mg/L	F	0.18 mg/L	FE	13.900 mg/L	HG	<0.0002 mg/L	K	4.290 mg/L	MG	64.000 mg/L
MN	0.635 mg/L	NA	9.000 mg/L	NI	0.009 mg/L	NO3I	<0.02 mg/L	PB	0.008 mg/L	PHNLI	0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	112.0 mg/L	TDSI	556 mg/L
ZN	0.068 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-S FRACTION Q1A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-S FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-S

FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24774

DATE INJECTED 06/01/87

ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected with a detection limit of <0.5 ug/L. This includes all of the CLP compounds plus acrolein, acrylonitrile and isomers of halogens, but the detection limits for acrolein, acrylo-nitrile and the chlorinated vinyl ethers is higher due to their instability in water. Such compounds hydrolyze readily.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	96.7 %	S1V
toluene-d6	112.0 %	S2V
bromofluorobenzene	115.0 %	S3V

CODE SV - Surrogate compound for QC check.

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HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-S FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.31	7.31	7.32	7.30	7.31	0.008
CONDUCTIVITY	702	697	693	702	699	4.36
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C13

SAMPLE ID #17-S B.#74751

SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #17-D

SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	3 pCi/L	CA	94.600 mg/L		
CD	<0.001 mg/L	CLI	22.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	0.14 mg/L	FE	1.430 mg/L	HG	<0.0002 mg/L	K	2.100 mg/L	MG	21.100 mg/L		
MN	0.305 mg/L	NA	8.900 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	84.0 mg/L	TDSI	428 mg/L		
ZN	<0.020 mg/L												

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-D FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-D FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-D FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24776

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	1040.0	ug/L
Cyclohexane	5000.0	ug/L
No other compounds detected,		
however due to the high levels		
of acetone and cyclohexane,		
detection levels for several		
compounds is near 5.0 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	92.3 %	S1V
toluene-d6	91.1 %	S2V
bromofluorobenzene	113.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-D FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.34	7.32	7.32	7.34	7.33	0.012
CONDUCTIVITY	526	526	526	518	524	4.0
TOTAL ORGANIC CARBON	<1	1	<1	<1	<1	0.433

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #17-D B.#74752 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #3 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	4 pCi/L	CA	85.000 mg/L
CD	<0.001 mg/L	CLI	23.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	1.420 mg/L	HG	<0.0002 mg/L	K	2.560 mg/L	MG	25.000 mg/L
MN	0.405 mg/L	NA	10.800 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.009 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	88.0 mg/L	TDSI	420 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #3 FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #3 FRACTION Q3A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450 1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #3 FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.48	7.49	7.49	7.49	7.49	0.005
CONDUCTIVITY	526	526	526	518	524	4.0
TOTAL ORGANIC CARBON	2	2	<1	<1	1	1.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #3 B.#74753 SAMPLE # 03 FRACTIONS: G,H

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 (Date Completed) TOCOL 46 /100ml

SAMPLE ID #4 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	3 pCi/L	CA	86.900 mg/L
CD	<0.001 mg/L	CLI	30.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.19 mg/L	FE	1.620 mg/L	HG	<0.0002 mg/L	K	2.990 mg/L	MG	22.600 mg/L
MN	0.023 mg/L	NA	12.200 mg/L	NI	<0.005 mg/L	NO3I	1.42 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	84.0 mg/L	TDSI	415 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #4 FRACTION 04A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #4 FRACTION 04A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NGM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #4 FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24777

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	580.0	ug/L
Cyclohexane	600.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	97.4 %	S1V
toluene-d6	103.0 %	S2V
bromofluorobenzene	116.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #4 FRACTION 04C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.47	7.48	7.50	7.49	7.49	0.013
CONDUCTIVITY	526	535	535	544	535	7.35
TOTAL ORGANIC CARBON	<1	<1	1	<1	<1	0.433

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #4 B.#74754 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL 12 /100ml

SAMPLE ID #8-S SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.013 mg/L	BA	<0.200 mg/L	BETA	<3 pCi/L	CA	24.200 mg/L
CD	<0.001 mg/L	CLI	18.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.05 mg/L	FE	5.810 mg/L	HG	0.0002 mg/L	K	2.660 mg/L	MG	24.800 mg/L
MN	0.547 mg/L	NA	10.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	0.009 mg/L	PHNLI	0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	20.0 mg/L	TDSI	233 mg/L
ZN	0.040 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-S FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/01/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-S FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-S FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24778

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	40.0	ug/L
Cyclohexane	22.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	116.0 %	S1V
toluene-d6	92.0 %	S2V
bromofluorobenzene	80.1 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-S FRACTION 05C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KK

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.70	7.70	7.71	7.72	7.71	0.010
CONDUCTIVITY	298	298	298	307	300	4.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C13

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-S B.#74755

SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

RECEIVED: 05/27/87 08/14/87 16:47:13

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

08/14/87 16:50:33

LAB # 87-05-C14

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

REPORT TO Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27/87
TRANS Picked up by HLI
TYPE Aqueous
P.O # 4-87485
INV # 87010069

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01 #8-D
01 #8-D B.#74756
02 #1-S
02 #1-S B.#74757
03 #1-D
03 #1-D B.#74758
04 #12 - Duplicate #1
04 #12-Duplicate #1 B.#74759
05 #DS - Duplicate #2
05 #DS-Duplicate #2 B.#74760

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver	NO3I	Nitrates
ALPHA	Gross Alpha	PB	Lead
AS	Arsenic	PHNLI	Phenols
BA	Barium	PSDWA	SDWA Pesticides/Herbicides
BETA	Gross Beta	PTI	Phosphorus, Total
CA	Calcium	RADIUM	Radium, Total
CD	Cadmium	RAD SC	Radionuclides Scan
CLI	Chloride	SE	Selenium
CN	Cyanide	SO4I	Sulfate
CODI	Chemical Oxygen Demand	SSTUDY	Special Study
CR	Chromium	TDSI	Total Dissolved Solids
CR6	Hexavalent Chromium	TOCOL	Total Coliform, Non Potable
CU	Copper	TOXDQ	TOX-Quad Runs-Method 450.1
F	Fluoride	VOAMSC	GC/MS SCAN TOTAL VOLATILES
FE	Iron	WCQ	RCRA TOC/COND/PH IN QUAD.
HG	Mercury	ZN	Zinc
K	Potassium		
MG	Magnesium		
MN	Manganese		
NA	Sodium		
NI	Nickel		

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-D SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	29 pCi/L	CA	82.500 mg/L
CD	<0.001 mg/L	CLI	10.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	2.220 mg/L	HG	<0.0002 mg/L	K	1.170 mg/L	MG	21.700 mg/L
MN	0.357 mg/L	NA	9.900 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.011 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	9.0 mg/L	TDSI	372 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-D FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/02/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-D FRACTION Q1A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-D FRACTION Q1G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24779

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	21.3	ug/L
Cyclohexane	12.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	106.0 %	S1V
toluene-d6	120.0 %	S2V
bromofluorobenzene	111.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C14

SAMPLE ID #8-D

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.39	7.40	7.42	7.48	7.42	0.040
CONDUCTIVITY	456	456	465	474	463	8.62
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #8-D B.#74756 SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #1-S SAMPLE # 02 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	4 pCi/L	CA	88.500 mg/L
CD	<0.001 mg/L	CLI	14.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	4.710 mg/L	HG	<0.0002 mg/L	K	0.936 mg/L	MG	25.000 mg/L
MN	0.345 mg/L	NA	15.100 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.011 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	76.0 mg/L	TDSI	468 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-S

FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/10/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/16/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-S FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-S FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY GC

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.50	7.44	7.46	7.52	7.48	0.037
CONDUCTIVITY	570	579	579	579	577	4.5
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-S B.#74757 SAMPLE # 02 FRACTIONS: G,H

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 (Date Completed) TOCOL <2 /100ml

SAMPLE ID #1-D SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	3 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	<3 pCi/L	CA	96.600 mg/L
CD	<0.001 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	2.150 mg/L	HG	<0.0002 mg/L	K	2.680 mg/L	MG	26.500 mg/L
MN	0.552 mg/L	NA	10.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.015 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	10.0 mg/L	TDSI	384 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-D FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/02/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-D FRACTION Q3A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-D FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24780

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	15.6	ug/L
Cyclohexane	20.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	93.4 %	S1V
toluene-d6	113.0 %	S2V
bromofluorobenzene	119.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-D FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD:

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.38	7.36	7.38	7.37	7.37	0.010
CONDUCTIVITY	544	544	553	553	549	5.20
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #1-D B.#74758

SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TQCOL <2 /100ml

SAMPLE ID #12 - Duplicate #1

SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	7 pCi/L	CA	48.700 mg/L
CD	<0.001 mg/L	CLI	104.0 mg/L	CN	<0.005 mg/L	CODI	15 mg/L	CR	0.011 mg/L	CR6	<0.010 mg/L
CU	<0.025 mg/L	F	1.04 mg/L	FE	11.600 mg/L	HG	<0.0002 mg/L	K	16.700 mg/L	MG	10.900 mg/L
MN	0.228 mg/L	NA	255.000 mg/L	NI	0.010 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	5.0 mg/L	TDSI	672 mg/L
ZN	0.032 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 - Duplicate #1 FRACTION Q4A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/02/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 - Duplicate #1 FRACTION Q4A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 - Duplicate #1 FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24782

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	694.0	ug/L
Cyclohexane	10.2	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	85.1 %	S1V
toluene-d6	87.2 %	S2V
bromofluorobenzene	116.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #12 - Duplicate #1 FRACTION Q4C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.79	7.81	7.81	7.81	7.81	0.010
CONDUCTIVITY	974	974	974	974	974	0.00
TOTAL ORGANIC CARBON	2	3	3	2	2.50	0.500

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-C14

SAMPLE ID #12-Duplicate #1 B.#74759 SAMPLE # 04 FRACTIONS: H
Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #DS - Duplicate #2 SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G
Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	43 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	69 pCi/L	CA	88.600 mg/L
CD	<0.001 mg/L	CLI	23.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.27 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	3.640 mg/L	MG	22.800 mg/L
MN	<0.015 mg/L	NA	12.200 mg/L	NI	<0.005 mg/L	NO3I	2.32 mg/L	PB	<0.005 mg/L	PHNLI	0.019 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	60.0 mg/L	TDSI	419 mg/L
ZN	0.045 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #DS - Duplicate #2 FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/02/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #DS - Duplicate #2 FRACTION Q5A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #DS - Duplicate #2 FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

DATA FILE 24788

DATE INJECTED 06/01/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
Acetone	40.5	ug/L
Cyclohexane	12.5	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	96.2 %	S1V
toluene-d6	98.7 %	S2V
bromofluorobenzene	112.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #DS - Duplicate #2 FRACTION 05C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.46	7.44	7.45	7.46	7.45	0.010
CONDUCTIVITY	526	526	526	526	526	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C14

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #DS-Duplicate #2 B.#74760 SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

HOWARD LABS INC REPORT LAB # 87-05-C14

RECEIVED: 05/27/87 08/14/87 16:50:33

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	<1.0	551
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87 08/14/87 16:53:55

CLIENT WEST M O SAMPLES 4
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01	#10	
01	#10	B. #74761
02	#5	
02	#5	B. #74762
03	#15-S	
03	#15-S	B. #74763
04	#AW	
04	#AW	B. #74764

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver	NO3I	Nitrates
ALPHA	Gross Alpha	PB	Lead
AS	Arsenic	PHNLI	Phenols
BA	Barium	PSDWA	SDWA Pesticides/Herbicides
BETA	Gross Beta	PTI	Phosphorus, Total
CA	Calcium	RADIUM	Radium, Total
CD	Cadmium	RAD SC	Radionuclides Scan
CLI	Chloride	SE	Selenium
CN	Cyanide	SO4I	Sulfate
CODI	Chemical Oxygen Demand	SSTUDY	Special Study
CR	Chromium	TDSI	Total Dissolved Solids
CR6	Hexavalent Chromium	TOCOL	Total Coliform, Non Potable
CU	Copper	TOXDQ	TOX-Quad Runs-Method 450.1
F	Fluoride	VOAMSC	GC/MS SCAN TOTAL VOLATILES
FE	Iron	WCQ	RCRA TOC/COND/PH IN QUAD
HG	Mercury	ZN	Zinc
K	Potassium		
MG	Magnesium		
MN	Manganese		
NA	Sodium		
NI	Nickel		

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #10 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	3 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	24 pCi/L	CA	354.000 mg/L
CD	<0.001 mg/L	CLI	83.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.19 mg/L	FE	0.289 mg/L	HG	<0.0002 mg/L	K	21.200 mg/L	MG	65.000 mg/L
MN	4.000 mg/L	NA	129.000 mg/L	NI	<0.005 mg/L	NO3I	118.00 mg/L	PB	<0.005 mg/L	PHNLI	0.023 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	52.0 mg/L	TDSI	2,488 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #10 FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/02/87 DATE INJECTED 06/13/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #10 FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT

LAB # 87-05-C15

Results by Sample

SAMPLE ID #10

FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24783

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	10,000.0	ug/L
Cyclohexane	5,000.0	ug/L
No other compounds detected with a detection limit of <10.0 ug/L due to the high levels of acetone.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	95.0 %	S1V
toluene-d6	92.3 %	S2V
bromofluorobenzene	66.4 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT

LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #10

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.00	6.97	6.96	6.96	6.97	0.019
CONDUCTIVITY	2,280	2,280	2,280	2,280	2,280	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #10 B.#74761 SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #5 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	3 pCi/L	CA	106.000 mg/L
CD	<0.001 mg/L	CLI	15.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.26 mg/L	FE	2.510 mg/L	HG	<0.0002 mg/L	K	3.000 mg/L	MG	28.400 mg/L
MN	0.487 mg/L	NA	8.340 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	76.0 mg/L	TDSI	532 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #5 FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/10/87 DATE INJECTED 06/23/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #5 FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	10	15	9	14	12	2.55

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #5 FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.35	7.37	7.36	7.36	7.36	0.008
CONDUCTIVITY	614	614	614	614	614	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #5 B.#74762 SAMPLE # 02 FRACTIONS: G,H

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 (Date Completed) TOCOL 19 /100ml

SAMPLE ID #15-S SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	27 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	50 pCi/L	CA	89.300 mg/L
CD	<0.001 mg/L	CLI	20.0 mg/L	CN	<0.005 mg/L	CODI	14 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.46 mg/L	FE	2.120 mg/L	HG	<0.0002 mg/L	K	3.610 mg/L	MG	24.000 mg/L
MN	0.060 mg/L	NA	11.200 mg/L	NI	<0.005 mg/L	NO3I	1.79 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.24 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	56.0 mg/L	TDSI	392 mg/L
ZN	0.020 mg/L										

HOWARD LABS INC REPORT

LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #15-S

FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/10/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/16/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #15-S FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	16	23	19	19	19.3	2.49

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/27/87

HOWARD LABS INC REPORT LAB # 87-05-C15

Results by Sample

SAMPLE ID #15-S

FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24785

DATE INJECTED 06/01/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	104.0	ug/L
Cyclohexane	20.0	ug/L
1,1-Dichloroethene	2.3	ug/L
1,1,1-Trichloroethane	18.9	ug/L
No other compounds detected.		

NOTE: These samples required dilutions and analyses on a second GCMS in order to eliminate the acetone and cyclohexane interferences. Also, blanks were necessary to prevent carryover between samples.

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	112.0 %	S1V
toluene-d6	104.0 %	S2V
bromofluorobenzene	108.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #15-S FRACTION Q3C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY WM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.58	7.58	7.64	7.59	7.60	0.029
CONDUCTIVITY	482	482	491	491	487	5.20
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #15-S B.#74763

SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TOCOL <2 /100ml

SAMPLE ID #AW

SAMPLE # 04 FRACTIONS: A,B,C,D,E,F

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	3 pCi/L	AS	0.003 mg/L	BA	<0.200 mg/L	BETA	18 pCi/L	CA	89.300 mg/L
CD	<0.001 mg/L	CLI	26.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.26 mg/L	FE	1.280 mg/L	HG	<0.0002 mg/L	K	2.930 mg/L	MG	22.800 mg/L
MN	0.348 mg/L	NA	10.900 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.013 mg/L	SO4I	64.0 mg/L	TDSI	431 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #AW FRACTION Q4A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/10/87 DATE INJECTED 06/23/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #AW FRACTION Q4A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDH

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10 0.	00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #AW FRACTION Q4C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.41	7.42	7.42	7.43	7.42	0.008
CONDUCTIVITY	570	579	570	579	575	5.20
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-C15

RECEIVED: 05/27/87

Results by Sample

SAMPLE ID #AW B.#74764

SAMPLE # 04 FRACTIONS: G,H

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 TOCOL <2

Date Completed /100ml

RECEIVED: 05/27/87 08/14/87 16:53:55

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSES (pCi/L)

RADIONUCLIDE	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04
Potassium 40	<1.0	<1.0	<1.0	<1.0
Total Uranium	<1.0	<1.0	332	<1.0
Radium 226	<1.0	<1.0	<1.0	<1.0
Radium 228	<1.0	<1.0	<1.0	<1.0
Technetium 99	<1.0	<1.0	<1.0	<1.0
Thorium 228	<1.0	<1.0	<1.0	<1.0
Thorium 230	<1.0	<1.0	<1.0	<1.0
Thorium 232	<1.0	<1.0	<1.0	<1.0
Cesium 137	<1.0	<1.0	<1.0	<1.0
Strontium 90	<1.0	<1.0	<1.0	<1.0
Ruthenium 106	<1.0	<1.0	<1.0	<1.0
Neptunium 237	<1.0	<1.0	<1.0	<1.0
Plutonium 238	<1.0	<1.0	<1.0	<1.0
Plutonium 239	<1.0	<1.0	<1.0	<1.0
Plutonium 240	<1.0	<1.0	<1.0	<1.0

RECEIVED 05/28/87

HOWARD LABS INC REPORT

08/14/87 16:56:32

LAB # 87-05-D08

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

REPORT TO Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27 & 5/28/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV # 87010069

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01	20-S	
01	20-S	B. #74783
02	20-D	
02	20-D	B. #74784
03	20-TP	
03	20-TP	B. #74785
04	21-TP	
04	21-TP	B. #74786
05	TP-19	
05	TP-19	B. #74787

