Raco Document Review and Site Evaluation

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BARR

4700 West 77th Street
Minneapolis, MN 55435
Phone: (952) 832-2600
Fax: (952) 832-2601

Raco Document Review and Site Evaluation

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Executive Summary

The former Raco Airbase and BOMARC Missile Site (the site) in the Hiawatha National Forest is part of what was formerly know as the Fort Bradley Military Reservation. The site is now under the control of the U.S. Department of Agriculture – Forest Service (USDA Forest Service). The military installation was demolished in the late 1980's under the oversight of the U.S. Army Corps of Engineers (USACE). Since that time there have been numerous charges of irregularities associated with the demolition work and the subsequent disposal of demolition debris and contaminated material from the site.

At the request of the USDA Forest Service, Barr Engineering Company performed an independent review of documents related to the demolition of the military installation, site characterization investigations, and allegations from a citizen's group (Tri-COPc) and a former employee of the demolition contractor of numerous irregularities associated with the demolition work.

Site-related documents were obtained from USDA Forest Service, the Michigan Department of Environmental Quality (MDEQ) offices in Newberry, Michigan, and the USACE offices in Louisville, Kentucky. In addition to reviewing these documents, Barr Engineering Company staff conducted a phone interview of the former demolition contractor employee (James Traynor) and a site inspection. Based on Barr Engineering Company's evaluation of the available information the following conclusions were drawn:

Site Characterization

Site characterization activities including soil borings, soil sampling, monitoring well installation, and groundwater sampling at the site have occurred in several phases. The goal of this effort was to define the geology at the site, determine the groundwater flow characteristics at the site, and identify the extent and characteristics of soil and groundwater contamination at the site. Investigation results described in the various project documents indicate that, in general, these goals were accomplished and that low concentrations of some contaminants are present in site soil and groundwater.

The MDEQ has closed the portion of the site related to the former USTs. Therefore, the former UST areas at the site are not subject to future regulatory action by the MDEQ.

Some data gaps/discrepancies in the site characterization were identified during the review of available information. Based on the available information, it appears that there are no monitoring wells immediately downgradient of some former locations of underground storage tanks (USTs) and a former wastewater treatment lagoon. This assessment is based on site maps from different investigations showing monitoring wells in different locations. Questions are likely to persist regarding the potential for groundwater contamination from these areas unless wells are installed directly downgradient and close to these potential contaminant source areas. It should be noted that the need for additional monitoring wells would be negated if it can be determined conclusively that the information reviewed is incorrect and that existing monitoring wells are actually downgradient of the locations in question. After installation of these new wells, it is recommended that all the site monitoring wells should be sampled at least twice for the metals, volatile organic compounds, and semivolatile organic compounds included in previous sampling events. It is anticipated that the USACE would be responsible for this additional investigation work.

The site is currently used under a Special Use Permit for winter vehicle testing. The testing firm has an onsite water supply well that is used to provide water for icing their test tracks during the winter months. In addition to the additional well installation and groundwater sampling activities, it is recommended that an evaluation of what effect, if any, pumping of the existing and a proposed new water supply well has/would have on groundwater flow and contaminant transport at the Site.

Baseline Risk Assessment

A baseline risk assessment was prepared for the site in 1994 by IT Corporation under contract to the USACE. The total risk ($5x10^{-7}$ cancer risk and a hazard index of 0.03), assuming that the same individual is exposed to site contaminants via all viable pathways, is below regulatory levels of concern. Exposure to lead is below regulatory action levels.

Review of the available information and the some additional risk analysis performed by Barr Engineering Company indicates that the risks associated with exposure to site related chemical contaminants via viable exposure pathways are well below regulatory levels of concern.

Demolition Activity Irregularities

Available information was also evaluated in light of the alleged irregularities related to the demolition of the military installation. These charges included the illegal onsite disposal of demolition debris of various types and materials contaminated with polychlorinated biphenyls (PCBs) being left at the site, and that uncleaned USTs were removed from the site. Based on the available information, the following conclusions may be reached:

- Inert debris was legally buried on the Site.
- There is no indication in the record that asbestos was disposed onsite. In fact, there is a record of off-site asbestos disposal in a properly licensed landfill.
- There is no indication of the presence of PCBs onsite. In fact, of all of the samples from the Site analyzed for PCBs, none have contained detectable concentrations of PCBs.
- Other than existing underground piping, there is no direct evidence in the record that piping was buried at the Site.
- There are records to indicate that petroleum materials went to Johnson Oil Company in Lake Nabagamon, Wisconsin. The records are not complete; however, given the time that has elapsed since the demolition, the USACE is not required to have complete records of this activity at this point in time.
- There is not any indication in the record that uncleaned tanks left the Site. In fact, the record contains evidence that tanks were cleaned before they left the Site.
- There is no indication in the record that spills and leaks were not cleaned up at the site. In fact, the record contains evidence that spills and leaks were cleaned up and the UST portion of the Site had been given a clean bill of health by the MDEQ.
- There is no indication in the record that there was a second on-site disposal area in an on-site borrow pit. During the period when a borrow pit was allegedly being used for disposal, the record shows Mr. James Traynor hauling material from a borrow pit. Mr. Traynor stated that he did not directly witness the burial of demolition debris. He stated that he did observe trucks loaded with demolition debris heading toward the location of the borrow pits and returning empty from that area to the work site. If such disposal took place, it would have been in accordance with Michigan DNR requirements if: 1) it was "inert" material and 2) it was covered by a minimum of two feet of clean soil. However, Mr. Traynor's statements regarding possible burial of material include identification of fairly specific areas in the borrow pit. The USACE should further investigate these specific areas to verify or refute Mr. Traynor's statements regarding burial of material in these areas, and if materials were buried in these areas whether they meet the Michigan DNR definition of inert materials.

In addition, the project-related documents also indicated that some unexploded ordinance had been discovered in a portion of the former Fort Bradley Military Reservation adjacent to the site in the early 1980s. This unexploded ordinance was safely removed and properly managed.

1.0 Introduction

This report has been prepared to document the findings of a site evaluation and independent review of documents prepared by several firms for the former Raco Airfield and BOMARC Missile site (the Site) located in the Hiawatha National Forest. Location of the Site is shown on Figure 1. This document review and site evaluation was conducted as requested by the U.S. Department of Agriculture Forest Service (USDAFS) in their March 25, 2002 request for proposal number R9Z-02-19-H. The work was conducted under delivery order number 43-54BO-2-1617 to contract number 53-569R-7-01111.

The purpose of the document review and site evaluation was to evaluate the adequacy of work done at the site as part of the site demolition/remediation done by the U.S. Army Corps of Engineers (USACE) in light of charges from Tri-Copc (a citizens group) that hazardous materials have been left at the site.

1.1 Project Objectives

Objectives of this project included the following items:

- Evaluate existing investigations/studies of the site and provide an opinion of the completeness of the investigation, identify significant data gaps, and identify any faulty assumptions, conclusions or recommendations.
- Collect additional information on the site from interviews of persons identified by the USDAFS.
- Prepare a report that summarizes Barr Engineering Company's findings and opinions formulated during the document review and interviews and develop recommendations to the USDAFS as to additional work needed before considering the site for closure.
- Quantify human health or ecological risks associated with onsite and offsite receptors.
- Review the Tri-Copc report on the site and during the documentation review search for documents that either support or refute the allegations made in the report. Provide any recommendations or opinions related to the allegations.

1.2 Site Background Information

1.2.1 Site History

The following bullets summarize the history of the Site:

- The site has been intermittently controlled and used by the Department of Defense (DoD) and its predecessor agencies since 1895. In 1925, the site was placed under USDAFS management, which was subject to certain reuse rights for defense purposes. The Secretary of Agriculture transferred 240 acres for airfield use by permit dated August 27, 1942. Based on United States Geological Survey (USGS) topographic maps the airfield actually covers about 640 acres. The airfield was constructed between 1942 and 1943. Around 1960, the missile base was constructed on 153.54 acres of land southeast of the airfield. On January 19, 1964, the Air Force released the airfield property to the USDAFS, but retained the 152.54-acre missile area. On June 30, 1973, the missile area was released to the USDAFS.

- Since June 30, 1973, the property has remained under USDAFS management. Several activities that affected the site have occurred under USDAFS management.

- A special use permit was issued to a local tribe on October 16, 1973 that allowed a sawmill to be operated in the composite building.

- In September 1978, the USDAFS sold six buildings, a water tower, and 28 missile silo shelters to a private contractor for removal.

- In November 1978, a smaller building was sold to Michigan Technological University and the building was removed from the site.

- Between September and October 1981 and between August and October 1984, the USDAFS issued a special use permit to a private contractor allowing broken concrete and other construction materials to be backfilled into the open missile silos.

- By the end of 1988, the USACE removed the remaining buildings and underground storage tanks (USTs) at the site. Missile silos were tested, cleaned out if necessary, backfilled, and covered.

- Since 1972, the airfield portion of the site has been used for automotive testing by Smithers Scientific Services, Inc. (Smithers) under a special use permit issued by the USDAFS. In 2002, Smithers began seeking approval for modifications to the special use permit.

1.2.2 Site Investigations

Several investigations and studies of the Site have been conducted. These include the following investigations and studies:

- Envirodyne Engineers Inc. (Envirodyne) conducted a Contamination Evaluation Study (CES) between December 1986 and April 1987. This study included a review of records, site inspection, and limited field investigation (Envirodyne, 1987).

- Removal of 14 USTs and associated soil sampling for total recoverable petroleum hydrocarbons (TRPH) between July and August 1988. This work is summarized in a USACE Memorandum for Record dated January 17, 1989 (USACE, 1989).

- International Technology Corporation (IT Corp.) conducted a remedial investigation at the Site. This investigation included installation of monitoring wells and soil borings, aquifer testing, assessment of contaminant fate and transport, and a baseline risk assessment (IT Corp., 1994).

- In 1996, BCM conducted a soil probe investigation of the site focusing on the areas around former UST locations. This investigation included 113 soil borings and 200 soil samples taken from in and around the former USTs location (BCM, 1996).