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver	NO3I	Nitrates
ALPHA	Gross Alpha	PB	Lead
AS	Arsenic	PHNLI	Phenols
BA	Barium	PSDWA	SDWA Pesticides/Herbicides
BETA	Gross Beta	PTI	Phosphorus, Total
CA	Calcium	RADIUM	Radium, Total
CD	Cadmium	RAD SC	Radionuclides Scan
CLI	Chloride	SE	Selenium
CN	Cyanide	SO4I	Sulfate
CODI	Chemical Oxygen Demand	SSTUDY	Special Study
CR	Chromium	TDSI	Total Dissolved Solids
CR6	Hexavalent Chromium	TOCOL	Total Coliform, Non Potable
CU	Copper	TOXDQ	TOX-Quad Runs-Method 450.1
F	Fluoride	VOAMSC	GC/MS SCAN TOTAL VOLATILES
FE	Iron	WCQ	RCRA TOC/COND/PH IN QUAD.
HG	Mercury	ZN	Zinc
K	Potassium		
MG	Magnesium		
MN	Manganese		
NA	Sodium		
NI	Nickel		

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-S

SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	16 pCi/L	CA	82.600 mg/L
CD	<0.001 mg/L	CLI	22.0 mg/L	CN	0.006 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.36 mg/L	FE	0.166 mg/L	HG	<0.0002 mg/L	K	3.090 mg/L	MG	21.500 mg/L
MN	0.034 mg/L	NA	9.400 mg/L	NI	<0.005 mg/L	NO3I	2.51 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	388 mg/L
ZN	<0.020 mg/L										

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-S

FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/10/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/23/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D08

Results by Sample

SAMPLE ID 20-S

FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-S

FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

VERIFIED BY CMH

DATA FILE 24834

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected with a detection limit of <0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	87.0 %	S1V
toluene-d6	99.1 %	S2V
bromofluorobenzene	81.7 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-S

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.40	7.41	7.41	7.40	7.41	0.006
CONDUCTIVITY	545	552	545	545	547	3.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-S B.#74783 SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL 3 /100ml

SAMPLE ID 20-D SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	4 pCi/L	CA	93.100 mg/L
CD	<0.001 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.22 mg/L	FE	1.230 mg/L	HG	<0.0002 mg/L	K	2.300 mg/L	MG	23.400 mg/L
MN	0.187 mg/L	NA	9.200 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	88.0 mg/L	TDSI	454 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-D

FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/10/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/23/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-D

FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-D FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24835

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	90.8 %	S1V
toluene-d6	110.0 %	S2V
bromofluorobenzene	87.4 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-D FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.35	7.37	7.37	7.39	7.37	0.016
CONDUCTIVITY	554	554	552	552	553	1.16
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D08

Results by Sample

SAMPLE ID 20-D B.#74784

SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 20-TP

SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,I

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	2 pCi/L	AS	0.004 mg/L	BA	<0.200 mg/L	BETA	8 pCi/L	CA	110.000 mg/L
CD	<0.001 mg/L	CLI	3.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	0.007 mg/L	CR6	<0.007 mg/L
CU	0.032 mg/L	F	0.21 mg/L	FE	7.060 mg/L	HG	<0.0002 mg/L	K	2.200 mg/L	MG	36.900 mg/L
MN	0.872 mg/L	NA	4.510 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.018 mg/L
PTI	0.13 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	60.0 mg/L	SSTUDY	07/21/87 Date Completed
TDSI	448 mg/L	ZN	0.123 mg/L								

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-TP

FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/10/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/23/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-TP FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D08

Results by Sample

SAMPLE ID 20-TP

FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

VERIFIED BY CMH

DATA FILE 24836

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	91.2 %	S1V
toluene-d6	101.0 %	S2V
bromofluorobenzene	109.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 20-TP

FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.07	7.08	7.09	7.08	7.08	0.008
CONDUCTIVITY	607	554	616	607	596	28.30
TOTAL ORGANIC CARBON	2	2	2	2	2	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 20-TP B.#74785 SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL 1,400 /100ml

SAMPLE ID 21-TP SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	100 pCi/L	AS	0.004 mg/L	BA	0.235 mg/L	BETA	640 pCi/L	CA	154.000 mg/L
CD	<0.001 mg/L	CLI	14.0 mg/L	CN	<0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.50 mg/L	FE	0.948 mg/L	HG	<0.0002 mg/L	K	1.490 mg/L	MG	70.000 mg/L
MN	2.090 mg/L	NA	13.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	0.04 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	250.0 mg/L	TDSI	928 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-TP FRACTION 04A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/10/87 DATE INJECTED 06/23/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D08

Results by Sample

SAMPLE ID 21-TP FRACTION Q4A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-TP

FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24839

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	101.0 %	S1V
toluene-d6	86.4 %	S2V
bromofluorobenzene	105.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D08

SAMPLE ID 21-TP

FRACTION 04C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.15	7.18	7.19	7.20	7.18	0.022
CONDUCTIVITY	1,000	911	1,040	929	969	58.90
TOTAL ORGANIC CARBON	3	3	3	3	3	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-TP B.#74786 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/27/87 Category

TDCOL <2 /100ml

SAMPLE ID TP-19 SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	27 pCi/L	AS	0.003 mg/L	BA	<0.200 mg/L	BETA	102 pCi/L	CA	379.000 mg/L
CD	<0.001 mg/L	CLI	562.0 mg/L	CN	<0.005 mg/L	CODI	17 mg/L	CR	0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	2.550 mg/L	HG	<0.0002 mg/L	K	1.610 mg/L	MG	121.000 mg/L
MN	1.230 mg/L	NA	135.000 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.07 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	480.0 mg/L	TDSI	2,736 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID TP-19 FRACTION Q5A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/10/87 DATE INJECTED 06/23/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID TP-19 FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID TP-19 FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24840 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
1,1-Dichloroethene	15.5	ug/L
Chloroethene	0.8	ug/L
Cis-1,2-Dichloroethene	25.8	ug/L
No other compounds detected		
above 0.5 ug/L.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	100.0 %	S1V
toluene-d6	107.0 %	S2V
bromofluorobenzene	104.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID TP-19 FRACTION Q5C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	6.71	6.73	6.74	6.75	6.73	0.017
CONDUCTIVITY	2,320	2,410	2,680	2,680	2,520	184.0
TOTAL ORGANIC CARBON	6	5	6	5	5.5	0.577

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D08

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID TP-19 B.#74787 SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

RECEIVED: 05/28/87

HOWARD LABS INC REPORT
08/14/87 16:56:32

LAB # 87-05-D08

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	3,400	802
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

08/14/87 16:59:59

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O.Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27 & 5/28/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01	14-S	
01	14-S	B.#74788
02	14-D	
02	14-D	B.#74789
03	18-S	
03	18-S	B.#74790
04	18-D	
04	18-D	B.#74791
05	P-1	
05	P-1	B.#74792

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus, Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
SSTUDY	Special Study
TDSI	Total Dissolved Solids
TOCOL	Total Coliform, Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD
ZN	Zinc

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-S SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	10 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	19 pCi/L	CA	83.500 mg/L
CD	<0.001 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	0.008 mg/L	CR6	<0.008 mg/L
CU	0.065 mg/L	F	0.32 mg/L	FE	0.813 mg/L	HG	<0.0002 mg/L	K	3.490 mg/L	MG	22.300 mg/L
MN	<0.015 mg/L	NA	11.400 mg/L	NI	<0.005 mg/L	NO3I	1.56 mg/L	PB	<0.005 mg/L	PHNLI	0.016 mg/L
PTI	0.09 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	423 mg/L
ZN	0.049 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-S FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/10/87 DATE INJECTED 06/23/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-S

FRACTION Q1A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-S FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24841

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	88.8 %	S1V
toluene-d6	91.1 %	S2V
bromofluorobenzene	87.1 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D09

SAMPLE ID 14-S

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.59	7.60	7.59	7.58	7.59	0.008
CONDUCTIVITY	498	509	455	509	493	25.7
TOTAL ORGANIC CARBON	2	2	2	2	2	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D09

SAMPLE ID 14-S B.#74788

SAMPLE # 01 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 14-D

SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	5 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	14 pCi/L	CA	79.300 mg/L
CD	<0.001 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.21 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	2.540 mg/L	MG	21.000 mg/L
MN	<0.015 mg/L	NA	12.700 mg/L	NI	<0.005 mg/L	NO3I	1.53 mg/L	PB	<0.005 mg/L	PHNLI	0.011 mg/L
PTI	0.03 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	404 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-D FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/25/87 DATE INJECTED 06/30/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-D

FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	13.0	13.0	13.0	13.0	13.0	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D09

Results by Sample

SAMPLE ID 14-D

FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

VERIFIED BY CMH

DATA FILE 24842

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	96.8 %	S1V
toluene-d6	92.1 %	S2V
bromofluorobenzene	100.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D09

SAMPLE ID 14-D

FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.67	7.69	7.70	7.71	7.69	0.017
CONDUCTIVITY	446	518	491	518	493	34.0
TOTAL ORGANIC CARBON	1	1	2	1	1.25	0.433

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 14-D B.#74789 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 18-S SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	0.023 mg/L	BA	<0.200 mg/L	BETA	<3 pCi/L	CA	141.000 mg/L
CD	<0.001 mg/L	CLI	15.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	0.011 mg/L	CR6	<0.010 mg/L
CU	0.039 mg/L	F	0.26 mg/L	FE	34.700 mg/L	HG	<0.0002 mg/L	K	1.750 mg/L	MG	35.500 mg/L
MN	1.090 mg/L	NA	4.280 mg/L	NI	<0.005 mg/L	NO3I	2.53 mg/L	PB	0.009 mg/L	PHNLI	0.008 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	52.0 mg/L	TDSI	444 mg/L
ZN	0.052 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-S FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/25/87 DATE INJECTED 06/30/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-S FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D09

Results by Sample

SAMPLE ID 18-S

FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

VERIFIED BY CMH

DATA FILE 24843

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
Acetone	24,500.0	ug/L
Cyclohexane	900.0	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	93.6 %	S1V
toluene-d6	87.0 %	S2V
bromofluorobenzene	97.8 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-S FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.40	7.39	7.38	7.39	7.39	0.008
CONDUCTIVITY	589	588	589	587	588	0.96
TOTAL ORGANIC CARBON	1	1	1	1	1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-S B.#74790

SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 18-D

SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG <0.030 mg/L	ALPHA <1 pCi/L	AS 0.010 mg/L	BA <0.200 mg/L	BETA 4 pCi/L	CA 98.700 mg/L
CD <0.001 mg/L	CLI 4.0 mg/L	CN <0.005 mg/L	CODI <10 mg/L	CR 0.009 mg/L	CR6 <0.009 mg/L
CU 0.025 mg/L	F 0.29 mg/L	FE 22.900 mg/L	HG <0.0002 mg/L	K 0.764 mg/L	MG 37.600 mg/L
MN 0.783 mg/L	NA 5.060 mg/L	NI <0.005 mg/L	NO3I <0.02 mg/L	PB <0.005 mg/L	PHNLI <0.005 mg/L
PTI 0.05 mg/L as P	RADIUM <1 pCi/L	RAD_SC SEE TEXT pCi/L	SE <0.0025 mg/L	SO4I 68.0 mg/L	TDSI 423 mg/L
ZN 0.074 mg/L					

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D09

SAMPLE ID 18-D

FRACTION 04A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/25/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/30/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-D FRACTION 04A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<50	<50	<50	<50	<50	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 18-D FRACTION 04G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24844

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	93.2 %	S1V
toluene-d6	94.5 %	S2V
bromofluorobenzene	104.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D09

Results by Sample

SAMPLE ID 18-D

FRACTION 04C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.29	7.31	7.32	7.31	7.31	0.013
CONDUCTIVITY	589	589	571	589	585	9.0
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D09

Results by Sample

SAMPLE ID 18-D B.#74791 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID P-1 SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,H

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	5 pCi/L	CA	130.000 mg/L
CD	<0.001 mg/L	CLI	36.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.16 mg/L	FE	5.870 mg/L	HG	<0.0002 mg/L	K	4.610 mg/L	MG	35.700 mg/L
MN	0.422 mg/L	NA	38.900 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	0.09 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	120.0 mg/L	SSTUDY	07/21/87 Date Completed
TDSI	677 mg/L	ZN	<0.020 mg/L								

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-1 FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/25/87 DATE INJECTED 06/30/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-1 FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-1 FRACTION Q5C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY AM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.36	7.38	7.38	7.38	7.38	0.010
CONDUCTIVITY	902	906	911	909	907	3.92
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-D09

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-1 B.#74792

SAMPLE # 05 FRACTIONS: G

Date & Time Collected 05/28/87 Category

TOCOL <2
/100ml

RECEIVED: 05/28/87 08/14/87 16:59:59

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

08/14/87 17:03:14

LAB # 87-05-D10

CLIENT WEST M O SAMPLES 5
COMPANY Westinghouse Materials Co.
FACILITY

REPORT TO Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27 & 5/28/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV # 87010069

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01 P-2
01 P-2 B.#74793
02 19-S
02 19-S B.#74794
03 19-D
03 19-D B.#74795
04 22-S
04 22-S B.#74796
05 22-TP
05 22-TP B.#74797

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus, Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
SSTUDY	Special Study
TDSI	Total Dissolved Solids
TOCOL	Total Coliform, Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD.
ZN	Zinc

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID P-2 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,H

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	0.003 mg/L	BA	<0.200 mg/L	BETA	4 pCi/L	CA	99.400 mg/L
CD	<0.001 mg/L	CLI	23.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.20 mg/L	FE	3.520 mg/L	HG	<0.0002 mg/L	K	1.800 mg/L	MG	27.700 mg/L
MN	0.378 mg/L	NA	16.000 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.013 mg/L
PTI	0.11 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	28.0 mg/L	SSTUDY	07/21/87 Date Completed
TDSI	504 mg/L	ZN	<0.020 mg/L								

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID P-2

FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category _

DATE EXTRACTED 06/25/87

CONCENTRATION FACTOR 90

DATE INJECTED 06/30/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-2 FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-2 FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.49	7.51	7.52	7.53	7.51	0.017
CONDUCTIVITY	634	638	634	634	635	2.0
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID P-2 B.#74793 SAMPLE # 01 FRACTIONS: G
Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 19-S SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G
Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	16 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	559 pCi/L	CA	146.000 mg/L
CD	<0.001 mg/L	CLI	58.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.23 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	6.660 mg/L	MG	34.400 mg/L
MN	<0.015 mg/L	NA	33.900 mg/L	NI	<0.005 mg/L	NO3I	44.40 mg/L	PB	<0.005 mg/L	PHNLI	0.027 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	116.0 mg/L	TDSI	900 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 19-S FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/29/87 DATE INJECTED 07/01/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 19-S FRACTION Q2A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	12	8	12	17	12.25	3.19

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID 19-S

FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24846

DATE INJECTED 06/02/87

ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		
with detection limits of <0.5		
ug/L for the priority		
pollutant and other HSL		
(Hazardous Substance List)		
compounds, except for acrolein		
acrylonitrile and chlorinated		
ethers which are unstable		
in water.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	100.0 %	S1V
toluene-d6	105.0 %	S2V
bromofluorobenzene	107.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 19-S FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.32	7.33	7.34	7.33	7.33	0.008
CONDUCTIVITY	1,070	1,060	1,020	1,000	1,040	34.40
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID 19-S B.#74794 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 19-D SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	4 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	17 pCi/L	CA	187.000 mg/L
CD	<0.001 mg/L	CLI	43.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.14 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	7.020 mg/L	MG	23.300 mg/L
MN	1.850 mg/L	NA	51.200 mg/L	NI	0.006 mg/L	NO3I	3.22 mg/L	PB	<0.005 mg/L	PHNLI	0.041 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	290.0 mg/L	TDSI	968 mg/L
ZN	<0.020 mg/L										

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID 19-D FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87 DATE INJECTED 07/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D10

Results by Sample

SAMPLE ID 19-D

FRACTION Q3A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 19-D FRACTION Q3G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24847 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected with a detection limit of <0.5 ug/L for the Hazardous Substance List(HSL) volatile compounds except for the chlorinated ethers which are unstable in water.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	107.0 %	S1V
toluene-d6	109.0 %	S2V
bromofluorobenzene	103.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID 19-D

FRACTION Q3C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.04	7.05	7.05	7.06	7.05	0.008
CONDUCTIVITY	1,090	1,090	1,090	1,090	1,090	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID 19-D B.#74795 SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TQCOL <2 /100ml

SAMPLE ID 22-S SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	3 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	72 pCi/L	CA	134.000 mg/L
CD	<0.001 mg/L	CLI	70.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.58 mg/L	FE	0.163 mg/L	HG	<0.0002 mg/L	K	4.860 mg/L	MG	41.400 mg/L
MN	<0.015 mg/L	NA	29.400 mg/L	NI	<0.005 mg/L	NO3I	40.00 mg/L	PB	<0.005 mg/L	PHNLI	0.022 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	96.0 mg/L	TDSI	904 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-S FRACTION Q4A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87 DATE INJECTED 07/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-S FRACTION Q4A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-S FRACTION Q4G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24848

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	100.0 %	S1V
toluene-d6	86.0 %	S2V
bromofluorobenzene	102.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID 22-S

FRACTION 04C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.31	7.29	7.32	7.33	7.31	0.017
CONDUCTIVITY	1,070	1,050	1,070	1,060	1,060	12.30
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID 22-S B.#74796

SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID 22-TP

SAMPLE # 05 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	296 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	998 pCi/L	CA	391.000 mg/L
CD	<0.001 mg/L	CLI	13.0 mg/L	CN	<0.005 mg/L	CODI	13 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.52 mg/L	FE	1.970 mg/L	HG	<0.0002 mg/L	K	5.770 mg/L	MG	118.000 mg/L
MN	0.690 mg/L	NA	14.800 mg/L	NI	0.008 mg/L	NO3I	1.24 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.07 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	1,050 mg/L	TDSI	2,390 mg/L
ZN	0.030 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-TP FRACTION 05A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87 DATE INJECTED 07/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 90 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-TP FRACTION 05A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	41	43	33	33	37.5	4.56

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-TP FRACTION 05G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24849 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	97.3 %	S1V
toluene-d6	94.0 %	S2V
bromofluorobenzene	103.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D10

SAMPLE ID 22-TP

FRACTION 05C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.00	7.02	7.02	7.03	7.02	0.013
CONDUCTIVITY	1,830	2,010	2,140	2,100	2,020	138.0
TOTAL ORGANIC CARBON	3	4	4	4	3.75	0.433

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 22-TP B.#74797 SAMPLE # 05 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL 8
/100ml