- Sverdrup Environmental, Inc (Sverdrup) conducted a supplemental remedial investigation at the site in 1996 and 1997. This investigation included installation of soil borings and sampling of existing monitoring wells (Sverdrup, 1996). (Elevated concentrations of lead were found during the 1996 sampling of the monitoring wells. As a result, the monitoring wells were redeveloped and sampled in 1997. The 1996 report was edited to include the 1997 data. The title of the report or report date was not changed.)

1.3 Documents Reviewed

Barr Engineering Company (Barr) reviewed the following documents for this project:

- Numerous pieces of correspondence from various parties, including Tri-Copc, the USACE, the USDAFS, various State of Michigan and United States Representatives and Senators, the and Michigan Department of Natural Resources/Department of Environmental Quality (MDNR/MDEQ).

- Various newspaper articles related to the Site.

- USACE Documentation of site demolition activities.
- Envirodyne CES report.
- IT Corp. remedial investigation report.
- BCM soil probe investigation report
- Sverdrup supplemental remedial investigation report.
- Smithers draft May 2002 environmental assessment prepared in support of their request to modify the special use permit for their activities at the Site.

In addition to the document review, Barr Engineering Company staff conducted a telephone interview with Mr. James Traynor on May 7, 2002 and inspected the Site with Mr. Traynor and USDAFS staff on May 16, 2002. A summary of the telephone interview is presented in Appendix A and a summary of the site inspection is presented in Appendix B.

Resumes for Barr Engineering Company staff that performed the review of these documents, the telephone interview, and the site inspection are presented in Appendix C.

1.3 Report Organization

This report is organized in 5 sections. Section 1 of the report is this introduction. Section 2 of this report discusses the site characterization described in the project documents. Section 3 summarizes Barr's review of the risk evaluation performed for the site by IT Corp. Section 4 presents the results of the document review with regard to the allegations made concerning the site cleanup. Section 5 presents the overall conclusion of the document review/site evaluation and recommendations for additional work.

2.0 Site Characterization

This section of the report presents the results of the document review as they relate to site characterization issues. The Site is divided into two main areas: 1) the Missile Battery Area located east of the airfield runways and 2) the Fuel Depot Area located west of the airfield runways (Figures 2, 3, and 4). Site characterization activities including over 100 soil borings, soil sampling, installation of 15 monitoring wells, geophysical surveys, sampling of tank and silo contents, geophysical surveys, slug tests, and groundwater sampling at the site have occurred in several phases. The goal of this effort was to define the geology at the site, determine the groundwater flow characteristics at the site, and identify the extent and characteristics of soil and groundwater contamination at the site. Investigation results described in the various project documents indicate that, in general, these goals were accomplished.

2.1 Site Inspection

As noted above, a site inspection was performed on May 16, 2002. Mr. James Traynor, a site employee for a short period during the demolition of the military installation at the Site in the late 1980's, accompanied Barr and USDAFS staff on the site inspection. Objective of the site inspection was to observe the condition of the site and look for any obvious signs of the presence of contamination or evidence that demolition debris not approved for onsite disposal/burial had been disposed/buried onsite. No visual evidence of contaminated soil was observed during the site inspection. No samples were collected during the site inspection. Summary notes from the site inspection (including photographs) are presented in Appendix B.

In the Missile Battery Area some debris was noted at the surface. Most of the debris was concrete with or without rebar. A few pieces of uninsulated steel pipe were observed at the surface. In one location, a piece of rebar with a blue ribbon tied around it was observed sticking a few inches out of the ground. Mr. Traynor pointed out the area where he said that he buried uninsulated steel pipes and concrete.

According to Mr. Traynor, during the military installation demolition topsoil was stored near the southeast corner of the Missile Battery Area (see Appendix B). There were two small locations along the edges of this storage area where there was roofing material and/or concrete blocks/chunks that were partially buried. It is not known if this material was emplaced during the demolition of the military installation. Photographs of this material are presented in Appendix B. No other evidence of building debris buried in this portion of the Site was observed.

Per Mr. Traynor, two sand borrow areas are located immediately east and southeast of the area where topsoil was stored (see Appendix B). Mr. Traynor believed that demolition debris had been buried in these borrow areas during the site demolition work. Both borrow areas were inspected and the only evidence of demolition debris was what appeared to be a concrete light pole base lying at the ground surface in the southern borrow area (see Appendix B for a description of this item).

The Fuel Depot Area was also inspected. A metal band (presumably a tank hold down strap) was observed sticking out of the ground (see Appendix B).

2.2 Site Geology and Hydrogeology

2.2.1 Geology

A number of soil borings have been drilled at the site to obtain information on the geology beneath the Site. As described in the various project documents, geology beneath the Site consists of a thick sequence of unconsolidated glacial deposits composed mainly of sand with some gravel and silt. Depth to bedrock beneath the site is unknown since no borings were advanced to the buried bedrock surface. Bedrock was not encountered in a 260-foot deep well located approximately 2.5 miles south of the Site (IT Corp., 1994). Taking into account differences in surface elevations between the Site and this well location, the depth to bedrock beneath the site could be more than 380 feet. Note that bedrock was not encountered in the 197-foot deep Smithers water supply well located north of the Missile Battery Area at the Site (Smithers, 2002). Descriptions of the unconsolidated deposits in the project documents are consistent with the field information (e.g., boring logs) presented in the appendices of these documents.

2.2.2 Hydrogeology

Groundwater elevations have been measured in the Site monitoring wells on numerous occasions (e.g., Table 1). Based on these groundwater elevations, groundwater flow direction beneath the site appears to be generally east-southeast (e.g., Figure 5). In the southern portion of the Missile Battery Area, however, the groundwater flow direction appears to change to slightly north of east (e.g., Figure 5). The horizontal hydraulic gradient across the Site appears to be approximately 0.002 ft/ft. All monitoring wells at the site were installed as water table wells, except for well MW08. Well MW08 is very close to well MW03 (originally identified as RG-3 in the CES report) but there generally is little if any difference in the groundwater elevations reported in these wells (e.g., Table 1). Thus, there appears to be little, if any, downward vertical hydraulic gradient beneath the Site. Without a vertical hydraulic gradient a groundwater contaminant plume would not be expected to spread vertically or sink appreciably.

The CES report (Envirodyne, 1987) and the RI report (IT Corp., 1994) discuss the results of slug tests performed in site monitoring wells. Envirodyne conducted slug tests in wells RG-1 through RG-4 (identified during subsequent investigations as wells MW01 through MW04) during the CES while IT Corp. conducted slug tests in wells MW05 through MW15 during the RI. All these monitoring wells were constructed with their screens crossing the water table, except for well MW08. Hydraulic conductivities determined using the results of these slug tests are generally consistent and range from 7.53×10^{-4} cm/sec to 5.38×10^{-1} cm/sec. IT Corp. (1994) used the results of both rising head and falling head slug tests in their analyses. It should be noted that falling head slug tests in wells screened across the water table might produce questionable data. Thus, a more conservative approach would be to use only rising head test results from these wells to estimate hydraulic conductivity. Hydraulic conductivity determined using only the rising head results from wells MW05 through MW15 (and excluding well MW08 that is screened entirely below the water table) ranges from 2.42×10^{-2} cm/sec to 2.36×10^{-1} cm/sec.

Smithers (2002) evaluated the effect of operating a second water supply well north of the Missile Battery Area for icing their test tracks. In the Smithers evaluation, a hydraulic conductivity of 85 gpd/ft^2 (approximately 2×10^{-3} cm/sec) was assumed. This estimated value appears to be based on a literature search rather than on actual aquifer test data from the Site.

2.3 Monitoring Well Locations

As shown on Figure 5, a total of 15 monitoring wells, numbered MW01 through MW15, have been installed at the site. All the monitoring wells were screened across or near the water table that occurs in the unconsolidated deposits beneath the site.

Some discrepancies/uncertainties related to well locations were noted in the project documents reviewed. The first of these is the location of well MW11 shown on some previous report figures. Well MW11 is shown on the inside (i.e., the southwest side) of a curve in the road going around the Fuel Depot Area on figures in both the remedial investigation (RI) report (IT Corp., 1994) and the supplemental RI report (Sverdrup, 1996) (e.g., Figure 5). During the May 2002 site inspection, well MW11 was observed to be on the outside (i.e., the northeast side) of the curve in the road going around the Fuel Depot Area. Well locations shown on Figure 6 were plotted using the well coordinates determined during the RI performed by IT Corp. Well MW11 is shown on the correct side of the road in the Fuel Depot Area on Figure 6.

The second discrepancy/uncertainty is in the location of well MW05 shown on figures in various reports. In both the RI report (IT Corp., 1994) and the supplemental RI report (Sverdrup, 1996) monitoring well MW05 is shown north-northeast of the location of UST B-1 (e.g., Figure 3). In the soil probe investigation report (BCM, 1996) monitoring well MW05 is shown to the east-southeast of UST B-1 (see Figure 2 from the BCM report presented in Appendix D of this report). Since these three investigations were conducted after UST B-1 had been removed, it is possible that the discrepancy in the location of well MW05 is due to inaccurate determination of the former location of UST B-1 during the investigations. As will be discussed below, however, the location of well MW05 relative to the location of UST B-1 is important when evaluating the analytical results for groundwater samples from monitoring well MW05. Based on available information, a monitoring well approximately 20 feet east and 30 feet south of the well MW05 location shown on Figure 3 would be immediately downgradient of the former location of UST B-1.

The third discrepancy/uncertainty is related to identifying monitoring wells as downgradient of some investigation areas. Wells MW01 (originally identified as RG-1 in the CES report), MW06 and MW15 are the wells that are closest to the former locations of USTs C-1, C-2, and C-3 (Figure 3). The RI report (IT Corp., 1994) discusses these wells as being downgradient of former UST locations C-1, C-2, and C-3. However, based on the groundwater flow directions indicated by the groundwater elevations measured during the RI and supplemental RI (see IT Corp., 1994 and Sverdrup, 1996; see also Figures 3 and 5) it appears that these wells are not downgradient of the former UST locations. Based on available information, a monitoring well located approximately 40 feet south of well MW015 would be approximately 100 feet downgradient of the former locations of USTs C-1, C-2, and C-3.

In addition, wells MW03 and MW08 are the closest wells to the former location of the wastewater treatment lagoon (Figure 3). Based on the groundwater flow directions indicated by the groundwater elevations measured during the RI and supplemental RI (see IT Corp., 1994 and Sverdrup, 1996; see also Figures 3 and 5) it appears that these wells are not downgradient of the former location of the wastewater treatment lagoon although the RI report and supplemental RI report discussions appear to indicate that wells MW03 and MW08 are downgradient of the wastewater treatment lagoon. Inspection of the published groundwater contour maps (e.g., Figure 5) indicates that wells MW03 and

MW08 may be located such that they could potentially detect contaminants entering the groundwater beneath the former locations of USTs C-1, C-2, and C-3, although the wells are several hundred feet away from these former UST locations. Based on available information, a monitoring well located approximately 100 feet north of well MW08 would be immediately downgradient of the former wastewater treatment lagoon location.

2.4 Extent of Contamination

Site investigation activities included determination of the extent of soil and groundwater contamination at the Site. Review of the project documents indicates that analytical data validation was done correctly and that data quality is acceptable. A summary of Barr Engineering Company's data validation review is presented in Appendix E.

2.4.1 Extent of Soil Contamination

Most soil borings were advanced until field screening of soil samples collected from each boring no longer indicated the presence/potential presence of contaminants (mainly organic compounds). A number of soil samples collected from soil borings drilled at the Site were analyzed for a variety of potential contaminants. The analytical parameter list for these samples included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), TPH as diesel, pesticides, and the metals aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium (total chromium and hexavalent chromium), cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc. This analytical parameter list appears to have been appropriate for the Site.

In general, the vertical extent of contamination appears to have been delineated. In some borings, however, field screening of samples collected at the bottom of the boring did not indicate the presence of any contaminants but relatively low concentrations of several analytical parameters were reported in the samples. Based on the available data, it appears likely that the low levels of soil contamination still present at the Site do not extend to the water table. Lateral extent of the soil contamination appears to have been established as well.

Table 2 presents the target analytical parameters detected in soil samples collected during the various investigations at the Site. For comparison purposes, the current Michigan Part 201 soil screening criteria for drinking water protection and groundwater-surface water interface protection are also shown on Table 2. The MDEQ has issued a closure determination for the UST portion of the Site but not for the remainder of the Site. All analytical results for portions of the Site not yet closed may be compared to applicable current Michigan Part 201 criteria, regardless of when the samples were collected. The majority of the sample analytical results that exceed the applicable Michigan Part 201 criteria are for various metals. A table presenting all the analytical results is on the CD attached to this report.

2.2.2 Extent of Groundwater Contamination

Several rounds of groundwater sampling have been completed at the site. Table 3 presents the target analytical parameters detected in groundwater samples collected during various sampling events at or related to the Site. For comparison purposes, the current Michigan Part 201 drinking water and groundwater-surface water interface (GSI) groundwater screening criteria are also shown on Table 3. Inspection of Table 3 shows that lead was detected in samples from all the monitoring wells in 1996 at concentrations that exceed one or both of the Michigan Part 201 criteria shown in Table 3. The wells were redeveloped and sampled in 1997 and the reported lead concentrations did not exceed the Michigan Part 201 criteria. As discussed in a previous report (Sverdrup, 1996), it appears that the 1996 lead results were the result of sediment in the wells and that the lead concentrations did not indicate the presence of dissolved lead concentrations in the groundwater at levels of concern. This hypothesis is consistent with the fact that lead has been reported in soil samples collected from across the site at concentrations that are likely naturally occurring. A table presenting all the analytical results is on the CD attached to this report.

Available groundwater monitoring results indicate that there are very few exceedences of the Michigan Part 201 drinking water and GSI criteria (Table 3). The majority of these exceedences were for lead in the 1996 sampling event. As discussed above, the elevated lead concentrations in the groundwater samples appears to have been related to the presence of significant amounts of sediment in the wells. As noted above, however, some of the monitoring wells at the Site may not be optimally located to determine if any contaminants have reached the groundwater from the former locations of USTs C-1, C-2, C-3, and B-1 or from the wastewater treatment lagoon.

In addition, there has been no evaluation by the USACE of what, if any, impact the operation of the Smithers water supply well north of the Missile Battery Area has had on groundwater flow and, potentially, contaminant transport at the Site. In light of the draft 2002 environmental assessment prepared due to Smithers' desire to expand their operations at the Site, an evaluation of the operation of the existing water supply well on groundwater flow and contaminant transport should also address operation of the proposed new well.

3.0 Risk Assessment Review

This section presents the results of the review of the *"Final Remedial Investigation Report for the Former Air Force Airfield and BOMARC Missile Site Raco, Michigan"* prepared by IT Corp. (IT Corp., 1994). The review was focused on the technical assumptions, formulas, and conclusions presented in Section 6.0 of the IT Corp. report titled *"Baseline Risk Assessment and Environmental Assessment"*. This review was conducted at the request of the USDAFS.

The purpose of the review was to evaluate the adequacy of the technical assumptions, formulas and conclusions presented in the *"Baseline Risk Assessment and Environmental Assessment"* (BRAEA). Barr Engineering conducted a review of the following documents:

- *Final Remedial Investigation Report for the Former Air Force Airfield and BOMARC Missile Site Raco, Michigan* prepared by IT Corporation. August, 1994.
- Environmental Assessment. RACO Airbase Special Use Permit Modification Request. Draft, May 9, 2002. Prepared by Smithers Scientific Services Inc.
- Biological Evaluation. RACO Airbase Special Use Permit Modification Request. Draft, May 9, 2002. Prepared by Smithers Scientific Services Inc
- Final Supplemental Remedial Investigation Work Plan Former Air Force Airfield and BOMARC Missile Site RACO, Michigan. Prepared by Sverdrup Environmental Inc. April 1996.
- Final Report Contamination Evaluation Former BOMARC Missile Site Raco Michigan. Prepared by Envirodyne Engineers. July 1987.

The following discussion presents the results of Barr Engineering's review of the BRAEA and the overall conclusion of the review of the BRAEA

3.1 Review of the BRAEA

This section presents the results of Barr Engineering's review of the BRAEA.

3.1.1 Selection of Chemicals of Concern (COCs)

Review of the data show that chemicals detected in soil or groundwater were eliminated from further review based on one or more criteria including: a) frequency of detection; b) probable common laboratory contaminants not associated with the site; c) presence below Michigan Act 307 cleanup criteria. The selection/elimination process of chemicals of potential concern, as used by IT Corp., followed U.S. Environmental Protection Agency (EPA) guidance presented in the "Risk Assessment Guidance for Superfund" (RAGS). All chemicals eliminated for further analysis met one or more of the elimination criteria presented in RAGS. However, because of the potential for additive effects of the chemicals detected in the various media, elimination from further review based on Michigan Act 307 cleanup criteria does not represent the most conservative approach. An analysis was performed to assess the impact on total risk, associated with these chemicals in the various media.

3.1.1.1 Soil Pathway

3.1.1.1.1 Ingestion

The BRAEA assumed that exposure to surface soils could occur during recreational activities. Under this exposure scenario, exposure to surface soils occurs generally in the upper 6 inches of the soil column. No analytical data for this interval were available. Additional exposure to chemicals at greater depth could occur to site workers through digging. It was assumed that an on-site worker (70 kg body weight) would ingest 50 mg of soil per day for 250 days per year over a 25-year period. This is a very conservative assumption since exposure to soil during winter months when the soil is frozen and/or snow covered would be minimal at the most. As a conservative measure the average concentration of chemicals detected in the upper 7 feet was calculated. For the recreational user child (16 kg average body weight) it was assumed that this individual would ingest 200 mg/soil per day during 50 visits to the site per year over a 5-year period. Again, this is a conservative assumption since it is highly unlikely that children of this age would visit the site at this frequency. The estimated potential cancer risks based on these exposure scenarios was $1x10^{-7}$ for the worker and child recreational user. The estimated total potential noncancer risks (assuming additivity of all chemicals) based on these exposure scenarios were 0.001 and 0.004, respectively. In summary, further evaluation of these chemicals indicate that the elimination of chemicals from quantitative risk analysis through the process as applied in the BRAEA does not have a significant impact on the total risk level.

3.1.1.1.2 Dermal Contact

The BRAEA did not consider the risk associated with exposure to chemicals in soil through dermal contact. An analysis was conducted to determine the impact on total risk associated with this exposure pathway. It was assumed that a site worker (70 kg body weight) would come into contact with surface soils for 175 days per year (warmer months of the year) with a total body area exposed of 4860 cm^2. A soil to skin adherence factor of 0.2 mg/cm^2 was assumed. An evaluation of this exposure pathway showed that the estimated risks ($2x10^{-8}$ cancer risk and a hazard index of 0.001) are well below regulatory levels of concern. It was further assumed that a child (16 kg average body weight) would visit the site (during recreational use) 50 times per year over a 5-year period, with a total body area exposed of 3495 cm^2. A soil to skin adherence factor of 1.0 mg/cm^2 was assumed. An evaluation of this exposure pathway showed that the estimated risks (2×10^{-8} cancer risk and a hazard index of 0.003) are well below regulatory levels of concern.

In summary, further evaluation of these chemicals and pathways indicate that the elimination of chemicals from quantitative risk analysis through the process as applied in the BRAEA and exclusion of the dermal exposure route does not have a significant impact on the total risk level. Detailed risk calculations are presented in Appendix F.

3.1.1.1.3 Inhalation

The BRAEA evaluated risk ($5x10^{-6}$ estimated cancer risk) associated with site soil particles released to air. Volatile and semivolatile compounds can be released to air from soil through volatilization; however, this exposure pathway was not evaluated in the BRAEA. Because ambient air monitoring data were not available, the BRAEA used the annual mean dust concentration for the United States to evaluate exposure and risk through the inhalation exposure pathway. This assumes that the origin of all of the dust is site soils. The BRAEA further used the maximum detected concentration of the contaminants as a starting point, regardless of whether this value came from a surface or subsurface sample. This approach and assumptions are overly conservative.