HOWARD LABS INC REPORT LAB # 87-05-D10

RECEIVED: 05/28/87 08/14/87 17:03:14

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02	FRACTION 03	FRACTION 04	FRACTION 05
POTASSIUM 40	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0	<1.0	<1.0	4,840
RADIUM 226	<1.0	<1.0	<1.0	<1.0	<1.0
RADIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	<1.0	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0	<1.0	<1.0

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

08/14/87 17:06:27

LAB # 87-05-D11

CLIENT WEST M O SAMPLES 3
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27 & 5/28/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01 HK-dug
01 HK-dug B.#74798
02 DS
02 DS B.#74799
03 21-S
03 21-S B.#74800

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver
ALPHA	Gross Alpha
AS	Arsenic
BA	Barium
BETA	Gross Beta
CA	Calcium
CD	Cadmium
CLI	Chloride
CN	Cyanide
CODI	Chemical Oxygen Demand
CR	Chromium
CR6	Hexavalent Chromium
CU	Copper
F	Fluoride
FE	Iron
HG	Mercury
K	Potassium
MG	Magnesium
MN	Manganese
NA	Sodium
NI	Nickel
NO3I	Nitrates
PB	Lead
PHNLI	Phenols
PSDWA	SDWA Pesticides/Herbicides
PTI	Phosphorus, Total
RADIUM	Radium, Total
RAD SC	Radionuclides Scan
SE	Selenium
SO4I	Sulfate
SSTUDY	Special Study
TDSI	Total Dissolved Solids
TOCOL	Total Coliform, Non Potable
TOXDQ	TOX-Quad Runs-Method 450.1
VOAMSC	GC/MS SCAN TOTAL VOLATILES
WCQ	RCRA TOC/COND/PH IN QUAD
ZN	Zinc

HOWARD LABS INC REPORT

LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID HK-dug SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	28 pCi/L	CA	149.000 mg/L
CD	<0.001 mg/L	CLI	30.0 mg/L	CN	0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.30 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	32.600 mg/L	MG	48.000 mg/L
MN	0.033 mg/L	NA	33.300 mg/L	NI	<0.005 mg/L	NO3I	4.40 mg/L	PB	<0.005 mg/L	PHNLI	0.008 mg/L
PTI	0.03 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	120.0 mg/L	TDSI	662 mg/L
ZN	0.034 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID HK-duq

FRACTION 01A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/24/87

CONCENTRATION FACTOR 100

DATE INJECTED 07/02/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID HK-duq FRACTION 01A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	18	13	20	13	16.0	3.08

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D11

Results by Sample

SAMPLE ID HK-dug

FRACTION 01G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/27/87 Category

VERIFIED BY CMH

DATA FILE 24850

DATE INJECTED 06/02/87

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected with a detection limit of <0.5 ug/L for the drinking water volatiles, hazardous substance list(HSL) and over 250 other volatile hydrocarbons.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	104.0 %	S1V
toluene-d6	95.6 %	S2V
bromofluorobenzene	112.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT

LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID HK-dug

FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.10	7.12	7.12	7.13	7.12	0.013
CONDUCTIVITY	1,030	1,050	1,030	1,050	1,040	13.5
TOTAL ORGANIC CARBON	1	2	2	2	1.75	0.433

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D11

SAMPLE ID HK-dug B.#74798 SAMPLE # 01 FRACTIONS: H
Date & Time Collected 05/27/87 Category

TOCOL 230 /100ml

SAMPLE ID DS SAMPLE # 02 FRACTIONS: A,B,C,D,E,F
Date & Time Collected 05/27/87 Category

AG	<0.030 mg/L	ALPHA	42 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	87 pCi/L	CA	95.500 mg/L
CD	<0.001 mg/L	CLI	24.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	<0.050 mg/L	HG	0.0008 mg/L	K	3.620 mg/L	MG	22.200 mg/L
MN	<0.015 mg/L	NA	11.800 mg/L	NI	<0.005 mg/L	NO3I	2.40 mg/L	PB	<0.005 mg/L	PHNLI	0.016 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	64.0 mg/L	TDSI	396 mg/L
ZN	0.051 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID DS FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/27/87 Category

DATE EXTRACTED 06/24/87 DATE INJECTED 07/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID DS FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/27/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D11

Results by Sample

SAMPLE ID DS

FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/27/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.47	7.46	7.47	7.47	7.47	0.005
CONDUCTIVITY	554	571	491	500	529	39.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID DS B.#74799 SAMPLE # 02 FRACTIONS: G,H

Date & Time Collected 05/27/87 Category

SSTUDY 07/21/87 (Date Completed) TOCOL <2 /100ml

SAMPLE ID 21-S SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	51 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	1,560 pCi/L	CA	189.000 mg/L
CD	<0.001 mg/L	CLI	46.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.20 mg/L	FE	0.119 mg/L	HG	<0.0002 mg/L	K	10.000 mg/L	MG	23.900 mg/L
MN	0.016 mg/L	NA	51.000 mg/L	NI	<0.005 mg/L	NO3I	63.00 mg/L	PB	<0.005 mg/L	PHNLI	0.015 mg/L
PTI	<0.02 mg/L as P	RADIUM	2 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	88.0 mg/L	TDSI	1,040 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-S

FRACTION 03A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87

CONCENTRATION FACTOR 100

DATE INJECTED 07/02/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-S FRACTION 03A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY NDM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.0

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-S FRACTION 03G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24851

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No other volatile compounds deected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	105.0 %	S1V
toluene-d6	89.8 %	S2V
bromofluorobenzene	109.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-S FRACTION 03C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.29	7.26	7.30	7.31	7.29	0.022
CONDUCTIVITY	1,030	1,160	1,070	1,160	1,100	67.28
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-D11

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID 21-S B.#74800

SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

HOWARD LABS INC REPORT

LAB # 87-05-D11

RECEIVED: 05/28/87

08/14/87 17:06:27

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION	FRACTION	FRACTION
POTASSIUM 40	<1.0	<1.0	<1.0
TOTAL URANIUM	<1.0	379	2.0
RADIUM 228	<1.0	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0	<1.0
THORIUM 228	<1.0	<1.0	<1.0
THORIUM 230	<1.0	<1.0	<1.0
THORIUM 232	<1.0	<1.0	<1.0
CESIUM 137	<1.0	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0	20.0
RUTHENIUM 106	<1.0	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0	<1.0

RADIUM 226 <1.0

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87 08/14/87 17:08:24

CLIENT WEST M O SAMPLES 11
COMPANY Westinghouse Materials Co.
FACILITY

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

REPORT TO Westinghouse Materials
Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/27 & 5/28/87
TRANS Picked up by HLI
TYPE Aqueous
P.O. # 4-87485
INV. # 87010069

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

Duplicate of report of 07/27/87.

SAMPLE IDENTIFICATION

01 P-2
01 P-3 B.#74801
02 Cleaning Blank
02 Cleaning Blank B.#74802
03 Trip Blanks
04 Trip Blanks - Closed
05 QC-1 - Metals I
06 QC-2 - Metals II
07 QC-3
08 QC-4
09 QC-5
10 QC-6
11 QC-7

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver	NI	Nickel
ALPHA	Gross Alpha	NO3I	Nitrates
AS	Arsenic	PB	Lead
BA	Barium	PHNLI	Phenols
BETA	Gross Beta	PSDWA	SDWA Pesticides/Herbicides
CA	Calcium	PTI	Phosphorus, Total
CD	Cadmium	RADIUM	Radium, Total
CLI	Chloride	RAD SC	Radionuclides Scan
CN	Cyanide	SE	Selenium
CODI	Chemical Oxygen Demand	SO4I	Sulfate
CR	Chromium	SSTUDY	Special Study
CR6	Hexavalent Chromium	TDSI	Total Dissolved Solids
CU	Copper	TOC	Total Organic Carbon
F	Fluoride	TOCOL	Total Coliform, Non Potable
FE	Iron	TOXDQ	TOX-Quad Runs-Method 450.1
GCSCAN	GC Scan	VOAMSC	GC/MS SCAN TOTAL VOLATILES
HG	Mercury	WCQ	RCRA TOC/COND/PH IN QUAD.
K	Potassium	ZN	Zinc
MG	Magnesium		
MN	Manganese		
NA	Sodium		

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

LAB # 87-05-D12

Results by Sample

SAMPLE ID P-3 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,H

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	0.003 mg/L	BA	<0.200 mg/L	BETA	<3 pCi/L	CA	92.400 mg/L
CD	<0.001 mg/L	CLI	14.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.17 mg/L	FE	2.590 mg/L	HG	<0.0002 mg/L	K	1.750 mg/L	MG	21.600 mg/L
MN	0.392 mg/L	NA	7.100 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.019 mg/L
PTI	0.06 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	48.0 mg/L	SSTUDY	07/21/87 Date Completed
TDSI	376 mg/L	ZN	<0.020 mg/L								

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D12

SAMPLE ID P-3

FRACTION Q1A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87

CONCENTRATION FACTOR 100

DATE INJECTED 07/02/87

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-3 FRACTION Q1A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID P-3 FRACTION 01C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.37	7.36	7.39	7.41	7.38	0.022
CONDUCTIVITY	536	536	536	536	536	0.00
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D12

SAMPLE ID P-3 B.#74801 SAMPLE # 01 FRACTIONS: G

Date & Time Collected 05/28/87 Category

TOCOL <2 /100ml

SAMPLE ID Cleaning Blank SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/28/87 Category

AG	<0.030 mg/L	ALPHA	<1 pCi/L	AS	<0.0025 mg/L	BA	<0.200 mg/L	BETA	<3 pCi/L	CA	0.184 mg/L
CD	<0.001 mg/L	CLI	2.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.14 mg/L	FE	<0.050 mg/L	HG	<0.0002 mg/L	K	0.099 mg/L	MG	0.032 mg/L
MN	<0.015 mg/L	NA	0.186 mg/L	NI	<0.005 mg/L	NO3I	0.02 mg/L	PB	<0.005 mg/L	PHNL1	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<1 pCi/L	RAD_SC	SEE TEXT pCi/L	SE	<0.0025 mg/L	SO4I	2.0 mg/L	TDSI	<1 mg/L
ZN	<0.020 mg/L										

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Cleaning Blank FRACTION 02A TEST CODE PSDWA NAME SDWA Pesticides/Herbicides

Date & Time Collected 05/28/87 Category

DATE EXTRACTED 06/24/87 DATE INJECTED 07/02/87 VERIFIED BY DLH

CONCENTRATION FACTOR 100 ANALYST WMC

COMPOUND	RESULT	UNITS *
Alachlor	< 2.0	
Lindane	< 0.2	
Endrin	< 0.2	
Methoxychlor	< 0.2	
Toxaphene	< 0.5	
2,4-D	< 1.0	
2,4,5-TP Silvex	< 0.5	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Cleaning Blank FRACTION 02A TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/28/87 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Cleaning Blank FRACTION 02G TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/28/87 Category

DATA FILE 24853 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
Cyclohexane	50.0	ug/L
No other compounds present.		
This compound was confirmed		
by a second GCMS.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	95.0 %	S1V
toluene-d6	88.5 %	S2V
bromofluorobenzene	107.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D12

SAMPLE ID Cleaning Blank FRACTION 02C TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/28/87 Category

VERIFIED BY KM

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.82	7.56	7.59	7.39	7.59	0.180
CONDUCTIVITY	3.57	4.02	3.48	3.75	3.71	0.238
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Cleaning Blank B.#74802 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/28/87 Category

TOCOL 47 /100ml

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Trip Blanks FRACTION 03A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

DATA FILE 24852

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	116.0 %	S1V
toluene-d6	102.0 %	S2V
bromofluorobenzene	102.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID Trip Blanks - Closed FRACTION Q4A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

DATA FILE 24854

DATE INJECTED 06/02/87 ANALYST DLH

VERIFIED BY CMH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	84.4 %	S1V
toluene-d6	105.0 %	S2V
bromofluorobenzene	110.0 %	S3V

CODE SV - Surrogate compound for QC check.

RECEIVED: 05/28/87

HOWARD LABS INC REPORT LAB # 87-05-D12

Results by Sample

SAMPLE ID QC-1 - Metals I SAMPLE # 05 FRACTIONS: A,B,C
Date & Time Collected not specified Category

AS	0.100 mg/L	CD	0.021 mg/L	CR	0.095 mg/L	CU	0.100 mg/L	FE	0.098 mg/L	HG	0.0054 mg/L
MN	0.103 mg/L	NI	0.098 mg/L	PB	0.096 mg/L	SE	0.024 mg/L	ZN	0.092 mg/L		

SAMPLE ID QC-2 - Metals II SAMPLE # 06 FRACTIONS: A,B,C
Date & Time Collected not specified Category

AG	0.049 mg/L

SAMPLE ID QC-3 SAMPLE # 07 FRACTIONS: A
Date & Time Collected not specified Category

COD1	216 mg/L	TOC	91 mg/L

RECEIVED: 05/28/87

HOWARD LABS INC REPORT

Results by Sample

LAB # 87-05-D12

SAMPLE ID QC-4

FRACTION Q8A TEST CODE GCSCAN NAME GC Scan

Date & Time Collected not specified Category

DATE EXTRACTED 06/30/87

DATE INJECTED 07/01/87

VERIFIED BY DLH

ANALYST WMC

COMPOUND	RESULT	UNITS
m-Dichlorobenzene	99.3	ug/L
p-Dichlorobenzene	99.4	ug/L
o-Dichlorobenzene	100.0	ug/L
1,2,4-Trichlorobenzene	99.5	ug/L
No other compounds detected.		
Analytical Method US EPA 612		

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID QC-5 FRACTION Q9A TEST CODE GCSCAN NAME GC Scan

Date & Time Collected not specified Category

DATE EXTRACTED 06/30/87
DATE INJECTED 07/01/87

VERIFIED BY DLH
ANALYST WMC

COMPOUND	RESULT	UNITS
Hexachloroethane	10.00	ug/L
Hexachlorobutadiene	9.97	ug/L
2-Chloronaphthalene	9.51	ug/L
Hexachlorobenzene	9.96	ug/L
No other compounds detected.		
Analytical Method US EPA 612		

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID QC-6 FRACTION 10A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

DATA FILE 24855 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
Chloroform	15.6	ug/L
1,1,1-Trichloroethane	2.1	ug/L
1,2-Dichloroethane	3.3	ug/L
Carbon Tetrachloride	5.7	ug/L
Trichloroethene	1.6	ug/L
Bromodichloromethane	1.6	ug/L
Dibromochloromethane	3.2	ug/L
Tetrachloroethene	2.6	ug/L
Bromoform	4.1	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	93.1 %	S1V
toluene-d6	95.6 %	S2V
bromofluorobenzene	97.5 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT LAB # 87-05-D12

RECEIVED: 05/28/87

Results by Sample

SAMPLE ID QC-7 FRACTION 11A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

DATA FILE 24856 VERIFIED BY CMH

DATE INJECTED 06/02/87 ANALYST DLH

COMPOUND	RESULT	UNITS
Chloroform	60.4	ug/L
1,1,1-Trichloroethane	7.8	ug/L
1,2-Dichloroethane	14.1	ug/L
Carbon Tetrachloride	14.7	ug/L
Trichloroethene	8.2	ug/L
Bromodichloromethane	11.2	ug/L
Dibromochloromethane	38.5	ug/L
Tetrachloroethene	8.5	ug/L
Bromoform	14.6	ug/L
No other compounds detected.		

The following are inter-laboratory QA/QC results for EPA Method 624/1624.

COMPOUND	RESULT	CODE
1,2-dichloroethane-d4	106.0 %	S1V
toluene-d6	98.2 %	S2V
bromofluorobenzene	90.0 %	S3V

CODE SV - Surrogate compound for QC check.

HOWARD LABS INC REPORT

LAB # 87-05-D12

RECEIVED: 05/28/87

08/14/87 17:08:24

Westinghouse Materials Co.