Exposure to dust in air associated with site soils occurs in general through wind erosion. The concentration in air can be calculated using a particulate emission factor (PEF). The PEF is a function of the mean concentration at the center of a square source, the fraction of vegetative cover, and the mean annual wind speed. A PEF value of $1.32x10^{-9}$ (EPA default value) was used in the additional analysis by Barr. Average chemical concentrations in the upper soil layer were used to calculate the chemical specific ambient air concentrations. The concentrations in air due to volatilization of volatile and semivolatile compounds were estimated using a chemical specific volatilization factor (VF). The VF is a function of chemical specific factors such as apparent diffusivity, diffusivity in air, Henry's law constant, diffusivity in water, soil water partition coefficient, soil organic carbon-water partition coefficient and other parameters such as exposure interval, dry soil bulk density, air filled soil porosity, total soil porosity, water filled soil porosity and soil particle density. An evaluation of the impact on total risk through inhalation of dust particles and volatile/semivolatile compounds released to air from the site showed that the overall cancer risk was $7x10^{-12}$ and the noncancer risk $7x10^{-7}$, well below the $1x10^{-6}$ acceptable cancer risk level, and the noncancer hazard index of 1 established by the EPA. This analysis shows that the approach taken in the BRAEA was extremely conservative. Detailed calculations are presented in Appendix F.

3.1.1.2 Groundwater pathway

The BRAEA indicates that groundwater may be used for crop irrigation. However, this pathway was not evaluated in the BRAEA. Plants may take up chemicals through the leaves (direct uptake and through deposition of chemicals in air on plant surfaces) and root system. Given the concentration of chemicals of concern (COCs) in air and groundwater, this pathway is not considered to add significantly to the overall risk.

3.1.1.3 Surface Water Pathway

The BRAEA did not consider the surface water pathway a viable exposure pathway. However the BRAEA considers impact on fish and wildlife to be logical. To be consistent, an evaluation of the risk associated with consumption of locally caught fish was conducted. To accomplish this it was very conservatively assumed that the concentrations of COCs in groundwater represent surface water conditions. Processes affecting concentrations of chemicals in surface water such as abiotic degradation (hydrolysis, photolysis and oxidation/reduction), and biotic degradation and biotransformation were not incorporated in this analysis. Uptake of chemicals in fish was estimated using chemical specific bio-concentration factors (BCFs) [bio-accumulation factors (BAFs)] obtained from EPA's Human Health Risk Assessment Protocol (EPA, 1998) by simply multiplying the chemical specific water concentration with its BCF/BAF. The chemical specific BCFs (BAFs) may not accurately represent site-specific water body conditions. It was further assumed that 100% of an individual's daily diet was from locally caught fish throughout the year. It is possible that fish may be frozen or preserved so that year round consumption of locally caught fish is possible. However, a diet consisting exclusively of locally caught fish for 30 years (assumed exposure period) is highly unlikely. Even with these very conservative assumptions, risk associated with fish consumption

($2x10^{-8}$ cancer risk and a hazard index of 0.02) was shown to be well below regulatory levels of concern.

3.1.1.4 Lead Exposure

In the BRAEA, risk associated with exposure to lead in soil and drinking water was evaluated using a simple generic equation, which is a function of the soil (water) ingestion rate, the exposure frequency, and duration and body weight. EPA's concern about exposure to lead is based on lead's subtle neurological effects in young children. Unlike the other chemicals evaluated in the BRAEA, toxicity criteria (such as RfC, cancer slope factors) for lead have not been developed by the EPA. It is EPA's position that current data are insufficient to determine an RfD or RfC for lead, which precludes EPA from developing a cancer risk value for lead. EPA requires the use of its Integrated Exposure Uptake Biokinetic (IEUBK) model to evaluate potential health effects from exposure to lead. This model is designed to model exposure to lead in air, water, soil, dust, diet, paint, and other sources to predict potential incremental blood lead levels in children 6 months to 7 years of age. The IEUBK model uses current information on the uptake of lead following exposure from different routes, the distribution of lead among various internal body compartments, and the excretion of lead, to predict incremental impacts of lead exposure on blood lead concentrations in young children. The predicted incremental blood lead concentration can then be compared with target blood lead concentrations associated with subtle neurological effects in children. Children, especially those of pre-school age, are the most sensitive group within the exposed population. Protection of this age group is assumed to also protect older individuals. As an additional analysis, the IEUBK model was used to predict potential incremental blood lead concentrations for children potentially exposed to lead in air and soil related to lead detected in soil and groundwater. To put the results of the IEUBK model output in perspective, the Centers for Disease Control (CDC) considers a blood lead level of 10 µg/dl in children as an action level triggering specific measures that CDC recommends should be taken (i.e., follow-up blood lead screening, counseling, etc.). The CDC recommends medical intervention for children with blood lead concentrations above 20 µg/dl. The EPA indicates a need for community-wide lead poisoning prevention activities when 5% of children in the community show blood lead concentrations above 10 µg/dl. The analysis showed that the predicted blood lead level for children in all age groups was below the CDC and EPA action levels.

The IEUBK model allows the user to input values for lead in air, soil, dust, drinking water, food items, and maternal lead in blood. Table 4 presents a summary of specific values used as input to the IEUBK model. Detailed data are provided in F.

3.1.1.4.1 Lead in Air

Ambient air concentrations of lead were based on the estimated concentration using the PEF approach:

- Outdoors: $1.4E^{-8}$ μg/m^3 (calculated)
- Indoors: $4.0E^{-9}$ μg/m^3 (30% of outdoor; EPA, 1994)

The indoor air lead concentration was assumed to be 30% of the outdoor concentration (EPA, 1986b). Lead particles in air were conservatively assumed to be in the respirable range.

Lead in House Dust

It was assumed that children would receive exposure to lead in dust exclusively at their primary residence. The concentration of lead in house dust is related to the concentrations of lead in air and in outdoor soil. The assumption was made that lead in soil was the major contributor to concentrations of lead in house dust (EPA, 1994). It was assumed that lead concentrations in house dust would be 70% of lead concentrations in soil. This represents the high-end value for all communities where significant lead emission sources were (or are) present (EPA, 1994). It was further assumed that the lead in air concentrations would contribute 100 μg/g of dust per μg/m^3 of lead in air. Lead intake through ingestion of fine lead-based paint particles in house dust is also possible and was accounted for by assuming that the concentration of lead in house dust due to outdoor soil was 70%.

IEUBK Model Run

The IEUBK model was applied to the locations of a hypothetical receptor present in the area of maximum annual lead air concentrations.

IEUBK Model Results

The IEUBK model was used to estimate the potential incremental blood lead level in children 6 months to 7 years of age potentially exposed to lead in air, soil, and house dust, associated with measured lead concentrations in soil and groundwater and calculated concentrations in air. Estimated blood lead levels from the IEUBK model are reported to one decimal place (see Appendix F for actual model output) and these results are presented in the following table:

Model Predicted Incremental Geometric Mean Blood Lead Concentrations

The following table shows that the predicted incremental geometric mean blood lead concentration for children ages 0.5 to 7 years for a receptor in a residential area ranges from 1.4 to 1.9 µg/dL with dietary uptake the major contributor.

Age Range	Incremental Geometric Mean Blood Lead Concentration* (µg/dL)
0.5 to 1 year	1.9
1 to 2 years	1.9
2 to 3 years	1.8
3 to 4 years	1.7
4 to 5 years	1.5
5 to 6 years	1.4
6 to 7 years	1.4

* Appendix F contains the output from the IEUBK model. The IEUBK model reports incremental blood lead concentrations to one decimal place.

As indicated in the following table, the proportion of children with blood lead levels greater than 10 µg/dL in the age range from 6 months to 12 months is 0.03% with dietary uptake contributing the most. The proportion of children with blood lead levels greater than 10 µg/dL in the age range from 0.5 months to 7 years is 0%.

Age Range	Proportion of Children Blood Lead Concentrations Greater Than 10 µg/dL (Percent)
0 to 12 months	0.03
0 to 84 months	0.0
USEPA level of concern: 5% of children with blood lead > 10 ug/dL	

These results indicate that potential exposure to lead associated with site soils are not expected to increase lead in blood above the existing background concentrations.

Regulatory Levels of Concern

The following information is presented to keep the IEUBK model results in perspective with regard to potential health risks from exposure to lead.

The Centers for Disease Control (CDC) considers a blood lead level of 10 µg/dl in children as an action level triggering specific measures that CDC recommends should be taken (i.e., follow-up blood lead screening, counseling, etc.). The CDC recommends medical intervention for children with blood lead concentrations above 20 μg/dl. The EPA indicates a need for community-wide lead poisoning prevention activities when 5% of children in the community show blood lead concentrations above 10 μg/dl.

3.1.2 Uncertainty

The risk estimates presented in the BRAEA and the additional analysis performed by Barr are subject to uncertainty from a variety of sources. These range from variability in exposure estimation, toxicity assessment, and risk characterization. It is important to emphasize that the estimated risks presented in the BRAEA and the additional analyses should not be interpreted as estimates of the probability of health risks. The risk estimates presented are conditional estimates of risk that depend on the assumptions involved in the assessments of exposure to and toxicity of the chemicals of potential concern. Uncertainties are due to the inherent uncertainties in the risk assessment process in general. Generally, uncertainties are related to measurement uncertainties and uncertainties that result from the lack of data. Measurement uncertainties are due to the variance associated with scientific measurements (i.e., soil and surface water analytical data, toxicity values) and reflect the accumulated variances around the individual measured values used to develop the estimate. Another source of uncertainty is due to the variability of important parameters and models and the effect on exposure and risk estimates. Variability is not related to data quality or knowledge of fundamental relationships in the risk assessment process, but refers to observed differences (i.e., residence time, exposure frequency, etc.) attributable to true heterogeneity (EPA, 1997a). Uncertainty due to the lack of data (such as the absence of information on the effects of a chemical on humans, the lack of information on the biological mechanisms etc.) is significant and is the greatest source of uncertainty in the risk estimate. For example the Unit Risk is an upper bound estimate of risk, where upper bound means that the true risk, which cannot be defined, is not likely to be higher but may be lower and may be close to zero in some cases (EPA, 1993a). Therefore, a simplified numerical representation of risk is incomplete and misleading (EPA, 1992a). The estimated risk presented in the BRAEA and this report most likely over than underestimate risk.