RESULTS OF RADIONUCLIDE ANALYSIS (pCi/L)

	FRACTION 01	FRACTION 02
POTASSIUM 40	<1.0	<1.0
TOTAL URANIUM	<1.0	<1.0
RADIUM 226	<1.0	<1.0
RADIUM 228	<1.0	<1.0
TECHNETIUM 99	<1.0	<1.0
THORIUM 228	<1.0	<1.0
THORIUM 230	<1.0	<1.0
THORIUM 232	<1.0	<1.0
CESIUM 137	<1.0	<1.0
STRONTIUM 90	<1.0	<1.0
RUTHENIUM 106	<1.0	<1.0
NEPTUNIUM 237	<1.0	<1.0
PLUTONIUM 238	<1.0	<1.0
PLUTONIUM 239	<1.0	<1.0
PLUTONIUM 240	<1.0	<1.0

ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

REQUESTED BY	CLIENT: UMCD	ALQA CONTACT: [illegible]	
DATE	CLIENT CONTACT: D L [illegible]	DATE DUE: [illegible]	
ASSIGNED TO	PHONE: 513-738-6273	PROJECT NUMBER: [illegible]	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		[illegible]	[illegible]	[illegible]	
COOLER AB	AW	✓ 500 ml amber glass	W	5-27 87	H_2SO_4					
		✓ 500 ml plastic			NaOH					
		✓ 4 L amber jug			none					
		✓ 1 gal plastic			HNO_3					
		✓ 1 gal plastic			HNO_3					
		✓ sterile - not potable								
		Linear Regression								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
COOLER AB	Sally Cam[illegible]	[illegible]	5-27	4:00P			M E Cowdery	5-27	6:02PM

8338

7149

ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY:	CLIENT: LUMCO	ALOA CONTACT: Laverne Russell
DATE: 5/27/87	CLIENT CONTACT: D.L. Jones	DATE DUE: 5/27/87
ASSIGNED TO:	PHONE: 513 738-6273	PROJECT NUMBER: RCRA ROUND 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
A3	1SS	well water	W	5/27/87	1 gal / HNO3					
A3	1SS	well 1SS	W		1 gal - brown					
A3	1SS		W		1 pt / NaOH					
A3	1SS		W		1 pt / H2SO4					
A3	1SS		W		500 sterile					
A3	1SS		W		GC vial					
A3	1SS		W		GC vial					
A3	1SS		W		GC vial					

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MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
A3	[illegible]	Ben Crawford	5-27	4:00P			ME Courtney	5-27	6:02PM

7749

ENVIRONMENT SAFETY & HEALTH ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT	ALQA CONTACT	
DATE	CLIENT CONTACT	DATE DUE	
ASSIGNED TO	PHONE 513-733-6677	PROJECT NUMBER	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		RCRA Parameters			
Cooler AE	Duplicate #1 (12)	✓500 ml amber glass	W	5-27-87	H_2SO_4					
		✓500 ml plastic			NaOH					
		✓Gal Plastic			HNO_3					
		✓3 VOC Bottles								
		✓4 L amber jug			none					
		✓Sterile - not pot.								
	Duplicate #2 (DS)	✓500 ml amber glass			H_2SO_4					
		✓500 ml plastic			NaOH					
		✓Gal plastic			HNO_3					
		✓(3) VOC bottles								
		✓4 L amber jug			4 L amber jug					
		✓sterile - not pot.								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Cooler AE	Sally [illegible]	Ben Graf[illegible]	5-27	4:00P			M E Courtney	5-27	6:00PM

340

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ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

REQUESTED BY	CLIENT: WMCO	ALOA CONTACT: L. Russell	
DATE	CLIENT CONTACT: D. L. Jones	DATE DUE: 5/27/87	
ASSIGNED TO	PHONE: 513/738-6273	PROJECT NUMBER: RCRA - Rounds	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA Parameters				
Cooler B	1S	500 ml Amber	W	5/27/87	H_2SO_4					
	1S	500 ml plastic			NaOH					
	1S	4 l amber			None					
	1S	1 gal plastic			HNO_3					
	1S	1 gal plastic			HNO_3					
	1S	Sterile			sterile					
	1d	500 ml amber			H_2SO_4					
	1d	500 ml plastic			NaOH					
	1d	4 l amber			None					
	1d	1 gal plastic			HNO_3					
	1d	~~1 gal~~ sterile			sterile					
	1d	VOA			None					
	1d	VOA								
	1d	VOA								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Cooler B	Kelly Clark	Ben Crawford	5-27	4:00			H E Courtney	5-27	6:00 PM

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ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

REFERENCE	CLIENT	ALOA CONTACT	
TYPE	CLIENT CONTACT	DATE DUE	
ASSIGNED TO	PHONE	PROJECT NUMBER	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO. DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
	11	well water	W	5/27/87	1 gal / HNO3					
	11	well 11	W		1 gal - brown					
	11		W		1 pt. NaOH					
	11		W		1 pt H2SO4					
	11		W		50ml sterile					
	11		W		GC vial					
	11		W		GC vial					
	11		W	V	GC vial					
	9	well water	W	5/27/87	1 gal / HNO3					
	9	well 9	W		1 gal - brown					
	9		W		1 pt NaOH					
	9		W		1 pt H2SO4					
	9		W		50ml sterile					
	9		W		GC vial					
	9		W		GC vial					
	9		W	V	GC vial					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Control #9	[illegible]	[illegible]	5-27	4:45P			ME Courtney	5/27	6:02P

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MPC

ENVIRONMENT SAFETY & H - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT WMCS	ALQA CONTACT C Lowell	
DATE	CLIENT CONTACT	DATE DUE 5-27-87	
ASSIGNED TO	PHONE (505) 756-6273	PROJECT NUMBER: Rift Round 5	

SAMPLE IDENTIFICATION / ANALYSES REQUESTED

LOT NO. DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA	Parameters			
Cooler D	13s	500ml Amber	W	5/27/87	H_2SO_4					
	13s	500ml plastic			NaOH					
	13s	4l plastic			None					
	13s	1gal plastic			HNO_3					
	13s	Stainless			Stable					
	13s	VOA			None					
	13s	VOA			None					
	13s	VOA			$Na_2S_2O_3$					
	13d	500ml amber			H_2SO_4					
	13d	500ml plastic			NaOH					
	13d	1l plastic			None					
	13d	1gal plastic			HNO_3					
	13d	Stainless			Stable					
	13c	VOA			None					
	13c	VOA			None					
	13c	VOA			None					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
(Cooler D)	[illegible]	[illegible]	5-27	4:00P			Mary Ellen Conley	5-27	600P

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ENVIRONMENT SAFETY & HEALTH ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

CLIENT

ALCOA CONTACT

CLIENT CONTACT

DATE DUE 5/27/97

PHONE

PROJECT NUMBER

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO. DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
				5-27-97						
		(3) VOC BOTTLES								
		Linear Regression								

5-C12

7149

MATRIX: S - SOIL DS - DRUM SOLIDS
W - WATER DL - DRUM LIQUIDS
O - OIL X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
			5-27	4:00			M.E. Courtney	5-27	6:00

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ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT: LOMCO	ALOA CONTACT: Laverne Rossiter
DATE: 5/27/87	CLIENT CONTACT: D L JONES	DATE DUE: 5/27/87
ASSIGNED TO	PHONE: 513 738-6273	PROJECT NUMBER: RCRA ROUND 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
A2	17S	well water	W	5/27/87	1 gal / HNO3					
A2	17S	well 17S	W		1 gal - brown					
A2	17S		W		1 pt / NaOH					
A2	17S		W		1 pt / H2SO4					
A2	17S		W		Sand slide					
A2	17S		W		G.C. vial					
A2	17S		W		GC vial					
A2	17S		W		GC vial					
A2	17D	well water	W	5/27/87	1 gal / HNO3					
A2	17D	well 17D	W		1 gal - brown					
A2	17D		W		1 pt / NaOH					
A2	17D		W		1 pt / H2SO4					
A2	17D		W		Sand slide					
A2	17D		W		GC vial					
A2	17D		W		GC vial					
A2	17D		W		GC vial					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
COMP-R A2	[illegible]	[illegible]	5-27	4:00P			M E Courtney	5-27	6:00PM

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ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY		CLIENT	WMCO	ALQA CONTACT	[illegible]
DATE		CLIENT CONTACT	D. [illegible]	DATE DUE:	5-[illegible]
ASSIGNED TO		PHONE	(513) 738-6273	PROJECT NUMBER	RCRA Round 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA Parameters				
Cooler E	3	500 ml Amber	W	5/27/87	H_2SO_4					
	3	500 ml plastic			NaOH					
	3	4 L Amber			None					
	3	1 gal plastic			HNO_3					
	3	1 gal plastic			HNO_3					
	3	Sterile			Sterile					
	4	500 ml Amber			H_2SO_4					
	4	500 ml plastic			NaOH					
	4	4 L Amber			None					
	4	1 gal plastic			HNO_3					
	4	Sterile			~~Sterile~~					
	4	VOA			None					
	4	VOA			None					
	4	VOA			None					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Cooler E	[signature]	[signature]	5-27	4:00P			[signature]	5-27	6:00PM

ENVIRONMENT, SAFETY & HEALTH — ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT UDOE	ALQA CONTACT [illegible]
DATE	CLIENT CONTACT DL Jones	DATE DUE [illegible]
ASSIGNED TO	PHONE 53-738-6273	PROJECT NUMBER ~~HA~~ RCRA Round 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA parameters				
Cooler A	8s	500ml Amber	W	5/27/87	H_2SO_4					
	8s	500ml plastic	W	5/27/87	NaOH					
	8s	4l Amber jug	W		None					
	8s	1 Gal. plastic	W		HNO_3					
	8s	Sterile	W		None					
	8s	VOA	W		None					
	8s	VOA	W		None					
	8s	VOA	W		None					
	8d	500ml Amber	W		H_2SO_4					
	8d	500ml plastic			NaOH					
	8d	4l Amber			None					
	8d	1 gal plastic			HNO_3					
	8d	Sterile			None					
	8d	VOA			None					
	8d	VOA			None					
	8d	VOA								

DS-CK

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Cooler A	[signature]	[signature]	5-27	5:00P			[signature]	5-27	6:00PM

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ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT: [redacted] UMTC	ALOA CONTACT: Laverne Rey
DATE: 5/27/87	CLIENT CONTACT: DL Jones	DATE DUE: 5/27/87
ASSIGNED TO	PHONE: 513 738-6273	PROJECT NUMBER: RCRA ROUND 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
A1	16S	[redacted]	W	5/27/87	1 gal / HNO_3					
A1	16S	Well water -	W	5/27/87	1 gal - brown					
A1	16S	Well 16S	W		1 pt / NaOH					
A1	16S		W		1 pt / H_2SO_4 brown					
A1	16S		W		Soil - Sterile					
A1	16S		W		[redacted] GC vial					
A1	16S		W		GC vial					
A1	16S		W		GC vial					
	[redacted]		[redacted]							
A1	16D	well water	W	5/27/87	1 gal / HNO_3					
A1	16D	well 16D	W		1 gal brown glass					
A1	16D		W		1 pt / NaOH					
A1	16D		W		1 pt / H_2SO_4					
A1	16D		W		Soil - Sterile					
A1	16D		W		GC vial					
A1	16D		W		GC vial					
A1	16D		W		GC vial					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Cooler A1	Sally Chant	Ben Ryfel	5-27	4:00 P			M E Courtney	5-27	6:00 PM

ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY		CLIENT	[illegible]	ALQA CONTACT	[illegible]
DATE		CLIENT CONTACT	[illegible]	DATE DUE	[illegible]
ASSIGNED TO		PHONE	[illegible]	PROJECT NUMBER	[illegible]

SAMPLE IDENTIFICATION						ANALYSES REQUESTED			
LOT NO., DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	✓ 500 ml [illegible]	W	[illegible]	[illegible]				
		✓ 500 ml plastic			NaOH				
		✓ 4 L amber jug			none				
		✓ Gal Plastic			HNO_3				
		✓ Gal Plastic			HNO_3				
		✓ Sterile - not potable							
		✓ (3) VOC Bottles							
		Lanam Regression							
	HKD	✓ 500 ml amber glass			H_2SO_4				
		✓ 500 ml plastic			NaOH				
		✓ 4 L amber jug							
		✓ Gal Plastic			HNO_3				
		✓ Sterile - not pot							

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
LAB	[illegible]	[illegible]	5-27	4:00P			ME Courtney	5-27	6:00PM

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MPC

ENVIRONMENTAL SAFETY & HEALTH · ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

ACCOUNT	CLIENT: MPC	ALOA CONTACT: Lorene Rosales	
DATE	CLIENT CONTACT: Bob Jones	DATE DUE: 5/28/87	
ASSIGNED TO	PHONE: 505 738-6273	PROJECT NUMBER: RCRA Round 5	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
A12	20S	water sample	W	5/28/87	1 gal / HNO_3					
Cooler	20S	well 20S	W		1 gal brown					
	20S		W		1 pt / NaOH					
	20S		W		1 pt / H_2SO_4					
	20S		W		sterile plastic					
	20S		W		G.C. vial					
	20S		W		G.C. vial					
	20S		W	✓	G.C. vial					
	20D	water	W	5/28/87	1 gal / HNO_3					
	20D	sample	W		1 gal / brown					
	20D	well 20D	W		1 pt / NaOH					
	20D		W		1 pt / H_2SO_4					
	20D		W		sterile plastic					
	20D		W		G.C. vial					
	20D		W	✓	G.C. vial					
	20D		W		G.C. vial					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Lot A12	[illegible]	[illegible]	5/28/87	5:[illegible]			M C Courtney	5/28/87	6:30p

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MPC

ENVIRONMENT SAFETY & HEALTH-ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

REQUESTED BY:

DATE:

ASSIGNED:

CLIENT: WMCO

CLIENT CONTACT: S. JONES

PHONE: 513 738-6273

ALSA CONTACT: [illegible]

DATE DUE: 5/28/87

PROJECT NUMBER: RCRA ROUND 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
A 1C	20TP	1 gal / HNO3	W	5/28/87						
	20TP	1 gal Brown glass	W		Water					
	20TP	1 pt / NaOH	W		Sampler					
	20TP	1 pt / H2SO4	W		Well					
	20TP	Sterile plastic	W		20TP					
	20TP	G.C vial	W							
	20TP	GC vial	W							
	20TP	GC vial	W							
	20TP	1 gal / HNO3	W							
		Lin Reg								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			M E Courtney	5/28/87	6:30p

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ENVIRONMENTAL SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

PROJECT		CLIENT	C
ALQA CONTACT		DATE	
CLIENT CONTACT		DATE DUE	5-27-87
AS OF DATE		PHONE	
PROJECT NUMBER	RCRA Round 5		

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA Parameters				
Lab. F	21TP3	500 ml Amber	W	5-27-87	H_2SO_4					
	21TP3	500 ml plastic			HNO3					
	21TP3	4 L Amber			None					
	21TP3	~~3 NOA's~~			~~HNO3~~ 1 liter					
	21TP3	1 gal plastic			HNO3					
	21TP3	Sterile			Sterile					
	TP19	500 ml Amber		5/28/87	H_2SO_4					
	TP19	500 ml plastic			HNO3					
	TP19	4 L Amber			None					
	TP19	1 gal plastic			HNO3					
	TP19	Sterile			Sterile					
	TP19	VOA			None					
	TP19	VOA			None					
	TP19	VOA			None					
	~~[illegible]~~									
				D by 5/28						

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS: ~~[illegible]~~

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
	[illegible]	[illegible]	[illegible]	[illegible]			M E Courtney	5/28/87	6:30

EMPC

ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY		CLIENT	[illegible]	ALOA CONTACT	[illegible]
DATE		CLIENT CONTACT	[illegible]	DATE DUE	[illegible]
ASSIGNED		PHONE	[illegible]	PROJECT NUMBER	RCRA Monitor

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO. DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE			RCRA Parameters		
UVW	14S	✓ 500 ml [illegible]	W	[illegible]	H_2SO_4					
		✓ 500 ml [illegible]			NaOH					
		✓ [illegible]			HNO_3					
		✓ 3) VOC vials								
		✓ 4 L amber jug			none					
		✓ [illegible]								
	14d	✓ 500 ml amber glass			H_2SO_4					
		✓ 500 ml plastic			NaOH					
		✓ 500 ml plastic			HNO_3					
		✓ (3) VOC vials								
		✓ 4 L amber jug			none					
		✓ [illegible]								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
- UVW	[illegible]	[illegible]	5/28/92	5:00			M E Courtney	5/28/92	6:30

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EMPC

ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT [illegible]	ALQA CONTACT [illegible]
DATE	CLIENT CONTACT [illegible]	DATE DUE [illegible]
ASSIGNED TO	PHONE 313-733-0273	PROJECT NUMBER RCRA Round 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		RCRA	Parameters		
[illegible]	13s	500ml amber glass	W	5-28-87	H_2SO_4					
		500ml glass			NaOH					
		500 plastic			HNO_3					
		(3) 100 ml vials								
		4 L amber jug			none					
		single-not pot								
	13d	500ml amber glass			H_2SO_4					
		500ml glass			NaOH					
		500 plastic			HNO_3					
		(3) 100 vials								
		4 L amber jug			none					
		single-not pot								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
[illegible]	[illegible]	[illegible]	5/29/87	[illegible]			M.E. Pountney	5/29/87	6:30

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MPC

ENVIRONMENT SAFETY & HEALTH · ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT	ALOA CONTACT	
DATE	CLIENT CONTACT	DATE DUE	
ASSIGNED TO	PHONE	PROJECT NUMBER	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
Locker B	P-1	[illegible]	W	[illegible]	H_2O_2					
		[illegible]			NaOH					
		[illegible]			NaCl					
		[illegible]			HCl					
		[illegible]			HNO3					
		[illegible]			[illegible]					
		Linear Regression								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
	[illegible]	[illegible]	[illegible]				M E Courtney	5/23/87	6:30p

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IPC

ENVIRONMENTAL SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT	ALQA CONTACT
DATE	CLIENT CONTACT	DATE DUE
ASSIGNED TO	PHONE	PROJECT NUMBER

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA				
		500ml Amber	W		H_2SO_4					
		500ml Clear			NaOH					
		1L Amber			None					
		1gal plastic			HNO_3					
		Ozone			Sterile					
		VOA			None					
		VOA			None					
		VOA			None					
		500ml Amber			H_2SO_4					
		500ml Clear			NaOH					
		1L Amber			None					
		1gal plastic			HNO_3					
		Sterile			Sterile					
		VOA			None					
		VOA			None					
		VOA			None					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
							ME Courtney	5/23/87	6:30p

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ENVIRONMENT SAFETY & ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

	CLIENT	ALCA CONTACT	
	CLIENT CONTACT	DATE DUE	
	PHONE	PROJECT NUMBER	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE	RCRA Parameters				
Cooler A	19a	500 ml Amber	W	5/28/87	H_2SO_4					
		500 ml plastic			NaOH					
		1 l Amber			None					
		1 gal plastic			HNO_3					
	19g	sterile			sterile					
	19s	VOA			None					
	19s	VOA			None					
	19s	VOA			None					
	19a	500 ml Amber			H_2SO_4					
	19a	500 ml plastic			NaOH					
	19d	1 l Amber			None					
	19d	1 gal plastic			HNO_3					
	19d	sterile			sterile					
	19a	VOA			None					
	19a	[illegible]			None					
	19a	VOA			None					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
	[illegible]	[illegible]	[illegible]	[illegible]			MC Courtney	5/28/87	6:30

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PC

ENVIRONMENT, SAFETY & [illegible] - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

[illegible]	CLIENT [illegible]	ALDA CONTACT [illegible]	
DATE	CLIENT CONTACT [illegible]	DATE DUE [illegible]	
ASSIGNED TO	PHONE (505) 756-6273	PROJECT NUMBER Rocky Round 5	

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		RCRA Parameters			
Carbon C	P2	500 ml Amber	W	5/28/87	H_2SO_4					
		500 ml Plastic			NaOH					
		4 l Amber			None					
		1 l Plastic			HNO_3					
		1 l Plastic			HNO_3					
		Sterile			Sterile					
		Air Bag								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
Carbon C	[illegible]	[illegible]	[illegible]	5:10			M E Courtney	5/28/87	6:30p

IPC
ENVIRONMENT, SAFETY & H - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT: WMCO	ALQA CONTACT: Lawrence Russell
DATE	CLIENT CONTACT: D. L. Jones	DATE DUE: 5-27-87
ASSIGNED TO	PHONE: 513-738-6273	PROJECT NUMBER: RCRA Round 5

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		RCRA Parameters			
COOLER AD	HKdug	500 ml amber glass	W	5-27-87	H_2SO_4					
		500 ml plastic			NaOH					
		Gal Plastic			HNO_3					
		(-) VOC Bottles								
		4 L amber jug			none					
		Sterile - not pot.								
	DS	✓ 500 ml amber glass			H_2SO_4					
		✓ 500 ml plastic			N_2OH					
		✓ 4 Lamber jug			none					
		✓ Gal Plastic			HNO_3					
		✓ Gal Plastic			HNO_3					
		✓ Sterile - not pot.								
		Linear Regression								

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
[illegible]	[illegible]	[illegible]	5/28/87	13R			M.E. Courtney	5/28/87	6:30p

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MPC

ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

RECEIVED BY	CLIENT: WMCO	ALQA CONTACT: L. Russel
DATE	CLIENT CONTACT: D. Jones	DATE DUE: 5/22/87
ASSIGNED TO	PHONE: (513) 738-6273	PROJECT NUMBER: RCRA - Ponds

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE		RCRA parameters			
Cooler D	215	500 ml Amber	W	5/28/87	H_2SO_4					
	215	500 ml plastic			NaOH					
	215	4 l amber			None					
	215	1 gal plastic			HNO_3					
	215	Sterile			Sterile					
	215	VOA			None					
	215	VOA			None					
	215	VOA			None					
	P3	500 ml Amber			H_2SO_4					
	P3	500 ml plastic			NaOH					
	P3	4 l Amber			None					
	P3	1 gal plastic			HNO_3					
	P3	Sterile			Sterile					
		VOA			None					
		VOA			None					
		VOA			None					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
	[illegible]	[illegible]	5/28/87	5:14			ME Courtney	5/28/87	6:30

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EMPO

ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

JOB SITE	CLIENT [illegible]	EPA CONTACT
DATE	CLIENT CONTACT [illegible]	DATE DUE
ASSIGNED TO	PHONE 510 733-6273	PROJECT NUMBER

SAMPLE IDENTIFICATION						ANALYSES REQUESTED				
LOT NO./ DRUM NO.	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE					
All	CA SAMPLES	- BOX	W	5/28/87						
[illegible]	TRIP BLANK	- CLOSED	W	5/28/87						
	BOX	- CLEANING	W		GC vial					
		Blanks	W		GC vial					
			W		GC vial					
	BOX	TRIP BLANKS	W		GC vial					
			W		GC vial					
			W		GC vial					
		CLEANING BLANK	W		Sterile					
		CLEANING BLANK	W		1 pt / H_2SO_4					
		CLEANING BLANK	W		1 gal HNO_3					
		"	W		1 pt / NaOH					
		"	W		1 gal Brown					

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME
[illegible]	[illegible]	[illegible]	5/28/87	5:10			Mary Ellen [illegible]	5/28/87	6:30

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Results of Phase 1-Round 1 Sampling

Table 3-1

GROUND-WATER SAMPLING RESULTS - FMPC - Pit #4
(All results in ppm except as noted)

	MW-12	MW-TP19	MW-TP21	MW-TP22	Standards Primary(6)	Standards Secondary (7)	Standards Recommended (12)
Chloride	109	459	58	118	--	250	--
Iron	18.1	4.57	58.4	2.26	--	0.3	--
Manganese	0.216	2.75	3.77	2.01	--	0.05	--
Phenols	0.019	0.049	<0.005	<0.005	--	--	0.001
Sodium	268.0	34.6	40.5	19.3	--	--	--
Sulfate	72	575	30	850	--	250	--
Silver	<0.030	<0.030	<0.030	<0.030	0.05	--	--
Arsenic	<0.0025	0.008	0.03	0.006	0.05	--	--
Barium	<0.200	0.308	0.863	0.363	1.0	--	--
Calcium	53	372	415	154	--	--	--
Cadmium	<0.002	<0.002	<0.002	<0.002	0.010	--	--
Cyanide	<0.005	<0.005	<0.005	<0.005	--	--	0.05
Chromium							
- Total	0.055	0.049	0.08	<0.005	0.05	--	--
- Hexavalent	<0.01	<0.01	<0.01	<0.01	--	--	--
Copper	<0.025	<0.025	0.074	<0.025	--	1.0	--
Fluoride	2.00	0.33	0.52	1.80	1.4-2.4	--	--
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.002	--	--
Potassium	NA	NA	NA	NA	--	--	--
Magnesium	12.3	12.8	18.3	7.8	--	--	--
Nickel	0.06	0.026	0.137	0.015	--	--	--
Nitrates	<0.02	<0.02	<0.02	0.06	10.0	--	--
Lead	0.320	<0.005	0.012	<0.005	0.05	--	--
Phosphorus, total	0.26	0.14	0.21	1.15	--	--	--
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	0.01	--	--
Zinc	0.081	0.029	0.240	<0.025	--	5.0	--
T.D.S.	660	2540	936	2240	--	500	--
C.O.D.	17.0	12.0	14.	44.	--	--	--
pH-lab (1)(2)	7.48	6.63	5.99	6.75	--	6.5-8.5	--
Conductivity-lab (1)(3)	880	2350	1000	1950	--	--	--
T.O.C.(1)	<1.00	4.00	4.00	6.5	--	--	--
T.O.X.(1)(4)	<10.00	80.25	<10.00	<10.00	--	--	--

Results of Phase 1-Round 1 Sampling

Table 3-1 (Cont'd)

	MW-12	MW-TP19	MW-TP21	MW-TP22	Standards Primary (6)	Restricted (9)	Unrestricted (9)
Gross Beta (5)	30	94	250 (8)	1340 (8)	30	--	--
Gross Alpha (5)	<10	43	230 (8)	1370 (8)	15	--	--
Potassium 40 (5)	<10	<10	15	75	--	90,000	3000
Uranium Natural(5)	<10	<10	<10	<50	--	20,000	600
Radium-226 (5)	<10	<10	<10	<50	5 (10)	400	30
Radium-228 (5)	<5	<5	12	75	5 (10)	800	30
Technicium-99 (5)	<5	<5	<5	<5	--	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	<5	--	200,000	7000
Thorium-230 (5)	<5	<5	<5	<5	--	50,000	2000
Thorium-232 (5)	<5	<5	<5	88	--	50,000	2000
Cesium-137 (5)	<5	22	49	115	--	400,000	20000
Strontium-90 (5)	<5	<5	14	28	8	10,000	300
Ruthenium-106 (5)	<10	<10	15	80	--	400,000	10000
Neptunium-237 (5)	<10	<10	14	50	--	90,000	3000
Plutonium-238 (5)	<10	<10	<40	<100	--	100,000	5000
Plutonium-239 (5)	<10	<10	<40	<100	--	100,000	5000
Plutonium-240 (5)	<10	<10	<40	<100	--	100,000	5000
Coliform, Total (11)	<20	<20	<20	<20	1	--	--
Lindane (4)	<0.2	<0.2	<0.2	<0.2	4	--	--
Endrin (4)	<0.2	<0.2	<0.2	<0.2	0.2	--	--
Methoxychlor(4)	<0.2	<0.2	<0.2	<0.2	100	--	--
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	5	--	--
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	10	--	--
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	10	--	--
Benzene (4)	14.8	ND	ND	ND	--	--	--
Xylenes (4)	11.8	ND	ND	ND	--	--	--
1,1 Dichloro-ethane (4)	ND	3.4	ND	ND	--	--	--
Methylene chloride (4)	ND	Trace	ND	ND	--	--	--

NOTES

ND Not detected

NA Not Analyzed due to laboratory error

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations -Subpart B - Maximum Contaminant Levels, July 1, 1984.

(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations -Section 143.3 - Secondary Maximum Contaminant Levels.

(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples

(9) Taken from DOE Order 5480.1A: Limit for Release to Restricted and Unrestricted Areas.

(10) Standard is for Radium -226 Plus Radium -228.

(11) Reported in per 100 ml.

(12) Taken from World Health Organization, European Standards, 1970.

Results of Phase 2-Round 1 Sampling

Table 3-1

GROUND-WATER SAMPLING RESULTS - FMPC - Sand and Gravel Aquifer
(All results in ppm except as noted)

	SW-1	MW-1d	MW-1D	Standards Primary (6)	Standards Secondary (7)	Standards Recommended (8)
Chloride	30	25	76	---	250	---
Iron	<0.05	61.8	18.9	---	0.3	---
Manganese	0.125	0.649	5.5	---	0.05	---
Phenols	<0.005	0.015	<0.005	---	---	0.001
Sodium	15	29.7	162	---	---	---
Sulfate	50	40	470	---	250	---
Silver	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.005	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	1.0	---	---
Calcium	94.4	80.7	1,232	---	---	---
Cadmium	<0.002	<0.002	0.003	0.010	---	---
Cyanide	<0.005	<0.005	0.005	---	---	0.05
Chromium						
- Total	<0.005	0.019	0.014	0.05	---	---
- Hexavalent	<0.005	0.01	0.01	---	---	---
Copper	<0.025	0.146	<0.025	---	1.0	---
Fluoride	0.15	0.12	0.05	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	2.4	1.5	20.2	---	---	---
Magnesium	27.2	24.2	90	---	---	---
Nickel	<0.005	0.012	0.039	---	---	---
Nitrates	2.05	<0.02	155.6	10.0	---	---
Lead	<0.005	0.028	<0.005	0.05	---	---
Phosphorus, total	<0.02	0.45	0.05	---	---	---

Results of Phase 2-Round 1 Sampling
Table 3-1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC - Sand and Gravel Aquifer
(All results in ppm except as noted)

	SW-1	MW-1d	MW-10	Standards: Primary (6)	Standards: Secondary (7)	Standards: Recommended (8)
Selenium	<0.0025	<0.0025	<0.0025	0.01	---	---
Zinc	0.025	0.141	0.056	---	5.0	---
T.D.S.	504	444	2,540	---	500	---
C.O.D.	<10	84	20	---	---	---
pH-lab (1)(2)	7.78	7.26	7.1	---	6.5-8.5	---
Conductivity-lab (1)(3)	520	400	2,400	---	---	---
T.O.C.(1)	2.	5	4	---	---	---
T.O.X.(1)(4)	NA	NA	NA	---	---	---

Results of Phase 2-Round 1 Sampling

Table 3-1 (Cont'd)

	SW-1	MW-1d	MW-10	Standards Primary (6)	Restricted (9)	Unrestricted (9)
Gross Beta (5)	<5	<10	<10	30 (12)	---	---
Gross Alpha (5)	<10	12	10	15	---	---
Potassium 40 (5)	<10	<10	<10	---	90,000	3000
Uranium Natural (5)	<10	<10	<10	---	20,000	600
Radium-226 (5)	<10	<10	<10	5 (10)	400	30
Radium-228 (5)	<5	<5	<5	5 (10)	800	30
Technicium-99 (5)	<5	<5	<5	---	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	---	200,000	7000
Thorium-230 (5)	<5	<5	<5	---	50,000	2000
Thorium-232 (5)	<5	<5	<5	---	50,000	2000
Cesium-137 (5)	<5	<5	12	---	400,000	20,000
Strontium-90 (5)	<5	<5	<5	8	10,000	300
Ruthenium-106 (5)	<10	<10	<10	---	400,000	10,000
Neptunium-237 (5)	<10	<10	<10	---	90,000	3000
Plutonium-238 (5)	<10	<10	<10	---	100,000	5000
Plutonium-239 (5)	<10	<10	<10	---	100,000	5000
Plutonium-240 (5)	<10	<10	<10	---	100,000	5000
Coliform, Total (10)	18	190,000	140,000	1	---	---
Lindane (4)	NA	NA	NA	4	---	---
Endrin (4)	NA	NA	NA	0.2	---	---
Methoxychlor (4)	NA	NA	NA	100	---	---
Toxaphene (4	NA	NA	NA	5	---	---
2,4-D (4)	NA	NA	NA	10	---	---
2,4,5-TP, Silvex (4)	NA	NA	NA	10	---	---

Results of Phase 2 -Round 1 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Secondary (7)	Recommended (8)
Chloride	15	19	7	49	---	250	---
Iron	0.123	37.2	18.3	5.33	---	0.3	---
Manganese	<0.02	0.451	0.818	0.318	---	0.05	---
Phenols	<0.005	0.015	<0.005	0.005	---	---	0.001
Sodium	12.7	10.4	8.6	180	---	---	---
Sulfate	70	70	50	130	---	250	---
Silver	<0.03	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.025	<0.01	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	<0.2	1.0	---	---
Calcium	89	241	165	361	---	---	---
Cadmium	<0.002	0.005	0.003	0.002	0.010	---	---
Cyanide	<0.005	<0.005	<0.005	0.013	---	---	0.05
Chromium							
- Total	<0.005	0.159	0.147	0.133	0.05	---	---
- Hexavalent	<0.005	0.03	0.01	<0.01	---	---	---
Copper	<0.025	0.269	0.179	0.109	---	1.0	---
Fluoride	0.13	1.1	0.7	1.06	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	1.9	5	5.22	5.7	---	---	---
Magnesium	19	44.3	50	93	---	---	---
Nickel	0.01	0.027	0.022	0.008	---	---	---
Nitrates	1.2	0.89	0.72	25.04	10.0	---	---
Lead	0.011	0.1	0.047	0.072	0.05	---	---
Phosphorus, total	0.06	1.04	0.44	0.13	---	---	---
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	0.01	---	---
Zinc	<0.025	0.166	0.109	0.281	---	5.0	---
T.D.S.	352	436	396	888	---	500	---
C.O.D.	10	32	52	18	---	---	---

Results of Phase 2 -Round 1 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Secondary (7)	Recommended (8)
pH-lab (1)(2)	6.97	8.1	7.1	7.06	---	5.5-8.5	---
Conductivity-lab (1)(3)	400	420	430	1,000	---	---	---
T.O.C. (1)	4.5	4	3.25	3	---	---	---
T.O.X. (1)(4)	NA	NA	NA	NA	---	---	---

Results of Phase 2 - Round 1 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Restricted (9)	Unrestricted (9)
Gross Beta (5)	<5	46	44	1,250	30 (12)	---	---
Gross Alpha (5)	<10	47	21	36	15	---	---
Potassium 40 (5)	<10	<10	<10	40	---	90,000	3000
Uranium Natural (5)	<10	<10	<10	<10	---	20,000	600
Radium-226 (5)	<10	<10	<10	<10	5 (10)	400	30
Radium-228 (5)	<5	<5	<5	70	5 (10)	800	30
Technicium-99 (5)	<5	<5	<5	<5	---	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	<5	---	200,000	7000
Thorium-230 (5)	<5	<5	<5	<5	---	50,000	2000
Thorium-232 (5)	<5	<5	<5	80	---	50,000	2000
Cesium-137 (5)	<5	12	12	110	---	400,000	20,000
Strontium-90 (5)	<5	<5	<5	24	8	10,000	300
Ruthenium-106 (5)	<10	<10	<10	75	---	400,000	10,000
Neptunium-237 (5)	<10	<10	<10	<10	---	90,000	3000
Plutonium-238 (5)	<10	<10	<10	<100	---	100,000	5000
Plutonium-239 (5)	<10	<10	<10	<100	---	100,000	5000
Plutonium-240 (5)	<10	<10	<10	<100	---	100,000	5000
Coliform, Total (10)	110	2,200	3,500	197	1	---	---
Lindane (4)	NA	NA	NA	NA	4	---	---
Endrin (4)	NA	NA	NA	NA	0.2	---	---
Methoxychlor (4)	NA	NA	NA	NA	100	---	---
Toxaphene (4)	NA	NA	NA	NA	5	---	---
2,4-D (4)	NA	NA	NA	NA	10	---	---
2,4,5-TP, Silvex (4)	NA	NA	NA	NA	10	---	---
1,1,1 Trichloro-ethane	ND	ND	ND	8.6	---	---	---

NOTES

ND Not Detected
NA Not Analyzed (See page 3-4 for explanation)
(1) Average of four tests
(2) pH results in standard units
(3) Conductivity results in umhos<cm
(4) Concentrations reported in ppb
(5) Results in pCi/l
(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Support R - Maximum Contaminant Levels, July 1, 1984.
(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum Contaminant Levels.
(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.
(9) Taken from DOE Order 5480.1A: Limit for Release to Restricted and Unrestricted Areas
(10) Standard is for Radium -226 Plus Radium -228.
(11) Reported in per 100 ml
(12) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

RESULTS OF PHASE 3 ROUND 1
Table 3.1

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	1S	3	4	5	8S	Standards: Primary (6)	Standards: Secondary (7)	Standards: Recommended (8)
Chloride	18	22	32	17	19	---	250	---
Iron	0.628	0.638	0.218	1.82	1.6	---	0.3	---
Manganese	0.511	0.426	<0.02	0.532	0.257	---	0.05	---
Phenols	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	0.001
Sodium	10	9.5	12.6	12.8	9.5	---	---	---
Sulfate	74	88	54.0	82	78	---	250	---
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	1.0	---	---
Calcium	108	102	101	115	104	---	---	---
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	0.010	---	---
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	0.05
Chromium								
- Total	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	---	1.0	---
Fluoride	0.41	0.25	0.29	0.24	0.14	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	2.26	2.40	2.79	2.21	2.34	---	---	---
Magnesium	23.9	23.3	22.2	25.5	22.5	---	---	---
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---
Nitrates	0.04	<0.02	1.43	0.09	<0.02	10.0	---	---
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
Phosphorus, total	<0.04	<0.04	<0.04	<0.04	<0.04	---	---	---

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	1S	3	4	5	8S	Standards: Primary (6)	Secondary (7)	Recommended (8)
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	---	---
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	---	5.0	---
T.D.S.	415	369	369	396	381	---	500	---
C.O.D.	<10	<10	<10	<10	<10	---	---	---
pH-lab (1) (2)	7.20	7.32	7.36	7.36	7.34	---	6.5-8.5	---
Conductivity-lab (1) (3)	600	590	580	620	588	---	---	---
T.O.C. (1)	1	1	1	<1	<1	---	---	---
T.O.X. (1) (4)	28.5	11.8	<10	<10	<10	---	---	---
Coliform (10)	<2	<2	380	17	36	1	---	---
Lindane (4)	<0.1	<0.1	<0.1	<0.1	<0.1	4	---	---
Endrin (4)	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	---	---
Methoxychlor (4)	<0.1	<0.1	<0.1	<0.1	<0.1	100	---	---
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	5	---	---
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	<0.4	10	---	---
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	10	---	---
VOC's (4)	NA	NA	ND	NA	ND	---	---	---
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	<15.0	15	---	---
Gross Beta (5)	15	17	17	12	7	30 (11)	---	---
Radium, Total (5)	<5.0	<5.0	<5.0	<5.0	<5.0	5 (9)	---	---
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	<5.0	---	---	---