3.2 Summary and Conclusions of the BRAEA Review

The total risk ($5x10^{-7}$ cancer risk and a hazard index of 0.03), assuming that the same individual is exposed to site contaminants via all viable pathways, is below regulatory levels of concern. Exposure to lead is below regulatory action levels.

Review of the *"Final Remedial Investigation Report for the Former Air Force Airfield and BOMARC Missile Site Raco, Michigan"* prepared by IT Corporation (IT) and the additional analysis performed concludes that the risks associated with exposure to site related chemical contaminants via viable exposure pathways are well below regulatory levels of concern.

4.0 Record Documents Review

The purpose of this section of the report is to discuss the documentation in the record, gaps in the documentation, and the allegations made by Tri-COPc and Mr. James Traynor. In completing this section, records were reviewed from the USDAFS, the MDEQ offices in Newberry, Michigan, and the USACE offices in Louisville, Kentucky.

4.1 Findings

The format that will be used below is to present a general allegation and then present information from the record related to the allegation. At the end of that discussion, any data gaps will be identified and general conclusions regarding the significance of the data gaps will be presented. Supporting documentation is presented Appendix G and referred to below as "Exhibit x" where "x" is the Exhibit number in Appendix G.

1. **Summary of information re: The allegation that the USACE contractor constructed an illegal landfill at the site.**

   The potential for onsite management of inert debris was discussed in the record as early as August of 1984 (Exhibit 1).

   In March of 1985, the USACE requested approval of waste management guidelines by the MDNR (Exhibit 2). Approval of the onsite management of inert material was received in an April 2, 1985 correspondence from the MDNR to the USACE (Exhibit 3).

   The USACE explored including reinforced concrete within the definition of inert materials that could be managed onsite in a May 1985 conversation with a representative of the MDNR. In that conversation, the USACE reportedly received verbal approval to manage reinforced concrete onsite (Exhibits 4 and 5).

   The September 1985 document entitled "Findings of No Significant Impact" discusses how "some disposal of select demolition debris, as approved by the State, would occur at the site" (Exhibit 6).

   The pre-bid conference notes from July of 1987 discusses the area around the missile silos, saying, "take care as to strip off topsoil. Then debris from broken concrete slabs, and building materials that are considered to be uncontaminated. That is as defined in the specs clean, not painted, free of grease and oils, to be disposed of in this area. Also, you see there is some old concrete rubble and concrete pipe. We want that leveled inside the silos or as necessary to be disposed of outside in the onsite disposal area." (Exhibit 7)

Drawings for the demolition show 12 to 18 inches of demolition debris to be used as filler around the missile silos (Exhibit 8).

Based on this information, Barr has concluded:

a. The USACE intended the Contractor to place clean demolition debris in an onsite location.

b. The USACE had permission from the Michigan DNR to dispose certain types of clean demolition debris onsite.

c. The USACE intended that the area around the missile silos would be used for clean waste disposal.

2. Summary of information re: The allegation that asbestos-containing materials may have been disposed of onsite.

According to a May 18, 1988, document entitled "Status as of 18 May 1988," the asbestos abatement portion of the contract was completed on 6 May, 1988. As of that date, all asbestos had been removed from the project and properly disposed at a State of Michigan licensed landfill (Exhibit 9). The removal and disposal of asbestos is confirmed by daily log sheets from the subcontract (Exhibit 10) and the many load tickets to the Dafter landfill (Exhibit 11).

One day prior to the 6th of May (May 5, 1988), the daily logs show that the contractor was still stripping topsoil from the onsite disposal area (Exhibit 12) by the missile silos. This would have been at a time when the asbestos cleanup was finishing.

Based on the information presented above, it may be concluded that asbestos removal was completed prior to demolition and the onsite landfilling of permitted materials. Based on the record, it therefore seems unlikely that any asbestos-containing material was placed in the onsite disposal area.

3. **Summary of information re: The allegation that PCB-contaminated soils were disposed onsite.**

Although tested for on many occasions, no PCBs have been detected in any water, soil, or oil samples collected at the Site. Attached Exhibit 13 shows analysis of onsite samples for PCBs. With no PCBs detected in any of these samples, it may be concluded that PCBs are not an issue at the Site.

4. **Summary of information re: The allegation that pipes were buried in the waste disposal area:**

Disposal of pipes in the missile silo area is contrary to what was agreed to with the MDNR and to what is described in the specifications.

There were existing pipes in the area that were uncovered and reburied. Pipe associated with the tanks and with steam heating was uncovered during tank excavation and left in place (Exhibit 15).

On November 22, 1988, in Ltc. Philip Johnson's project log, he notes a conversation with Fred Paine in which Mr. Paine says "no loose steel or metal was buried"—he salvaged steel and allowed his employees to salvage copper and brass (Exhibits 15 and 16).

Since there was scrapping of other steel going on during the demolition, it is unclear what the motive would have been to bury pipe. It should be noted that a few small pieces of small diameter, uninsulated steel pipe were observed in the Missile Battery Area during the May 2002 site inspection. The source of the pipe pieces is unknown but it is plausible that they are left from the site demolition work.

Based on the information in the record, it is possible, but does not seem likely, that significant quantities of pipe were placed with the demolition debris as part of the onsite fill. If pipe were placed in the fill area, it would have been contrary to the requirements of both the MDNR and the USACE; however, it would likely not pose a significant risk to human health or the environment.

5. **Summary of information re: Tri-COPc questioning of the disposition of the tank contents.**

A total of 43,995 gallons of petroleum hydrocarbons were reported as present in the tanks at the Raco/BOMARC site (Exhibit 17 and 18).

The material reportedly included 31,450 gallons of tar-like residue (fuel oil No. 6 or Bunker C). 11,950 gallons of contaminated gasoline, and 595 gallons of miscellaneous hydrocarbons found within 14 of the underground fuel storage tanks (Exhibits 17 and 18).

The record contains several references to petroleum materials going to Johnson Oil Co. in Lake Nabagamon, Wisconsin (Exhibits 19 and 20).

The tank contents were removed beginning in August 1988 (Exhibit 21). This was after the time that Mr. Traynor had been injured and no longer worked at the site (Exhibit 22) and was after the time that the fill area around the missile silos was covered with fill (Exhibit 23). Therefore, Mr. Traynor could not be expected to have any first hand knowledge of the removal of the tank contents.

It was determined at the time that the materials were shipped that load tickets were all that was required to ship the material because it was a petroleum product that was being transported by a licensed hauler (Exhibit 24). The USACE did request copies of the load slips (Exhibit 25).

There appears to be a data gap in documenting the removal of a portion of the petroleum materials from the Site. Only some of the load slips for the petroleum materials were present in the record. This data gap may exist because applicable record keeping practices do not require retention of documents beyond 3 years. There may be other reasons for this data gap such as the misplacement of the records over the last 15 years.

In conclusion, the apparent data gap that appears in the load slips neither implies that the materials were properly or improperly managed, it is simply a data gap. In fact, if the USACE had not received all the load slips after having requested them from the contractor there would likely have been additional documentation of that in the record. The USACE should ask their contractor (if still in existence) to search their files to see if this data gap can be filled.

6. **Summary of information re: The allegation that a tank from the Raco/BOMARC site was used as a culvert and was coated with materials.**

It was the contractor's responsibility to clean and to dispose the tanks (Exhibit 26).

The contractor's daily logs show up to three individuals were involved in that tank cleaning on four days (Exhibit 27). It seems unlikely if four days were spent cleaning tanks, that a dirty tank would be removed from the Site and selected for use as a culvert and, even if this did happen, the USACE cannot be responsible for tracking the tanks after they have been cleaned and left the site.

7. **Summary of information re: Mr. Traynor's statement that approximately five gallons of a clear liquid spilled from a tank that he was directed to move.** While he was working at the Site, Mr. Traynor was told that any liquid in the missile silos was pumped out of them before they were filled. One of the tasks Mr. Traynor was directed to do was to move a tank containing some of the liquid removed from the missile silos. Mr. Traynor stated that approximately five gallons of a clear liquid spilled from the tank and that the liquid could have been water. He recalls that his supervisor was angry that the liquid was spilled. He also reported that a transformer had leaked and affected an area 10 to 15 ft. in diameter.

According to the specifications, the Contractor was responsible to clean up leaks and spills caused by the Contractor's activities (Exhibit 37). Subsequent clean up of contaminated soils was completed by the contractor after the time that Mr. Traynor was on the site. Thus, he could not be expected to have witnessed any of this cleanup. Additional investigations of soil contamination in the area of the missile silos were also completed. In 1996, the MDEQ closed the UST portion of the Site (Exhibit 28). There is no documentation in the record to indicate that liquids were not properly handled and that accidental spills were not cleaned up.

8. **Summary of information re: Record of Mr. Traynor's onsite work activities**

In a phone interview on May 7, 2002, Mr. Traynor said that he worked at the site during June of 1988. As described previously, there is a gap in the daily log from May 24 to June 20. Mr. Traynor does not appear on any log sheets earlier than May 24, 2002, but appears on log sheets from June 20, 1988 to July 11, 1988. (Exhibit 29)

Mr. Traynor said that he worked until he was injured on June 24, 1988. The daily logs for the site show that he worked about two weeks later than he remembered. The daily logs show that he was still working at the site on July 11, 1988. There is another gap in daily logs from July 11, 1988, to August 3, 1988. Mr. Traynor is recorded as present on July 11, 1988, but not August 3, 1988.

The daily logs show that he hauled fill from the borrow pit to the silo area from June 20 to July 6, 1988. (Reports 58 through 68) (Exhibit 29) Although Mr. Traynor was reported present on the 6th, the daily log is unclear regarding what he did on that day. On the 7th, the daily log reports that he leveled the dirt in the silo area. Reports 69 and 70 are missing from the record and on July 11, Mr. Traynor reportedly loaded trucks to the maintenance building area.