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	8D	9	10	11	12 (8/1/85)	12 (1/8/86)	13S	13D	15S	16S	16D
Chloride	13	22	76	21	109	105	25	61	23	19	20
Iron	2.62	0.072	18.9	2.93	18.1	30.8	2.71	6.93	0.078	<0.05	0.123
Manganese	0.365	0.071	5.5	0.193	0.216	0.592	0.205	0.349	<0.020	0.025	<0.02
Phenols	<0.005	0.007	<0.005	<0.007	0.019	0.021	<0.005	0.012	0.007	0.009	0.009
Sodium	11.9	11.0	162	12.9	268.0	224	14.7	49	11.9	15.6	11.1
Sulfate	10	76	470	88	72	64	92	300	49	50	60
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.0025	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	94.7	96.6	1,232	123	53	72.1	137	163	71.9	88.5	81.8
Cadmium	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium											
- Total	<0.005	<0.005	0.014	<0.005	0.055	0.058	<0.005	<0.005	<0.005	<0.005	<0.005
- Hexavalent	<0.005	<0.005	0.01	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	0.055	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.24	0.21	0.05	0.21	2.00	1.21	0.23	0.31	0.43	0.22	0.16
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	1.04	2.02	20.2	0.984	NA	12.8	2.05	5.11	2.37	2.17	1.85
Magnesium	21.1	22.1	90	28.3	12.3	18.3	28.6	44	19.5	23.4	20.7
Nickel	<0.005	<0.005	0.039	<0.005	0.06	0.048	<0.005	<0.0005	<0.0005	<0.0005	<0.0005
Nitrates	<0.02	3.52	155.6	<0.01	<0.02	<0.02	<0.02	<0.02	3.3	2.52	2.36
Lead	<0.005	<0.005	<0.005	<0.005	0.320	0.04	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.04	<0.04	0.05	<0.04	0.26	0.14	<0.04	<0.04	0.12	<0.04	<0.04

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	8D	9	10	11	12 (8/1/85)	12 (1/8/86)	13S	13D	15S	16S	16D
Selenium	<0.005	<0.005	<0.0025	<0.005	<0.0025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	<0.025	<0.025	0.056	<0.025	0.081	0.135	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	288	377	2,540	423	660	580	300	956	376	364	356
C.O.D.	<10	<10	20	<10	17.0	<10	<10	13	17	11	21
pH-lab (1) (2)	7.40	7.46	7.1	7.42	7.48	7.79	7.15	6.97	7.54	7.50	7.54
Conductivity-lab (1) (3)	530	540	2,400	650	880	998	695	1,250	498	560	520
T.O.C. (1)	<1	<1	4	1	<1.00	<1	<1	1	<1	1	<1
T.O.X. (1) (4)	<10	<10	NA	<10	<10.00	64	44.7	79	21.8	16.9	28.5
Coliform (10)	<4	24	140,000	<4	<20	<4	<4	<2	<2	<2	<2
Lindane (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toxaphene (4)	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.4	<0.4	NA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4)	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	ND
Benzene (4)	ND	ND	ND	ND	14.8	ND	ND	ND	ND	ND	ND
Xylene (4)	ND	ND	ND	ND	11.8	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	---	18	<15.0	<15.0	<15.0	<15.0	<15.0
Gross Beta (5)	12	11	---	9	---	78	15	<5.0	<5.0	<5.0	<5.0
Radium, Total (5)	<5.0	<5.0	---	<5.0	---	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Radionuclide Scan (5) (12)	<5.0	<5.0	---	<5.0	---	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	17S	17D	18D	19D	20S	20D	TP-20	21S	22S	OS-1A
Chloride	24	19	4	57	21	20	3	37	62	34
Iron	0.101	1.29	8.94	<0.05	0.102	1.12	5.43	0.262	0.379	0.338
Manganese	0.234	0.36	0.104	3.73	0.043	0.235	1.04	0.052	0.061	0.054
Phenols	0.006	0.011	0.006	0.011	0.006	<0.005	0.007	0.015	0.006	0.012
Sodium	8.75	10.2	4.59	86.8	11.6	14.1	4.1	28.3	31.8	33.1
Sulfate	150	72	62	440	78	80	48	84	98	102
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	148	106	102	240	96.6	99	108	148	137	143
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
- Total	<0.005	<0.005	<0.005	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.3	0.12	0.44	0.08	0.15	0.11	0.47	0.21	0.71	0.24
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	1.94	1.9	0.556	8.73	2.46	1.69	1.22	9.35	3.95	32.4
Magnesium	32.1	19.5	35.3	35.5	21.1	23.1	31.7	18	40.3	47
Nickel	<0.005	<0.005	<0.005	<0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrates	0.15	<0.02	<0.02	0.46	5.67	<0.02	<0.02	39.3	42	7.99
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.04	<0.04	0.11	<0.04	<0.04	<0.04	0.44	<0.04	<0.04	0.38

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	17S	17D	18D	19D	20S	20D	TP-20	21S	22S	OS-1A
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.07
T.D.S.	612	612	388	424	436	420	324	712	712	600
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
pH-lab (1) (2)	7.13	7.31	7.30	6.83	7.50	7.41	7.05	7.33	7.30	7.15
Conductivity-lab (1) (3)	810	553	575	1,600	545	560	570	908	980	1,010
T.O.C. (1)	<1	<1	<1	1	<1	<1	3	1	2	2.5
T.O.X. (1) (4)	<10	<10	<10	<10	36.5	18.9	25.5	<10	29	23.3
Coliform (10)	<2	<2	<4	<4	<2	<2	10	<2	<2	2
Lindane (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1 Trichloroethane (4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
Gross Beta (5)	<5.0	<5.0	<5.0	<15.0	9	<5.0	77	400	78	<5.0
Radium, Total (5)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	OS1	15D	OS3	OS2	SW2 (8/27/85)	SW2 (1/8/86)	P1	P2	P3	TP19	TP21	TP22
Chloride	19	28	26	29	30	35	36	20	12	459	58	118
Iron	0.05	2.61	1.25	<0.05	<0.05	<0.05	5.31	2.78	2.51	4.57	58.4	2.26
Manganese	<0.02	0.349	0.373	<0.02	0.125	0.154	0.425	0.358	0.418	2.75	3.77	2.01
Phenols	0.008	0.014	0.02	0.011	<0.005	0.009	0.008	0.012	0.018	0.049	<0.005	<0.005
Sodium	11.2	6.8	10.5	11	15	17.4	26.6	11.5	11.0	34.6	40.5	19.3
Sulfate	54	86	58	18	60	96	16	50	42	575	30	850
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.03	0.006
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.308	0.863	0.363
Calcium	67.8	106	85.7	90.6	94.4	93.2	116	84.5	85.3	372	415	154
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium												
- Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.08	<0.005
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.074	<0.025
Fluoride	0.46	0.13	0.24	0.22	0.15	0.2	0.18	0.19	0.14	0.33	0.52	1.80
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.36	1.75	2.2	2.88	2.4	2.35	3.4	1.22	1.62	NA	NA	NA
Magnesium	18.9	27.2	22	24.3	27.2	28.9	33.9	23.6	22.2	12.8	18.3	7.8
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.026	0.137	0.015
Nitrates	2.55	<0.02	<0.02	3.64	2.06	2.89	<0.02	<0.02	<0.02	<0.02	<0.02	0.06
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.012	<0.005
Phosphorus, total	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	0.12	0.06	0.14	0.21	1.15

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	OS-1	15-D	OS-2	OS-3	SW-2 (8/27/85)	SW-2 (1/8/86)	P-1	P-2	P-3	TP19	TP-21	TP-22
Selenium	<0.005	<0.005	<0.005	<0.005	<0.0025	<0.005	<0.005	<0.005	<0.005	<0.0025	<0.0025	<0.0025
Zinc	0.109	<0.071	<0.025	0.037	0.025	<0.025	<0.025	<0.025	<0.025	0.029	0.240	<0.025
T.D.S.	304	408	308	376	504	468	420	240	240	2540	936	2240
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	10	12.0	14	44
pH-lab (1) (2)	7.48	7.35	7.62	7.39	7.78	7.36	7.45	7.50	7.36	6.63	6.99	6.75
Conductivity-lab (1) (3)	491	638	575	610	520	660	835	555	533	2350	1000	1950
T.O.C. (1)	<1	<1	<1	<1	2	<1	<1	<1	<1	4.00	4.00	6.5
T.O.X. (1) (4)	32	40.8	43.3	49.3	NA	61.5	12.8	10	12.4	80.25	<10.00	<10.00
Coliform	<2	<2	<2	40	18	<2	<2	<2	<2	<20	<20	<20
Lindane (4)	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Endrin (4)	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Methoxychlor	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4) (9)	<0.4	<0.4	<0.4	<0.4	NA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4) (9)	<0.2	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichlorethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	Trace	ND	ND
Gross Alpha	<15.0	<15.0	20	<15.0	---	<15.0	<15.0	<15.0	<15.0	---	---	---
Gross Beta	28	<5.0	42	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---
Radium, Total	<5.0	<5.0	<5.0	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---

NOTES

ND Not Detected

NA Not Analyzed

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B - Maximum Contaminant Levels, July 1, 1984.

(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.

(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.

(9) Standard is for Radium -226 Plus Radium -228

(10) Reported in per 100 ml

(11) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

(12) Radionuclide Scan includes analysis for K-40, Umat, Th-228, Th-230, Th-232, Tc-99, Cs-137, Sr-90, Ru-106, Np-237, Pu-238, Pu-239, Pu-240.

RESULTS OF ROUND 2 SAMPLING

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Chloride	105.0	265.0	5.0	19.0	34.0	35.0
Iron	3.410	2.100	0.360	1.690	15.800	0.083
Manganese	0.050	1.380	1.020	1.920	1.280	<0.020
Phenols	<0.005	<0.005	<0.005	0.006	0.007	0.008
Sodium	210.000	56.100	3.680	11.300	174.000	32.700
Sulfate	8.0	660.0	48.0	260.0	1,100	130.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.007	<0.005	0.008	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	22.300	310.00	120.000	146.000	458.00	141.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	0.008	0.010
Chromium						
-Total	<0.005	<0.005	<0.005	<0.005	0.028	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.052	<0.025
Fluride	1.09	0.38	0.22	0.52	0.97	0.17
Mercury	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	10.600	1.140	1.010	1.390	8.090	34.100
Mangesium	9.200	-107.000	29.000	74.000	176.000	62.000
Nickel	<0.005	<0.005	<0.005	<0.005	0.023	<0.005
Nitrates	<0.02	0.07	<0.02	0.19	10.50	8.96
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.06	0.11	0.07	0.08	0.35	0.07

RESULTS OF ROUND 2 SAMPLING

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	US-1A
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	0.48	0.051
T.D.S.	660	1,820	376	780	2,550	840
C.O.D.	<10	21	17	12	38	16
pH-lab (1) (2)	7.75	6.72	7.13	7.28	7.07	6.99
Conductivity-lab (1) (3)	1,000	2,000	598	999	2,400	1,100
T.O.C. (1)	<1	4	2	2	5	2
T.O.X. (1) (4)	<10	NA	15.5	NA	30.8	19.5
Coliform (10)	6	<2	29	6	2,600	4,200
Lindane (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Endrin (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Methoxychlor (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Toxaphene (4)	<0.5	NA	<0.5	NA	<0.5	<0.5
2,4-D (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	125	37	<15
Gross Beta (5)	5	76.77	<5	335	143	26
Radium, Total (5)	<5	5.84	<5	21.1	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0001	0.90	0.012	3.20	5.06	0.0013

RESULTS OF ROUND 2 SAMPLING

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Producation Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Chloride	18.0	27.0	24.0	21.0	16.0	21.0	13.0	82.0	27.0	69.0
Iron	1.050	6.240	0.750	0.170	2.310	1.190	3.010	0.250	3.180	7.840
Manganese	0.487	0.416	0.396	<0.005	0.546	0.217	0.362	4.160	0.183	0.338
Phenols	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.006	<0.005
Sodium	10.400	23.500	7.800	8.500	8.290	9.500	9.700	131.000	12.000	48.800
Sulfate	74.0	60.0	94.0	66.0	72.0	72.0	12.0	720.0	94.0	230.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	76.800	98.400	83.100	84.100	110.000	83.000	96.900	377.00	121.000	205.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.13	0.13	0.24	0.24	0.24	0.14	0.22	0.13	0.17	0.15
Mercury	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.470	1.010	2.640	2.880	2.660	2.860	1.010	21.900	2.310	4.300
Magnesium	23.500	27.100	23.300	20.300	26.500	22.900	21.000	73.000	26.300	59.000
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005
Nitrates	<0.02	0.08	<0.02	2.20	<0.02	<0.02	<0.02	160.00	0.06	<0.02
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.12	0.04	<0.02	<0.02	<0.02	0.07	0.06	<0.02	<0.02

RESULTS OF ROUND 2 SAMPLING

3.2 Sand and Gravel Aquifer

Groundwater Sampling Results Inside Production Area (FMPC)

(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-6s	MW-6d	MW-10	MW-13s	MW-[illegible]
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.0025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	456	476	416	348	560	448	332	2730	468	[illegible]
C.O.D.	<10	12	<10	<10	<10	<10	11	<10	11	[illegible]
pH-lab (1) (2)	7.32	7.36	7.40	7.47	7.30	7.40	7.47	6.66	7.24	[illegible]
Conductivity-lab (1) (3)	599	725	603	546	656	600	519	2,713	666	1,2[illegible]
T.O.C. (1)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<[illegible]
T.O.X. (1) (4)	47.0	12.0	<10	11.0	<10	19	<10	23.3	<10	[illegible]
Coliform (10)	<2	18	<2	2,100	<2	9	<2	<2	3	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	4.06	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	0.694	<0.2	<0.2	<0.2	<0.2
VOC's (4)	NA	ND	NA	----	NA	ND	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
Gross Beta (5)	<5	<5	<5	<5	<5	<5	<5	12.9	<5	[illegible]
Radium, Total (5)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0093	0.0001	0.0023	0.0058	0.0037	0.0006	0.0003	0.015	0.0021	[illegible]
Trichloroethene	----	----	----	0.0044	----	----	----	----	----	----

RESULTS OF ROUND 2 SAMPLING

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Chloride	39.0	51.0	69.0	38.0
Iron	0.085	0.060	1.130	0.064
Manganese	0.027	2.360	<0.020	<0.020
Phenols	0.008	0.009	0.014	0.007
Sodium	43.600	75.400	52.900	27.800
Sulfate	98.0	410.0	92.0	100.0
Silver	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200
Calcium	143.000	248.000	175.000	122.000
Cadmium	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005
Chromium				
-Total	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025
Fluoride	0.14	0.09	0.19	0.68
Mercury	0.0003	<0.0002	<0.0002	<0.0002
Potassium	4.710	7.960	10.340	3.540
Maynesium	41.100	26.400	21.200	34.600
Nickel	<0.005	0.007	<0.005	0.005
Nitrates	72.00	3.70	63.90	28.70
Lead	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.04	0.05	0.09	<0.02

RESULTS OF ROUND 2 SAMPLING

3.2 Sand and Gravel Aquifer

Groundwater Sampling Results Inside Producation Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Selenium	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025
T.D.S.	948	1,120	1,100	664
C.O.D.	11	<10	<10	<10
pH-lab (1) (2)	7.30	6.96	7.37	7.46
Conductivity-lab (1) (3)	1,200	1,575	1,255	933
T.O.C. (1)	<1	<1	<1	<1
T.O.X. (1) (4)	18.5	<10	22.3	21.8
Coliform (10)	<2	<2	<2	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<0.2	<0.2	<0.2	<0.2
2,4,5 TP Silvex (4)	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND
Gross Alpha (5)	15.3	<15	33	<15
Gross Beta (5)	794	12.2	930	73
Radium, Total (5)	130	<5	29	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5
Uranium (13)	0.0011	0.032	0.0018	0.0035

RESULTS OF ROUND 2 SAMPLING

Table 3.3

Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3
Chloride	15.0	22.0	34.0
Iron	3.030	3.960	5.560
Manganese	0.415	0.352	0.403
Phenols	<0.005	<0.005	<0.005
Sodium	7.650	11.200	26.500
Sulfate	50.0	8.0	110.0
Siver	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200
Calcium	86.300	87.900	14.900
Cadmium	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005
Chromium			
-Total	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025
Fluoride	0.15	0.20	0.02
Mercury	<0.0002	<0.0002	<0.0002
Potassium	1.610	1.190	3.730
Magnesium	21.100	22.600	32.500
Nickel	<0.005	<0.005	<0.005
Nitrate	<0.02	0.02	<0.02
Lead	<0.005	<0.005	<0.005
Phosphorus, total	0.03	0.13	0.10

RESULTS OF ROUND 2 SAMPLING

Table 3.3 (Cont'd)
Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3
Selenium	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025
T.D.S.	368	368	656
C.O.D	<10	<10	<10
pH-lab (1) (2)	7.43	7.60	7.57
Conductivity-lab (1) (3)	540	575	885
T.O.C. (1)	<1	<1	<1
T.O.X. (1) (4)	NA	<10	26.0
Coliform (10)	9	<2	<2
Lindane (4)	NA	<0.2	<0.2
Endrin (4)	NA	<0.2	<0.2
Methoxychlor (4)	NA	<0.2	<0.2
Toxaphene (4)	NA	<0.5	<0.5
2,4-D (4)	NA	<0.2	<0.2
2,4,5-TP, Silvex (4)	NA	<0.2	<0.2
VOC's (4)	NA	NA	NA
Gross Alpha (5)	<15	<15	<15
Gross Beta (5)	5.76	<5	<5
Radium, Total (5)	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5
Uranium (13)	0.0004	0.0002	0.0002

RESULTS OF ROUND 2 SAMPLING

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Chloride	22.0	21.0	20.0	18.0	19.0	20.0	19.0	22.0	21.0
Iron	0.210	8.540	5.700	0.150	0.031	1.020	1.300	0.180	1.330
Manganese	0.061	0.169	0.143	<0.020	<0.020	0.042	0.051	0.121	0.295
Phenols	0.007	0.007	0.008	0.007	<0.005	0.005	0.009	0.009	0.008
Sodium	10.300	9.600	9.400	8.200	11.000	10.500	10.400	7.240	7.600
Sulfate	70.0	78.0	68.0	58.0	52.0	56.0	58.0	96.0	80.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	79.900	99.800	89.000	78.700	69.400	92.600	91.700	139.000	92.700
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	0.099	<0.025	<0.025	0.027	<0.025	<0.025	<0.025
Fluoride	0.18	0.22	0.29	0.18	0.42	0.21	0.16	0.17	0.11
Mercury	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.170	0.950	3.410	2.050	2.780	3.070	2.430	1.850	2.130
Magnesium	21.600	25.500	22.100	19.500	19.100	21.000	21.600	30.500	18.300
Nickel	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	2.96	<0.02	0.10	2.80	2.60	2.28	2.92	0.13	<0.02
Lead	<0.005	<0.005	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.04	0.09	0.12	<0.02	0.05	<0.02	<0.02	<0.02	<0.02