9. Summary of information re: Mr. Traynor's recollection that material was buried in a sand borrow pit in the woods.

In his telephone interview with Barr staff, Mr. Traynor stated that demolition material was buried in a sand borrow pit in the woods. He reiterated this during the May 2002 site inspection. Mr. Traynor did not state that he buried material in the borrow pit or that he saw material being buried. Mr. Traynor did say that while he worked at the Site he saw some trucks carrying material toward the borrow pit and returning from the borrow pit empty. Barr did not find any evidence to support this claim in the record. During the period when this was allegedly occurring, the daily logs show that Mr. Traynor was removing material from a borrow pit (Exhibit 29). It is unclear if the alleged burying of material took place in the same location as he was removing material for use as cover at the missile silo area.

It is not possible to conclude definitely if material was or was not buried in a borrow pit and what the nature of that material might have been. If it did occur and if it was unpainted concrete or other inert material that was covered with two feet of fill, it would meet the MDNR's disposal requirements. The MDNR did not limit the disposal of inert material to the missile silo area. If inert material was disposed in the borrow pit area it would not present a significant threat to human health and the environment.

The USACE should further investigate the borrow pit area(s) where Mr. Traynor believes material was buried. Surface geophysical methods may be a cost-effective way to identify any locations possibly requiring further, more invasive investigation. If more invasive investigation is required, a determination can be made concerning whether or not the fill corresponds to MDNR requirements for inert debris.

10. **Summary of information re: Other miscellaneous findings of the document review**

The Raco BOMARC site is part of what was formerly known as the Fort Bradley Military Reservation (Exhibit 30). Another part of the Reservation was the Camp Lucas Target Range. The location of the abandoned rifle range that was part of the Camp Lucas Target Range is also shown on Exhibit 30. The Camp Lucas Target Range included several types of ranges.

In 1983, an unexploded shell was found on the Raco Site (Exhibit 31). This presumably was a legacy from the Camp Lucas Target Range. This unexploded ordinance was properly managed.

4.2 Conclusions

The following conclusions may be reached based on information in the record:

- Inert debris was legally buried on the Site.
- There is no indication in the record that asbestos was disposed onsite. In fact, there is a record of off-site asbestos disposal in a properly licensed landfill.
- There is no indication of the presence of PCBs onsite. In fact, of all of the samples from the Site analyzed for PCBs, none have contained detectable concentrations of PCBs.
- Other than existing underground piping, there is no direct evidence in the record that piping was buried at the Site.
- There are records to indicate that petroleum materials went to Johnson Oil Company in Lake Nabagamon, Wisconsin. The records are not complete; however, given the time that has elapsed since the demolition, the USACE is not required to have complete records of this activity at this point in time.
- There is not any indication in the record that uncleaned tanks left the Site. In fact, the record contains evidence that tanks were cleaned before they left the Site.
- There is no indication in the record that spills and leaks were not cleaned up at the site. In fact, the record contains evidence that spills and leaks were cleaned up and the UST portion of the Site had been given a clean bill of health by the MDEQ.

- There is no indication in the record that there was a second on-site disposal area in an on-site borrow pit. During the period when a borrow pit was allegedly being used for disposal, the record shows Mr. Traynor hauling material from a borrow pit. If such disposal took place, it would have been in accordance with Michigan DNR requirements if: 1) it was "inert" material and 2) it was covered by a minimum of two feet of clean soil. However, Mr. Traynor's statements regarding possible burial of material include identification of fairly specific areas in the borrow pit. The USACE should further investigate these specific areas to verify or refute Mr. Traynor's statements regarding burial of material in these areas, and if materials were buried in these areas whether they meet the MDNR definition of inert materials.

- Although unexploded ordinance was discovered on the site in the early 1980s, it was removed and properly managed.

5.0 Conclusions and Recommendations

This section of the report presents the conclusions and recommendations developed from the review of project documents.

5.1 Site Characterization

Site characterization activities including soil borings, soil sampling, monitoring well installation, and groundwater sampling at the site have occurred in several phases. The goal of this effort was to define the geology at the site, determine the groundwater flow characteristics at the site, and identify the extent and characteristics of soil and groundwater contamination at the site. Investigation results described in the various project documents indicate that, in general, these goals were accomplished.

However, some data gaps/discrepancies in the site characterization were identified. Based on the available information, it appears that there are no monitoring wells immediately downgradient of the former locations of USTs C-1, C-2, C-3, and B-1 or the former wastewater treatment lagoon. Questions are likely to persist regarding the potential for groundwater contamination from these areas unless wells are installed directly downgradient and close to these potential contaminant source areas. Based on available information on groundwater flow direction in the water table aquifer beneath the Site, it is recommended that monitoring wells be installed in the following locations:

- Approximately 40 feet south of well MW015 – this location should be approximately 100 feet downgradient of the former locations of USTs C-, C-2, and C-3
- Approximately 20 feet east and 30 feet south of well MW05 – this locations should be immediately downgradient of the former location of UST B-1
- Approximately 100 feet north of well MW08 – this location should be immediately downgradient of the former wastewater treatment lagoon location

It should be noted that the need for these additional wells would be negated if it can be determined conclusively that the information reviewed is incorrect and that existing monitoring wells are actually downgradient of the locations identified above. After installation of these new wells, all the site monitoring wells should be sampled at least twice for the metals, VOCs, and SVOCs shown in Table 2. Groundwater elevations should be measured in all site monitoring wells prior to purging and sampling during each sampling event.

In addition to the additional well installation and groundwater sampling activities, it is recommended that an evaluation of what effect, if any, pumping of the existing and proposed Smithers' water supply wells to the north of the Missile Battery Area has/would have on groundwater flow and contaminant transport at the Site.

5.2 Baseline Risk Assessment

The total risk ($5x10^{-7}$ cancer risk and a hazard index of 0.03), assuming that the same individual is exposed to site contaminants via all viable pathways, is below regulatory levels of concern. Exposure to lead is below regulatory action levels.

Review of the *"Final Remedial Investigation Report for the Former Air Force Airfield and BOMARC Missile Site Raco, Michigan"* (IT Corp., 1994) and the additional analysis performed by Barr Engineering indicates that the risks associated with exposure to site related chemical contaminants via viable exposure pathways are well below regulatory levels of concern.

5.3 Record Documents Review

The following conclusions may be reached based on information in the record:

- Inert debris was legally buried on the Site.
- There is no indication in the record that asbestos was disposed onsite. In fact, there is a record of off-site asbestos disposal in a properly licensed landfill.
- There is no indication of the presence of PCBs onsite. In fact, of all of the samples from the Site analyzed for PCBs, none have contained detectable concentrations of PCBs.
- Other than existing underground piping, there is no direct evidence in the record that piping was buried at the Site.
- There are records to indicate that petroleum materials went to Johnson Oil Company. The records are not complete; however, given the time that has elapsed since the demolition, the USACE is not required to have complete records of this activity at this point in time.
- There is not any indication in the record that uncleaned tanks left the Site. In fact, the record contains evidence that tanks were cleaned before they left the Site.

- There is no indication in the record that spills and leaks were not cleaned up at the site. In fact, the record contains evidence that spills and leaks were cleaned up and the UST portion of the Site had been given a clean bill of health by the MDEQ.

- There is no indication in the record that there was a second on-site disposal area in an on-site borrow pit. During the period when a borrow pit was allegedly being used for disposal, the record shows Mr. Traynor hauling material from a borrow pit. If such disposal took place, it would have been in accordance with Michigan DNR requirements if: 1) it was "inert" material and 2) it was covered by a minimum of two feet of clean soil. . However, Mr. Traynor's statements regarding possible burial of material include identification of fairly specific areas in the borrow pit. The USACE should further investigate these specific areas to verify or refute Mr. Traynor's statements regarding burial of material in these areas, and if materials were buried in these areas whether they meet the MDNR definition of inert materials.

- Although unexploded ordinance was discovered on the site in the early 1980s, it was removed and properly managed.

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Table 1
Water Level Measurements
Former Air Force Airfield & BOMARC Missile Site
Raco, Michigan

Well	Date Well Installed	Measurement Date	Top of Casing Elevation (feet msl)	Depth to Water (feet)	Water Level Elevation (feet msl)
RG-1	06-Dec-86	07-Sep-90	907.08	48.85	858.23
		19-Sep-90		48.83	858.25
		25-Sep-90		48.94	858.14
		26-Sep-90		49.21	857.87
		17-Nov-90		49.15	857.93
		17-Apr-91		49.00	858.08
		16-Jul-91		47.84	859.24
		18-Jul-91		47.84	859.24
		20-Aug-91		47.91	859.17
RG-2	07-Dec-86	07-Sep-90	905.96	46.10	859.86
		19-Sep-90		46.06	859.90
		25-Sep-90		46.10	859.86
		26-Sep-90		48.40	857.56
		17-Nov-90		48.36	857.60
		17-Apr-91		48.50	857.46
		16-Jul-91		46.80	859.16
		18-Jul-91		46.79	859.17
		20-Aug-91		46.70	859.26
RG-3	09-Dec-86	07-Sep-90	906.56	48.88	857.68
		19-Sep-90		48.88	857.68
		24-Sep-90		49.84	856.72
		26-Sep-90		49.92	856.64
		17-Nov-90		49.90	856.66
		17-Apr-91		49.91	856.65
		16-Jul-91		48.54	858.02
		18-Jul-91		48.53	858.03
		20-Aug-91		48.63	857.93
RG-4	04-Dec-86	07-Sep-90	910.04	35.90	874.14
		19-Sep-90		35.83	874.21
		25-Sep-90		37.15	872.89
		26-Sep-90		37.30	872.74
		17-Nov-90		37.17	872.87
		17-Apr-91		37.35	872.69
		16-Jul-91		35.74	874.30
		18-Jul-91		35.74	874.30
		20-Aug-91		35.92	874.12

Source: IT Corp. (1994)

Table 1 (cont.)

Water Level Measurements
Former Air Force Airfield & BOMARC Missile Site
Raco, Michigan

Well	Date Well Installed	Measurement Date	Top of Casing Elevation (feet msl)	Depth to Water (feet)	Water Level Elevation (feet msl)
MW05	09-Sep-90	19-Sep-90	915.09	57.05	858.04
		24-Sep-90		57.10	857.99
		26-Sep-90		57.06	858.03
		17-Nov-90		57.11	857.98
		17-Apr-91		57.00	858.09
		16-Jul-91		55.76	859.33
		18-Jul-91		55.74	859.35
		20-Aug-91		55.79	859.30
MW06	10-Sep-90	18-Sep-90	908.96	51.37	857.59
		25-Sep-90		51.35	857.61
		26-Sep-90		51.30	857.66
		17-Nov-90		51.28	857.68
		17-Apr-91		51.40	857.56
		16-Jul-91		49.97	858.99
		18-Jul-91		49.74	859.22
		20-Aug-91		49.97	858.99
MW07	11-Sep-90	18-Sep-90	906.83	49.64	857.19
		25-Sep-90		49.58	857.25
		26-Sep-90		49.60	857.23
		17-Nov-90		49.61	857.22
		17-Apr-91		49.53	857.30
		16-Jul-91		48.25	858.58
		18-Jul-91		48.24	858.59
		20-Aug-91		48.34	858.49
MW08	22-Sep-90	23-Sep-90	905.59	48.90	856.69
		25-Sep-90		48.90	856.69
		26-Sep-90		48.95	856.64
		17-Nov-90		48.93	856.66
		17-Apr-91		48.96	856.63
		16-Jul-91		47.59	858.00
		18-Jul-91		47.58	858.01
		20-Aug-91		47.58	858.01
MW09	18-Sep-90	23-Sep-90	903.15	41.26	861.89
		25-Sep-90		41.26	861.89
		26-Sep-90		41.27	861.88
		17-Apr-91		41.18	861.97
		16-Jul-91		40.04	863.11
		18-Jul-91		40.02	863.13
		20-Aug-91		40.00	863.15

Source: IT Corp. (1994)

Table 1 (cont.)

Water Level Measurements
Former Air Force Airfield & BOMARC Missile Site
Raco, Michigan

Well	Date Well Installed	Measurement Date	Top of Casing Elevation (feet msl)	Depth to Water (feet)	Water Level Elevation (feet msl)
MW10	19-Sep-90	23-Sep-90	903.87	40.60	863.27
		25-Sep-90		40.61	863.26
		26-Sep-90		40.60	863.27
		17-Nov-90		40.49	863.38
		17-Apr-91		40.70	863.17
		16-Jul-91		39.22	864.65
		18-Jul-91		39.20	864.67
		20-Aug-91		39.33	864.54
MW11	20-Sep-90	23-Sep-90	911.79	38.90	872.89
		25-Sep-90		38.80	872.99
		26-Sep-90		38.95	872.84
		17-Nov-90		38.99	872.80
		17-Apr-91		39.27	872.52
		16-Jul-91		37.49	874.30
		18-Jul-91		37.49	874.30
		20-Aug-91		37.73	874.06
MW12	20-Sep-90	23-Sep-90	906.60	36.90	869.70
		25-Sep-90		37.20	869.40
		26-Sep-90		37.25	869.35
		17-Nov-90		37.30	869.30
		17-Apr-91		37.43	869.17
		16-Jul-91		36.13	870.47
		18-Jul-91		36.12	870.48
		20-Aug-91		36.18	870.42
MW13	29-Jun-91	16-Jul-91	911.66	37.06	874.60
		18-Jul-91		37.06	874.60
		20-Aug-91		37.30	874.36
MW14	30-Jun-91	16-Jul-91	909.54	51.80	857.74
		18-Jul-91		51.77	857.77
		20-Aug-91		51.75	857.79
MW15	02-Jul-91	16-Jul-91	906.86	47.90	858.96
		18-Jul-91		47.88	858.98
		20-Aug-91		47.85	859.01
Average Across the Site			908	45	863

Source. IT Corp. (1994)

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Michigan Part 201 Criteria Drinking Water Protection Criteria 2/11/02	Michigan Part 201 Criteria Groundwater Surface Water Interface Protection Criteria 2/11/02	P1 11/7/95	P2 11/7/95	P3 11/7/95	P3 3-4' 11/7/95	P4 11/7/95	P5 11/7/95	P6 11/7/95	P7 11/7/95	P8 11/7/95	P8 3-4' 11/7/95	P9 11/7/95	P10 11/7/95	P11 11/7/95
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	93	--	--	--	--	--	95	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	<330	<330	<330	770	<330	<330	<330	<330	<330	<260	<330	<330	<330
Anthracene	--	41000	ID	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<330	280	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	P1 11/7/95	P2 11/7/95	P3 11/7/95	P3 3-4' 11/7/95	P4 11/7/95	P5 11/7/95	P6 11/7/95	P7 11/7/95	P8 11/7/95	P8 3-4' 11/7/95	P9 11/7/95	P10 11/7/95	P11 11/7/95
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	<330	<330	<330	940	<330	<330	<330	<330	<330	<260	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	<1700	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<330	<270	<330	<330	<330	<330	<330	<260	<330	<330	<330
Pyrene	--	480000	ID	<330	<330	<330	770	<330	<330	<330	<330	<330	<260	<330	<330	<330
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<30	<24	<30	<30	<30	<30	<30	<24	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	P12 11/7/95	P13 11/7/95	P13 3-4' 11/7/95	P14 11/7/95	RS-1 1/14/87	RS-1 1/14/87 DUP	RS-1 1/14/87	RS-2 12/2/86	RS-2 12/2/86	RS-3 12/2/86	RS-3 12/2/86	RS-4 12/2/86	RS-4 12/2/86
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	13000000	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	95	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	1480	1150	<500	1440	--	<350	--	800	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	8400	8700	8600	7300	--	<5000	--	5900	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	<1000	<1000	440	<1000	--	<1000	--	<1000	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	4300	3100	2300	4900	--	3100	--	2100	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	<5000	<5000	<5000	12400	--	<5000	--	<5000	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	<200	<200	<1000	<200	--	<200	--	<200	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	<320	<320	<500	<320	--	<320	--	<320	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	P12 11/7/95	P13 11/7/95	P13 3-4' 11/7/95	P14 11/7/95	RS-1 1/14/87	RS-1 1/14/87 DUP	RS-1 1/14/87	RS-2 12/2/86	RS-2 12/2/86	RS-3 12/2/86	RS-3 12/2/86	RS-4 12/2/86	RS-4 12/2/86
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	<330	<330	<260	<330	--	--	--	--	--	--	--	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	8310000	8530000	--	62000	62000	36000	36000	28000	28000
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	<1.2	<1.2	<25	<1.2	--	<1.2	--	<1.2	--
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<7.9	<10	<0.5	<0.5	<25	<0.5	--	<0.5	--	<0.5	--
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	<0.6	<0.6	<25	<0.6	--	<0.6	--	<0.6	--
Chloroform	--	2000 W	3400 X	--	--	--	--	<0.8	<0.8	54	<0.8	--	<0.8	--	<0.8	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<7.9	<10	<0.4	<0.4	<25	<0.4	--	1.1 B	--	<0.4	--
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	130.6	28.3 B	6 B	42.8 B	--	36.2 B	--	36.2 B	--
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	<1.5	<1.5	<25	<1.5	--	<1.5	--	<1.5	--
Toluene	--	16000 I	2800 I	<10	<10	<7.9	<10	9.7 B	3.6 B	4	1.1 B	--	<1.0	--	<1.0	--
Trichloroethylene	--	100	4000 X	--	--	--	--	<1.3	<1.3	<25	<1.3	--	<1.3	--	<1.3	--
Xylenes total	--	5600 I	700 I	<30	<30	<24	<30	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	RS-5 12/2/86	RS-5 12/2/86	RS-6 12/2/86	RS-6 12/2/86	RS-7 12/2/86	RS-7 12/2/86	RS-8 1/14/87	RS-9 12/2/86	RS-9 12/2/86	SB01-101 9/8/90	SB01-102 9/8/90	SB01-103 9/8/90	SB01-104 9/8/90
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	560	--	470	--	640	--	1060	710	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	5800	--	8100	--	6300	--	6100	5000	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	<1000	--	<1000	--	<1000	--	<1000	<1000	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	2300	--	2800	--	2400	--	3000	2900	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	<5000	--	<5000	--	<5000	--	<5000	<5000	--	--	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	<200	--	<200	--	<200	--	<200	<200	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	<320	--	<320	--	<320	--	<320	<320	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria													
Location				RS-5	RS-5	RS-6	RS-6	RS-7	RS-7	RS-8	RS-9	RS-9	SB01-101	SB01-102	SB01-103	SB01-104
Date	2/11/02	2/11/02	2/11/02	12/2/86	12/2/86	12/2/86	12/2/86	12/2/86	12/2/86	1/14/87	12/2/86	12/2/86	9/8/90	9/8/90	9/8/90	9/8/90
Dup																
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	620 JB	1100 B	390 JB	460 JB
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	<670	52 J	<670	<670
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	40 J	71 J	43 J	39 J
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	69 J	<3350	<3350	<3350
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	<670	<670	<670	<670
TPHs																
Total Petroleum Hydrocarbons	--	--	--	40000	40000	46000	46000	264000	264000	63000	24000	24000	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND
VOCs																
1,1,1-Trichloroethane	--	4000	4000	<1.2	--	<1.2	--	<1.2	--	<1.2	<1.2	--	<5	<5	<5	<5
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	<10	<10	<10	<10
Benzene	--	100 I	4000 I,X	<0.5	--	<0.5	--	<0.5	--	<0.5	<0.5	--	<5	<5	<5	<5
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5
Chlorobenzene	--	2000 I	940 I	<0.6	--	<0.6	--	<0.6	--	<0.6	<0.6	--	<5	<5	<5	<5
Chloroform	--	2000 W	3400 X	<0.8	--	<0.8	--	<0.8	--	<0.8	<0.8	--	9	<5	<5	<5
Ethyl benzene	--	1500 I	360 I	<0.4	--	<0.4	--	8.4	--	0.6 B	1.0	--	<5	<5	<5	<5
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	<10	<10	<10	14
Methylene chloride	--	100	19000 X	24.7 B	--	21.3 B	--	50.9 B	--	25.5 B	19.5 B	--	18	8	<5	11
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	<5	32	<5	9
Tetrachloroethylene	--	100	900 X	<1.5	--	<1.5	--	<1.5	--	<1.5	<1.5	--	<5	<5	<5	<5
Toluene	--	16000 I	2800 I	<1.0	--	<1.0	--	2.4	--	<1.0	<1.0	--	<5	<5	<5	<5
Trichloroethylene	--	100	4000 X	<1.3	--	<1.3	--	<1.3	--	<1.3	<1.3	--	<5	<5	<5	<5
Xylenes total	--	5600 I	700 I	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB01-105 9/8/90	SB02-101 9/8/90	SB02-102 9/8/90	SB02-103 9/8/90	SB02-104 9/8/90	SB02-105 9/8/90	SB03-101 9/7/90	SB03-102 9/7/90	SB03-102 9/7/90 DUP	SB03-103 9/7/90	SB03-104 9/7/90	SB03-105 9/7/90	SB04-101 9/7/90
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Anthracene	--	41000	ID	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Benzo(a)anthracene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Benzo(a)pyrene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<670	<670	<670	<670	35 J	<670	--	--	--	--	--	--	<670
Benzo(g,h,i)perylene	--	NLL	NLL	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<670	<670	<670	<670	43 J	<670	--	--	--	--	--	--	<670