RESULTS OF ROUND 2 SAMPLING

3.4 Sand and Gravel Aquifer

Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	408	476	344	316	344	408	372	620	412
C.O.D.	13	15	26	12	<10	<10	<10	<10	12
ph-lab (1) (2)	7.50	7.37	7.67	7.69	7.53	7.60	7.57	7.20	7.42
Conductivity-lab (1) (3)	540	643	518	515	534	522	529	790	546
T.O.C. (1)	<1	<1	1	1.25	<1	<1	<1	<1	<1
T.O.X. (1) (4)	11.3	22.8	25.8	26.3	30.0	<10	14.8	30.8	12.0
Coliform (10)	3,400	31	9	<2	<2	<2	6	<2	3
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	----	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	<15	24.9	<15	<15	<15	<15
Gross Beta (5)	<5	8.28	<5	7.74	25.16	9.67	5.26	<5	<5
Radium, Total (5)	<5	<5	<5	<5	7.14	<5	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0011	0.0001	0.020	0.021	0.154	0.012	0.0075	0.0034	0.0008
1,1,1-Trichloroethane	---	----	----	----	0.0051	----	----	----	----

RESULTS OF ROUND 2 SAMPLING

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	HK-15d	OS-2	OS-3
Chloride	6.0	2.0	21.0	22.0	30.0	19.0	25.0	36.0	29.0
Iron	32.700	2.500	0.710	1.300	0.104	0.081	3.100	0.005	1.930
Manganese	1.250	0.120	0.070	0.205	0.131	<0.020	0.309	<0.020	0.365
Phenols	0.009	0.006	<0.005	<0.005	0.007	0.006	<0.005	0.012	0.011
Sodium	4.440	4.600	11.400	9.100	13.600	13.600	7.630	13.800	11.100
Sulfate	50.0	56.0	76.0	86.0	68.0	58.0	94.0	62.0	70.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	0.035	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	146.000	98.200	115.000	104.000	97.700	73.300	109.000	108.000	94.300
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.200	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	0.025	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005
-Hexavalent	0.010	<0.005	<0.005	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005
Copper	0.034	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.63	0.40	0.20	0.11	0.29	0.58	0.10	0.18	0.20
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	3.160	0.525	2.660	1.920	2.610	2.840	2.000	3.120	2.480
Magnesium	38.800	33.500	20.900	22.000	26.700	18.700	24.600	22.600	22.600
Nickel	0.021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	0.67	<0.02	5.48	0.06	3.40	2.60	0.09	5.04	0.10
Lead	0.012	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.26	<0.02	<0.002	<0.002	<0.02	<0.02	<0.02	0.004	0.04

RESULTS OF ROUND 2 SAMPLING

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	US-1	HK-15d	US-2	US-3
Selenium	0.003	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	0.068	<0.025	<0.025	<0.025	<0.025	0.092	0.031	0.064	<0.025
T.D.S.	408	384	376	316	448	NA	452	444	340
C.O.D.	30	<10	<10	27	23	16	12	12	11
pH-lab (1) (2)	7.51	7.52	7.47	7.41	7.46	7.68	7.51	7.47	7.35
Conductivity-lab (1) (3)	550	566	568	578	637	499	612	636	618
T.O.C. (1)	4	1	<1	1	<1	<1	<1	<1	<1
T.O.X. (1) (4)	51.5	<10	28.0	15.5	<10	<10	<10	18.0	24.0
Coliform (10)	<2	<2	<2	3	100	9	<2	<2	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	NA	NA	NA	NA
Gross Alpha (5)	<15	<15	<15	<15	<15	35	<15	51	<15
Gross Beta (5)	14	<5	5.7	<5	12.37	37	<5	31	<5
Radium, Total (5)	<5	<5	8	5.9	7.74	36	<5	6.57	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0027	0.0017	0.0005	0.0009	0.0008	0.205	0.0001	0.282	0.035

NOTES

ND	Not Detected
NA	Not Analyzed
(1)	Average of four tests
(2)	pH results in standard units
(3)	Conductivity results in umhos/cm
(4)	Concentrations reported in ppb
(5)	Results in pCi/l
(6)	Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B - Maximum Contaminant Levels, July 1, 1984.
(7)	Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.
(8)	High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.
(9)	Standard is for Radium -226 Plus Radium -228
(10)	Reported in per 100 ml
(11)	Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.
(12)	Radionuclide Scan includes analysis for K-40, Unat, Th-228, Th-230, Th-232, Tc-99 Cs-137, Sr-90, Ru-106, Np-237, Pu-238, Pu-239, Pu-240.
(13)	WMCO Split Sample - Analyzed for Uranium at the FMPC; Results in mg/l.

Results of Round 3 Sampling

3.1 Shallow (Till) Groundwater
Sampling Results (FMPC)
(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Chloride	100.0	1,030	3.0	19.0	56.0	32.0
Iron	0.618	2.240	69.800	1.740	22.700	0.463
Manganese	<0.020	2.260	2.490	1.920	2.680	<0.020
Phenols	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	191.000	144.000	4.970	11.600	21.700	32.700
Sulfate	8.0	400.0	48.0	240.0	1,300	150.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.002
Arsenic	<0.005	<0.005	0.025	0.006	0.011	<0.005
Barium	<0.200	<0.200	0.746	0.292	<0.200	<0.200
Calcium	21.900	539.000	250.000	153.000	426.000	141.000
Cadmium	<0.002	<0.002	0.003	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	0.006	<0.005	<0.005	0.011
Chromium						
-Total	<0.005	<0.005	0.101	<0.005	0.040	<0.005
-Hexavalent	<0.005	<0.005	<0.010	<0.005	<0.010	<0.005
Copper	<0.025	<0.025	0.105	<0.025	0.037	<0.025
Fluoride	1.05	0.25	0.30	0.55	1.34	0.25
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	11.100	1.230	17.500	1.620	10.700	28.100
Magnesium	7.300	154.000	106.000	70.000	194.000	55.000
Nickel	<0.005	0.012	0.105	<0.005	0.037	<0.005
Nitrates	0.03	0.02	0.04	0.02	<0.02	11.20
Lead	<0.005	<0.005	0.021	<0.005	<0.005	<0.005
Phosphorus, total	0.03	0.34	0.41	0.08	<0.02	0.02

Results of Round 3 Sampling

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	0.400	<0.025	0.255	0.099
T.D.S.	672	3,570	428	544	2,430	694
C.O.D.	<10	36	50	<10	25	<10
pH-lab (1) (2)	7.74	6.58	7.00	7.17	6.83	6.92
Conductivity-lab (1) (3)	1,100	3,400	665	900	2,580	1,050
T.O.C. (1)	1	5.5	3	3	6	3
T.O.X. (1) (4)	8,270	176	61.5	<10	22.8	<10
Coliform (10)	<5	9	<10	50	<5	10,000
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's (4)	ND	--	--	ND	--	--
1.1 Dichloroethane	--	17.1	--	--	--	--
Cis-1,2-Dichloroethene	--	5.1	--	--	--	--
1,1,1 Trichloroethane	--	--	16.1	--	--	--
Acetone	--	--	--	--	73.0	88.0
2-Propanol	--	--	--	--	21.5	--
Gross Alpha (5)	3.46	2	<1	16.3	288	<1
Gross Beta (5)	10.9	45.4	3.72	386	423	27.4
Uranium (13)	<0.0001	0.36	0.031	2.76	4.28	0.0022

Results of Round 3 Sampling

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Chloride	17.0	19.0	21.0	21.0	14.0	21.0	11.0	80.0	25.0	64.0
Iron	0.906	5.800	0.752	0.539	2.080	4.750	2.840	0.264	3.140	7.350
Manganese	0.468	0.332	0.374	0.069	0.457	0.369	0.434	4.220	0.161	0.327
Phenols	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005
Sodium	9.300	15.400	8.600	9.500	8.610	9.200	8.100	132.000	10.800	39.400
Sulfate	72.0	11.0	82.0	62.0	68.0	32.0	10.0	640.0	110.0	260.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	98.500	89.000	78.300	82.900	108.000	56.000	82.400	418.000	118.000	212.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	0.040	<0.025	<0.025	<0.025	<0.025
Fluoride	0.22	0.17	0.24	0.25	0.40	0.12	0.21	0.11	0.19	0.14
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.250	0.980	2.580	2.550	2.560	2.650	1.130	18.700	2.140	4.400
Magnesium	24.800	22.800	22.600	21.800	27.500	24.200	21.500	69.000	26.800	51.000
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	<0.005
Nitrates	0.003	0.02	<0.02	1.40	0.05	0.03	0.02	153.00	<0.02	0.06
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.13	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.02

Results of Round 3 Sampling

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	0.025	0.052	<0.025	<0.025	<0.025	<0.025
T.D.S.	388	392	416	392	508	228	332	2,550	448	1,020
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
pH-lab (1) (2)	7.23	7.39	7.38	7.55	7.36	7.41	7.41	6.89	7.14	6.97
Conductivity-lab (1) (3)	620	600	600	573	680	380	540	2,750	720	1,300
T.O.C. (1)	1	1	1	1	<1	1	<1	1.75	2.25	1
T.O.X. (1) (4)	39.2	<10	65.5	18.0	120.0	<10	<10	<10	<10	1,400
Coliform (10)	6	3	<2	350	17	3,700	550	9	3	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's (4)	NA	--	NA	NA	NA	--	--	--	--	ND
1,1,1 Trichloroethane	--	2.0	--	--	--	6.0	--	--	--	--
Carbon Disulfide	--	--	--	--	--	--	32.3	--	--	--
Butanol	--	--	--	--	--	--	180.0	--	--	--
Trichloroethene	--	--	--	--	--	--	--	1.7	--	--
Acetone	--	--	--	--	--	--	--	--	735.0	--
2-Propanol	--	--	--	--	--	--	--	--	29,600.0	--
Gross Alpha (5)	<1	<1	<1	1.29	<1	<1	<1	<1	2.89	<1
Gross Beta (5)	4.8	<1	25.5	<1	3.2	1.66	<1	1.88	1.31	3.23
Uranium (13)	0.011	0.0002	0.0022	0.0087	0.0041	0.0032	0.0010	0.019	0.0011	0.018

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Chloride	41.0	52.0	45.0	61.0
Iron	0.070	<0.050	0.438	<0.050
Manganese	<0.020	2.440	0.028	<0.020
Phenols	<0.005	<0.005	0.007	<0.005
Sodium	34.700	69.400	34.600	26.200
Sulfate	96.0	385.0	74.0	98.0
Silver	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200
Calcium	135.000	231.000	159.000	133.000
Cadmium	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005
Chromium				
-Total	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025
Fluoride	0.28	0.12	0.39	0.55
Mercury	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	5.030	7.420	10.600	4.160
Magnesium	34.400	26.800	23.200	38.700
Nickel	<0.005	<0.005	<0.005	<0.005
Nitrates	49.20	0.09	80.80	40.80
Lead	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	<0.02	<0.02	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Selenium	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025
T.D.S.	704	1,040	916	800
C.O.D.	<10	<10	<10	<10
pH-lab (1) (2)	7.29	7.01	7.28	7.50
Conductivity-lab (1) (3)	1,100	1,350	1,280	1,040
T.O.C. (1)	<1	1	1	1
T.O.X. (1) (4)	863.0	49.3	<10	<10
Coliform (10)	<2	<5	<2	3
Lindane (4)	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<1.0	<1.0	<1.0	<1.0
2,4,5 TP Silvex (4)	<0.5	<0.5	<0.5	<0.5
VOC's (4)	ND	--	--	ND
Acetone	--	490.0	--	--
2-Propanol	--	830.0	--	--
1,1,1 Trichloroethane	--	--	10.5	--
Gross Alpha (5)	3.47	1.7	11.4	3.81
Gross Beta (5)	430	<1	867	50.1
Uranium (13)	.010	.019	.0046	.0043

Results of Round 3 Sampling

Table 3.3

Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3*
Chloride	33.0	20.0	
Iron	7.660	3.430	
Manganese	0.388	0.320	
Phenols	<0.005	<0.005	
Sodium	24.800	11.400	
Sulfate	94.0	27.0	
Siver	<0.030	<0.030	
Arsenic	<0.005	<0.005	
Barium	<0.200	<0.200	
Calcium	127.000	91.100	
Cadmium	<0.002	<0.002	
Cyanide	<0.005	<0.005	
Chromium			
-Total	<0.005	<0.005	
-Hexavalent	<0.005	<0.005	
Copper	<0.025	<0.025	
Fluoride	0.22	0.23	
Mercury	<0.0002	<0.0002	
Potassium	3.350	1.337	
Magnesium	33.500	24.300	
Nickel	0.012	0.022	
Nitrate	0.02	0.02	
Lead	<0.005	<0.005	
Phosphorus, total	0.24	0.15	

* Well was not sampled due to pump repair work.

Table 3.3 (Cont'd)
Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3*
Selenium	<0.0025	<0.0025	
Zinc	<0.025	<0.025	
T.D.S.	576	456	
C.O.D	<10	10	
pH-lab (1) (2)	7.60	7.64	
Conductivity-lab (1) (3)	820	598	
T.O.C. (1)	<1	<1	
T.O.X. (1) (4)	57.5	<10	
Coliform (10)	29	<2	
Lindane (4)	<0.2	<0.2	
Endrin (4)	<0.2	<0.2	
Methoxychlor (4)	<0.2	<0.2	
Toxaphene (4)	<0.5	<0.5	
2,4-D (4)	<1.0	<1.0	
2,4,5-TP, Silvex (4)	<0.5	<0.5	
VOC's (4)	NA	NA	
Gross Alpha (5)	3.47	<1	
Gross Beta (5)	24.3	5.25	
Uranium (13)	0.0001	0.0001	

* Well was not sampled due to pump repair work.

Results of Round 3 Sampling

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Chloride	21.0	45.0	19.0	18.0	21.0	22.0	19.0	28.0	18.0
Iron	0.434	2.820	1.440	0.130	0.294	0.557	<0.050	<0.050	1.540
Manganese	0.063	0.160	0.083	<0.020	<0.020	0.031	<0.020	0.096	0.290
Phenols	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006
Sodium	9.500	8.200	10.500	9.800	11.400	9.200	8.500	7.490	8.840
Sulfate	80.0	78.0	50.0	58.0	52.0	52.0	50.0	100.0	74.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	79.300	94.000	88.400	845.000	73.900	78.900	71.900	142.000	92.700
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	0.115	<0.025	<0.025	0.030	<0.025	<0.025	<0.025
Fluoride	0.21	0.26	0.34	0.22	0.48	0.22	0.20	0.18	0.17
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.290	1.150	3.670	2.010	2.770	2.480	2.090	1.930	2.090
Magnesium	22.500	26.700	20.100	20.400	20.400	21.500	19.400	30.800	18.700
Nickel	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	3.10	<0.02	2.06	0.48	2.24	2.24	2.64	0.07	0.03
Lead	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.025	0.07	0.19	0.05	0.05	0.07	0.02	<0.02	<0.02

Results of Round 3 Sampling

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	0.048	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	404	404	468	424	400	372	292	580	456
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10
ph-lab (1) (2)	7.45	7.36	7.63	7.87	7.36	7.01	7.75	7.03	7.20
Conductivity-lab (1) (3)	595	668	535	540	560	535	510	830	590
T.O.C. (1)	1	1	1.5	1	2	<1	<1	1	1
T.O.X. (1) (4)	<10	39.3	30.8	<10	58.3	19.0	26.5	<10	25.3
Coliform (10)	3,600	6	86	<2	<2	860	<2	310	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's (4)	--	--	ND	--	--	ND	ND	ND	--
Acetone	8,670	--	--	--	--	--	--	--	58.5
2-Propanol	26,400.0	--	--	--	--	--	--	--	130.0
Carbon Disulfide	--	6.3	--	--	--	--	--	--	--
Butanol	--	195.0	--	--	--	--	--	--	--
Tetracloroethene	--	--	--	1.1	--	--	--	--	--
1,1,1 Trichloroethane	--	--	--	--	2.9	--	--	--	--
Trichloroethene	--	--	--	--	3.7	--	--	--	--
Gross Alpha (5)	<1	<1	<1	6.9	70	1.4	1.21	2.13	<1
Gross Beta (5)	5.91	6.1	<1	7.08	21.5	<1	<1	2.77	6.03
Uranium (13)	0.0015	0.0002	0.025	0.027	0.163	0.017	0.0094	0.0044	0.0009

Results of Round 3 Sampling

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	HK-15d	OS-2	OS-3
Chloride	5.0	2.0	22.0	22.0	28.0	34.0	24.0	38.0	24.0
Iron	2.740	2.540	0.172	1.240	<0.050	<0.050	2.630	<0.050	1.410
Manganese	0.141	0.204	0.034	0.184	0.130	<0.020	0.282	<0.020	0.347
Phenols	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	0.012	0.013	0.022
Sodium	4.550	3.990	8.500	8.500	11.200	118.000	6.260	11.000	9.600
Sulfate	49.0	58.0	67.0	82.0	78.0	53.0	108.0	62.0	66.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	117.000	91.500	87.700	91.300	101.000	82.600	107.000	82.000	85.800
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.27	0.34	0.20	0.16	0.26	0.50	0.19	0.22	0.25
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	1.780	0.768	2.640	2.010	2.390	2.730	1.470	3.200	2.580
Magnesium	29.600	33.500	20.600	22.800	27.700	19.900	25.200	22.900	22.000
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005
Nitrate	0.78	<0.02	4.52	0.05	2.76	2.66	0.05	4.24	0.07
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.17	<0.02	<0.02	<0.02	<0.02	0.16	<0.02	<0.02	<0.02

Results of Round 3 Sampling

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	HK-15d	OS-2	OS-3
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	0.089	0.057	0.055	<0.025
T.D.S.	362	380	446	606	456	318	354	384	444
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10
pH-lab (1) (2)	7.26	7.19	7.40	7.35	7.28	7.40	7.35	7.39	7.31
Conductivity-lab (1) (3)	595	600	580	600	678	420	543	650	620
T.O.C. (1)	1	<1	<1	<1	<1	<1	<1	1	1
T.O.X. (1) (4)	<10	73.8	18.3	36.3	6,440	<10	<10	<10	<10
Coliform (10)	6	<5	<2	<2	<2	2,400	<2	25	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<1.0
2,4,5-TP, Silvex (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOC's (4)	ND	ND	ND	--	ND	--	NA	NA	NA
Acetone	--	--	--	3,600.0	--	--	--	--	--
2-Propanol	--	--	--	8,390.0	--	--	--	--	--
1,1,1 Trichloroethane	--	--	--	--	--	2.0	--	--	--
Gross Alpha (5)	<1	<1	<1	1.21	<1	42.3	<1	48.5	<1
Gross Beta (5)	1.37	13.8	6.07	4.77	9.40	38.5	3	19.0	8.47
Uranium (13)	.0023	.0013	.0005	.0007	.0006	.233	.0002	.260	.048

NOTES

ND Not Detected

NA Not Analyzed

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B - Maximum Contaminant Levels, July 1, 1984.

(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.

(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.

(9) Standard is for Radium -226 Plus Radium -228

(10) Reported in per 100 ml

(11) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

(12) Radionuclide Scan includes analysis for K-40, Unat, Th-228, Th-230, Th-232, Tc-99 Cs-137, Sr-90, Ru-106, Np-237, Pu-238, Pu-239, Pu-240.

(13) WMCO Split Sample - Analyzed for Uranium at the FMPC; Results in mg/l.

(14) Taken from World Health Organization European Standards, 1970.

	Standards		
	Primary (6)	Secondary (7)	Recommended (14)
Chloride	---	250	---
Iron	---	0.3	---
Manganese	---	0.05	---
Phenols	---	---	0.001
Sodium	---	---	---
Sulfate	---	250	---
Silver	0.05	---	---
Arsenic	0.05	---	---
Barium	1.0	---	---
Calcium	---	---	---
Cadmium	0.010	---	---
Cyanide	---	---	0.05
Chromium			
- Total	0.05	---	---
- Hexavalent	---	---	---
Copper	---	1.0	---
Fluoride	1.4-2.4	---	---
Mercury	0.002	---	---
Potassium	---	---	---
Magnesium	---	---	---
Nickel	---	---	---
Nitrates	10.0	---	---
Lead	0.05	---	---
Phosphorus, total	---	---	---
Selenium	0.01	---	---
Zinc	---	5.0	---
T.D.S.	---	500	---
C.O.D.	---	---	---
pH-lab (1) (2)	---	6.5-8.5	---
Conductivity-lab (1) (3)	---	---	---
T.O.C.	---	---	---
T.O.X.	---	---	---
Coliform (10)	1	---	---
Lindane (4)	4	---	---
Endrin (4)	0.2	---	---
Methoxychlor (4)	100	---	---
Toxaphene (4)	5	---	---
2,4-D (4)	10	---	---
2,4,5-TP, Silvex (4)	10	---	---
VOC's (4)	---	---	---
Gross Alpha (5)	15	---	---
Gross Beta (5)	30 (11)	---	---
Radium, Total (5)	5 (9)	---	---
Radionuclide Scan (5) (12)	---	---	---

RESULTS OF ROUND 4 SAMPLING

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Chloride	91.0	744.0	<1.0	13.0	14.0	32.0
Iron	2.200	3.930	7.530	3.450	7.050	0.069
Manganese	0.044	1.970	1.670	2.010	1.250	<0.020
Phenols	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	236.000	171.000	5.370	11.600	16.200	272.000
Sulfate	<1.0	375.0	42.0	435.0	1,320	100.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	0.007	0.006	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	0.277	<0.200	<0.200
Calcium	97.900	489.000	119.000	164.000	524.000	149.000
Cadmium	<0.002	<0.002	<0.002	0.003	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium						
-Total	<0.005	0.006	0.006	<0.005	0.012	<0.005
-Hexavalent	<0.005	<0.006	<0.006	<0.005	<0.010	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	0.025	<0.025
Fluoride	1.00	0.40	0.29	0.46	1.07	0.28
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	11.500	2.010	1.890	1.820	6.700	24.300
Magnesium	6.200	137.000	33.000	58.000	144.000	43.000
Nickel	<0.005	0.009	0.010	0.007	0.015	<0.005
Nitrates	0.02	0.13	0.04	0.07	0.24	8.80
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.09	0.13	0.13	0.38	0.04

3.1 Shallow (Till) Groundwater
Sampling Results (FMPC)
(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	0.033	0.025	0.056	0.046
T.D.S.	716	2,830	320	761	2,560	668
C.O.D.	<10	20	<10	<10	25	<10
pH-lab (1) (2)	7.66	6.82	7.07	7.37	7.01	7.25
Conductivity-lab (1) (3)	1,030	3,500	675	988	2,510	921
T.O.C. (1)	<1	4	<1	3	5.75	<1
T.O.X. (1) (4)	<10.0	163.0	<10	<10	21.5	<10
Coliform (10)	3	13	130	260	13	2,600
Alachlor (LASSO)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	--	ND	ND	--	--
1.1 Dichloroethane	--	1.0	--	--	--	--
Acetone	--	--	--	--	4,770.0	4,480.0
2-Propanol	--	--	--	--	8,500.0	1,420.0
Trichloroethene	--	0.5	--	--	--	--
Tetrachloroethene	--	8.2	--	--	--	--
Bromoform	--	7.0	--	--	--	--
Gross Alpha (5)	21	13	2	251	330	<1
Gross Beta (5)	7	50	3	251	625	33
Uranium (13)	0.0002	0.74	0.018	4.48	4.40	0.0011

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Chloride	17.0	18.0	21.0	24.0	17.0	18.0	12.0	86.0	27.0	63.0
Iron	1.150	5.160	1.060	0.565	2.200	1.230	2.610	0.393	2.630	7.260
Manganese	0.547	0.383	0.418	0.031	0.553	0.243	0.390	5.190	0.211	0.393
Phenols	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	<0.005	<0.005	<0.005
Sodium	10.200	11.700	15.100	15.900	5.900	9.300	9.000	188.000	255.000	54.200
Sulfate	80.0	8.0	100.0	58.0	72.0	73.0	14.0	680.0	105.0	240.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	103.000	96.000	96.300	86.800	119.000	91.200	84.700	421.000	130.000	207.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.20	0.24	0.20	0.21	0.24	0.17	0.22	0.14	0.24	0.16
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.290	0.885	2.590	2.940	2.460	2.660	1.100	18.400	2.760	4.190
Magnesium	24.500	24.100	24.200	20.200	28.900	23.900	22.000	73.000	28.000	44.100
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005
Nitrates	0.04	0.04	<0.02	0.27	0.04	0.06	0.07	142.00	0.08	0.07
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.09	0.04	0.04	0.50	0.04	0.36	0.04	<0.02	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Selenium	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	0.041
T.D.S.	652	962	1,046	1,090
C.O.D.	<10	<10	10	<10
pH-lab (1) (2)	7.45	7.09	7.23	7.22
Conductivity-lab (1) (3)	1,000	1,200	1,260	1,100
T.O.C. (1)	<1	<1	<1	<1
T.O.X. (1) (4)	13.0	<10	21.3	<10
Coliform (10)	<2	6	9	<2
Alachlor (LASSO)	<0.2	<0.2	<0.2	NA
Lindane (4)	<0.2	<0.2	<0.2	NA
Endrin (4)	<0.2	<0.2	<0.2	NA
Methoxychlor (4)	<0.2	<0.2	<0.2	NA
Toxaphene (4)	<0.5	<0.5	<0.5	NA
2, 4-D (4)	<0.2	<0.2	<0.2	NA
2,4,5 TP Silvex (4)	<0.2	<0.2	<0.2	NA
VOC's (4)	ND	(15)	--	ND
Tetrachloroethene	--	--	11.9	--
Gross Alpha (5)	4	2	15	<1
Gross Beta (5)	209	8	627	42
Uranium (13)	0.0041	0.027	0.0047	0.0032

Table 3.3

Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3*
Chloride	35.0	20.0	NA
Iron	5.850	2.940	NA
Manganese	0.455	0.379	NA
Phenols	<0.005	<0.005	NA
Sodium	39.100	15.600	NA
Sulfate	125.0	42.0	NA
Siver	<0.030	<0.030	NA
Arsenic	<0.005	<0.005	NA
Barium	<0.200	<0.200	NA
Calcium	138.000	96.400	NA
Cadmium	<0.002	<0.002	NA
Cyanide	<0.005	<0.005	NA
Chromium			
-Total	<0.005	<0.005	NA
-Hexavalent	<0.005	<0.005	NA
Copper	<0.025	<0.025	NA
Fluoride	0.20	0.25	NA
Mercury	<0.0002	<0.0002	NA
Potassium	3.720	1.340	NA
Magnesium	35.500	25.100	NA
Nickel	<0.005	<0.005	NA
Nitrate	0.03	0.02	NA
Lead	<0.005	<0.005	NA
Phosphorus, total	0.08	0.08	NA

* Well was not sampled due to pump repair work.

(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Chloride	23.0	19.0	19.0	20.0	21.0	17.0	17.0	27.0	20.0
Iron	0.198	3.060	26.500	<0.050	0.289	0.690	<0.050	0.107	1.470
Manganese	0.074	0.187	0.342	<0.020	<0.020	0.025	<0.020	0.154	0.321
Phenols	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	12.500	7.800	11.900	11.800	14.900	8.900	9.040	12.300	13.000
Sulfate	70.0	78.0	60.0	60.0	60.0	60.0	70.0	100.0	72.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	84.400	105.000	197.000	83.600	82.900	87.900	82.800	149.000	100.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	<0.005	<0.005	0.084	<0.005	0.009	0.011	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.01	<0.005	<0.009	<0.010	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	0.127	<0.025	0.027	<0.025	<0.025	<0.025	<0.025
Fluoride	0.18	0.23	0.38	0.19	0.40	0.24	0.20	0.23	0.18
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.130	1.060	4.480	2.130	2.650	2.390	2.120	2.060	2.180
Magnesium	21.700	26.100	37.100	19.300	20.600	21.300	19.900	30.200	19.300
Nickel	<0.005	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	2.60	0.04	1.53	1.68	2.96	2.03	2.43	0.03	0.03
Lead	<0.005	<0.005	0.048	<0.005	0.008	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.02	0.39	<0.02	0.09	<0.02	<0.02	0.04	0.04

	Standards		
	Primary (6)	Secondary (7)	Recommended (14)
Chloride	---	250	---
Iron	---	0.3	---
Manganese	---	0.05	---
Phenols	---	---	0.001
Sodium	---	---	---
Sulfate	---	250	---
Silver	0.05	---	---
Arsenic	0.05	---	---
Barium	1.0	---	---
Calcium	---	---	---
Cadmium	0.010	---	---
Cyanide	---	---	0.05
Chromium			
- Total	0.05	---	---
- Hexavalent	---	---	---
Copper	---	1.0	---
Fluoride	1.4-2.4	---	---
Mercury	0.002	---	---
Potassium	---	---	---
Magnesium	---	---	---
Nickel	---	---	---
Nitrates	10.0	---	---
Lead	0.05	---	---
Phosphorus, total	---	---	---
Selenium	0.01	---	---
Zinc	---	5.0	---
T.D.S.	---	500	---
C.O.D.	---	---	---
pH-lab (1) (2)	---	6.5-8.5	---
Conductivity-lab (1) (3)	---	---	---
T.O.C.	---	---	---
T.O.X.	---	---	---
Coliform (10)	1	---	---
Lindane (4)	4	---	---
Endrin (4)	0.2	---	---
Methoxychlor (4)	100	---	---
Toxaphene (4)	5	---	---
2,4-D (4)	10	---	---
2,4,5-TP, Silvex (4)	10	---	---
VOC's (4)	---	---	---
Gross Alpha (5)	15	---	---
Gross Beta (5)	30 (11)	---	---
Radium, Total (5)	5 (9)	---	---
Radionuclide Scan (5) (12)	---	---	---

NOTES

ND Not Detected
NA Not Analyzed
(1) Average of four tests
(2) pH results in standard units
(3) Conductivity results in umhos/cm
(4) Concentrations reported in ppb
(5) Results in pCi/l
(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B - Maximum Contaminant Levels, July 1, 1984.
(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.
(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.
(9) Standard is for Radium -226 Plus Radium -228
(10) Reported in per 100 ml
(11) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.
(12) Radionuclide Scan includes analysis for K-40, Unat, Th-228, Th-230, Th-232, Tc-99 Cs-137, Sr-90, Ru-106, Np-237, Pu-238, Pu-239, Pu-240.
(13) WMCO Split Sample - Analyzed for Uranium at the FMPC; Results in mg/l.
(14) Taken from World Health Organization European Standards, 1970.
(15) VOC's detected in MW-19d.

COMPOUND	RESULT
Trichlorofluoromethane	15.7 ug/l
1,1-Dichloroethene	22.9 ug/l
2-Propanol	4000.0 ug/l
Trans-1,2-Dichloroethene	37.6 ug/l
Chloroform	41.6 ug/l
1,1,1-Trichloroethane	27.5 ug/l
1,2-Dichloroethane	29.3 ug/l
Carbon tetrachloride	10.5 ug/l
Benzene	18.5 ug/l
Trichloroethene	58.1 ug/l
Bromodichloromethane	22.0 ug/l
Toluene	28.5 ug/l
Dibromochloromethane	14.6 ug/l
Tetrachloroethene	36.3 ug/l
Bromoform	34.1 ug/l

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July 28, 1987

Mr. David Jones
Westinghouse Materials Company of Ohio
Post Office Box 398704
Cincinnati, Ohio 45239

Dear Dave:

Enclosed you will find all data generated from the analyses of your May, 1987, sampling for your groundwater monitoring program. This data includes a computer print-out of all chemical/physical data plus individual charts and tabular data for the radiological studies. These latter studies include linear regressions to obtain lower detection limits and simultaneously provide multiple analyses per sample.

All data was performed per protocol plus additional analyses were performed for QA/QC purposes. Although all data was well within QC limits, the volatile samples exhibited a severe problem during the analyses. This problem was a result of acetone and cyclohexane contamination in some of the samples. The levels of acetone and cyclohexane were sufficiently high to warrant a thorough review of current and previous data for volatile organics.

Previous data indicated acetone and 2-propanol contamination while the present data yielded acetone and cyclohexane contamination. Since the levels were quite high, some samples required dilutions. Some bottles within the same set did not contain the same amount of contamination. We then reviewed the raw GCMS volatile data from the previous sampling. This data is maintained on mag tape per USEPA protocol and is easily reviewed. This review revealed two points: First, acetone and 2-propanol were present in the previous samples and at relatively similar concentrations for each sample bottle within a set. Next, this review yielded a gross error on our part in reporting volatiles in well 19-D for November, 1986, on our report number 8611844. The analyst reported the results of a spiked sample of well 19-D. Although some samples are spiked for QA/QC, these samples are never to be reported. I personally checked and verified the calculations but failed to check the true identity of the sample. Our mag tapes contain all such data including analyses of well 19-D without a spike (except for surrogates and internal standards). This data indicated no compounds were detected in well 19-D from the November, 1986 samples except the acetone and 2-propanol. As a result of our error, we have modified our procedures for verification to include true identity of the sample and GCMS file reference numbers. A corrected copy of our report number 8611844 which includes the November, 1986 data is enclosed.

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Concerning the acetone and cyclohexane, we have now assumed this to be a contamination as a result of rinsing bailers between wells. There were no problems with acetone and cyclohexane contamination for other fractions of samples collected, such as TOC, metals and others. Some bottles within the same set of three volatiles contained enough acetone and cyclohexane that dilutions were required while other bottles for the same well did not.

As a result of these two problems, we have initiated a modification in our verification procedures. This modification will include a verification of the file reference number and true identity of all samples to prevent erroneous reporting. The second problem could be solved by eliminating solvent rinses on bailers. Although 40 CFR 265 references cleaning of such devices, the Guidance Document "RCRA Ground-Water Monitoring Technical Enforcement Guidance Document" leaves sufficient latitude that if dedicated samplers not available, then "appropriate" cleaning procedures should be used. For volatiles we believe deionized water rinse only is "appropriate".

If you have any quesitons concerning the above, please do not hesitate to call.

Respectfully,

David L. Howard, Ph.D.
President

DLH/mrh

Enclosures

CALCULATED T*/Tc STATISTICS

PARAMETER:		WELL NUMBER (1)			
		MW-12	MW-19TP	MW-21TP	MW-22TP
TOX:					
	Mean	10	10	10	37.5
	Variance	0.0	0.0	0	27.67
	T*	-2.19	-2.19	-2.19	-2.15
	Tc	1.73	1.73	1.73	1.73
	Increase	No	No	No	No
TOC:					
	Mean	1	5.5	3	3.75
	Variance	0	0.33	0	0.25
	T*	N/A	15.59	N/A	11.00
	Tc	N/A	2.35	N/A	2.36
	Increase	No	Yes	Yes	Yes
Sp. Cond.:					
	Mean	877	2522.5	970	2020
	Variance	0	34425	3654	19000
	T*	-7.62	16.15	-0.92	14.38
	Tc	1.73	2.33	2.21	2.32
	Increase	No	Yes	No	Yes
pH:					
	Mean	7.81	6.73	7.18	7.01
	Variance	3.3E-05	0.000292	0.000467	0.000158
	T*	4.71	-34.63	-17.79	-24.79
	Tc	2.11	2.20	2.25	2.15
	Change	Incr.	Decr.	Decr.	Decr.

(1) Each well compared to MW-12 background values

CALCULATED T*/Tc STATISTICS

WELL NUMBER (2)

PARAMETER:		MW-19s	MW-19d	MW-21s	MW-22s	SW-2
TOX:						
	Mean	12.25	10	10	10	26.5
	Variance	13.58	0	0	0	1.67
	T*	-2.21	-2.21	-2.21	-2.21	-2.19
	Tc	1.75	1.75	1.75	1.75	1.75
	Increase	No	No	No	No	No
TOC:						
	Mean	1	1	1	1	1
	Variance	0	0	0	0	0
	T*	N/A	N/A	N/A	N/A	N/A
	Tc	N/A	N/A	N/A	N/A	N/A
	Increase	No	No	No	No	No
Sp. Cond.:						
	Mean	1037.5	1090	1105	1062.5	597.25
	Variance	1091.67	0	4300	91.67	6.25
	T*	22.12	87.132	13.54	58.85	-11.41
	Tc	2.3	1.75	2.34	2.04	1.79
	Increase	Yes	Yes	Yes	Yes	No
pH:						
	Mean	7.33	7.05	7.29	7.31	7.38
	Variance	6.7E-05	6.67E-05	0.000467	0.000292	0.0003
	T*	-0.23	-12.91	-1.86	-0.96	2.14
	Tc	2.17	2.17	2.34	2.27	2.28
	Change	None	Decr.	None	None	None

(2) Each well compared to SW-2 background values