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	SB01-105 9/8/90	SB02-101 9/8/90	SB02-102 9/8/90	SB02-103 9/8/90	SB02-104 9/8/90	SB02-105 9/8/90	SB03-101 9/7/90	SB03-102 9/7/90	SB03-102 9/7/90 DUP	SB03-103 9/7/90	SB03-104 9/7/90	SB03-105 9/7/90	SB04-101 9/7/90
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	30 JB	220 JB	330 JB	240 JB	320 JB	110 JB	--	--	--	--	--	--	280 JB
Butyl benzyl phthalate	--	310000 C	26000 X	<670	<670	<670	<670	<670	61 J	--	--	--	--	--	--	38 J
Chrysene	--	NLL Q	NLL Q	<670	<670	<670	<670	29 JB	<670	--	--	--	--	--	--	<670
Di-n-butyl phthalate	--	760000 C	11000	<670	30 J	<670	<670	<670	42 J	--	--	--	--	--	--	33 J
Fluoranthene	--	730000	5500	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
Pentachlorophenol	--	22	G,X	78 J	<3350	<3350	<3350	<3350	<3350	--	--	--	--	--	--	<3350
Phenanthrene	--	56000	5300	<670	<670	<670	<670	<670	11 J	--	--	--	--	--	--	<670
Pyrene	--	480000	ID	<670	<670	<670	<670	<670	<670	--	--	--	--	--	--	<670
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	79000	<25000	42000	42000	33000	42000	--
TPH as Diesel	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	<10000
VOCs																
1,1,1-Trichloroethane	--	4000	4000	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	10
Acetone	--	15000 I	34000 I	27	<10	<10	27	<10	<10	--	--	--	--	--	--	8 J
Benzene	--	100 I	4000 I,X	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Carbon disulfide	--	16000 I,R	ID I,R	<5	<5	<5	<5	15	<5	--	--	--	--	--	--	<5
Chlorobenzene	--	2000 I	940 I	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Chloroform	--	2000 W	3400 X	<5	<5	<5	<5	<5	27	--	--	--	--	--	--	<5
Ethyl benzene	--	1500 I	360 I	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Methyl ethyl ketone	--	260000 I	44000 I	<10	<10	83	<10	<10	27	--	--	--	--	--	--	180 B
Methylene chloride	--	100	19000 X	9	21	16	13	<5	22	--	--	--	--	--	--	27
Styrene	--	2700	2200	<5	<5	30	<5	<5	10	--	--	--	--	--	--	14 B
Tetrachloroethylene	--	100	900 X	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Toluene	--	16000 I	2800 I	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Trichloroethylene	--	100	4000 X	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Xylenes total	--	5600 I	700 I	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB04-102 9/7/90	SB04-103 9/7/90	SB04-103 9/7/90 DUP	SB04-104 9/7/90	SB04-104 9/7/90 DUP	SB04-105 9/7/90	SB04-107 9/7/90	SB05-107 9/7/90	SB05-108 9/7/90	SB05-109 9/7/90	SB06-101 9/7/90	SB06-102 9/7/90	SB06-103 9/7/90
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	862000	724000	552000
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	<270	410 B	<260
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--	190 B	160 B	130 B
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--	8300 B	5700 B	4300
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	<530	<560	<520
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	173000 B	159000 B	95900
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	1100	4300	720
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	1000 B	<670	<630
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	694000	663000	478000
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--	840	650	1700
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	201000 B	181000 B	139000
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	30700 *N	19500 *N	10800 *N
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	<30	<30	**200**
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	<2000	<2100	<2000
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	<96700	<102000	<95300
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--	<50	60	<50
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	19200 B	8400 B	<3600
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	<100	100	90
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	1400 B	2000 B	<940
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	4000	2500	1800
SVOCs																
Acenaphthene	--	300000	4400	<670	<670	<670	<670	<670	<3350	<666	<670	<670	<670	<666	<666	<666
Anthracene	--	41000	ID	<670	<670	<670	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666
Benzo(a)anthracene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666
Benzo(a)pyrene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	<666	<670	31 J	<670	<666	<666	<666
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	<666	<670	45 J	<670	<666	<666	<666
Benzo(g,h,i)perylene	--	NLL	NLL	<670	<670	<670	<670	<670		<666	<670	<670	<670	<666	<666	<666
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<670	<670	<670	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	SB04-102 9/7/90	SB04-103 9/7/90	SB04-103 9/7/90 DUP	SB04-104 9/7/90	SB04-104 9/7/90 DUP	SB04-105 9/7/90	SB04-107 9/7/90	SB05-107 9/7/90	SB05-108 9/7/90	SB05-109 9/7/90	SB06-101 9/7/90	SB06-102 9/7/90	SB06-103 9/7/90
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	380 JB	66 JB	180 J,B	<670	160 J,B	53 JB	<666	270 JB	530 JB	71000 B	30 JB	140 JB	150 JB
Butyl benzyl phthalate	--	310000 C	26000 X	41 J	39 J	51 J	<670	55 J	<1340	<666	<670	<670	<670	<666	<666	<666
Chrysene	--	NLL Q	NLL Q	<670	<670	27 J	<670	13 J	<670	<666	<670	<670	<670	<666	<666	<666
Di-n-butyl phthalate	--	760000 C	11000	<670	<670	44 J	<670	47 J	<670	<666	<670	53 J	31 J	25 J	<666	<666
Fluoranthene	--	730000	5500	<670	<670	<670	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666
Pentachlorophenol	--	22	G,X	<3350	<3350	<3350	<3350	<3350	<670	<3330	<3350	<3350	<3350	<3330	<3330	<3330
Phenanthrene	--	56000	5300	<670	<670	22 J	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666
Pyrene	--	480000	ID	<670	<670	26 J	<670	<670	<670	<666	<670	<670	<670	<666	<666	<666
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	--	--	--
VOCs																
1,1,1-Trichloroethane	--	4000	4000	<5	<5	<5	<5	<5	14	<5	--	--	--	<5	<5	<5
Acetone	--	15000 I	34000 I	<10	<10	61	70 B	21	<10	10 B	--	--	--	<10	10 B	13 B
Benzene	--	100 I	4000 I,X	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Carbon disulfide	--	16000 I,R	ID I,R	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Chlorobenzene	--	2000 I	940 I	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Chloroform	--	2000 W	3400 X	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Ethyl benzene	--	1500 I	360 I	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Methyl ethyl ketone	--	260000 I	44000 I	<10	49 B	<10	<10	66 B	<10	<10	--	--	--	<10	<10	<10
Methylene chloride	--	100	19000 X	72	13 B	35	<5	34	25	39	--	--	--	150	27	28
Styrene	--	2700	2200	<5	47 B	<5	<5	7 B	28 B	<5	--	--	--	<5	<5	<5
Tetrachloroethylene	--	100	900 X	<5	<5	<5	<5	<5	4 J	<5	--	--	--	<5	<5	<5
Toluene	--	16000 I	2800 I	<5	<5	2 J	<5	<5	<5	<5	--	--	--	5	<5	<5
Trichloroethylene	--	100	4000 X	<5	<5	<5	<5	<5	<5	<5	--	--	--	<5	<5	<5
Xylenes total	--	5600 I	700 I	<5	<5	<5	<5	<5	<5	<5	--	--	--	4 J	<5	<5

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	SB06-104 9/7/90	SB06-105 9/7/90	SB06-106 9/7/90	SB07-101 9/9/90	SB07-101 9/10/90	SB07-102 9/9/90	SB07-102 9/10/90	SB07-103 9/9/90	SB07-103 9/10/90	SB07-104 9/9/90	SB07-104 9/10/90	SB07-105 9/9/90	SB07-105 9/9/90
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	569000	564000	568000	782000	--	582000	--	671000	--	414000	--	354000	670000
Antimony	--	500 M	94000	<260	<260	<270	320 W	--	320 W	--	320 W	--	310 W	--	320 W	<330
Arsenic	5800	23000	70000 X	150 B	130 B	150 B	190 B	--	<110	--	<120	--	<100	--	<110	<120
Barium	75000 B	1300000 B	1200000 B,G,X	6300	7900	9600	39000 B	--	3700 B	--	5200 B	--	5500 B	--	620 B	9500 B
Cadmium	1200 B	6000 B	7400 GX B	<520	<530	<550	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	180000	229000	302000	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	1600	2400	1100	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	860	840	930	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	698000	736000	684000	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	19000	700	690	--	--	--	--	--	--	--	--	--	--
Magnesium	--	8000000 B	NA B	177000	181000	180000	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	17600 *N	16200 *N	20300 *N	15100	--	12100	--	16500	--	16000	--	17100	25800
Mercury	130 B,Z	1700 B,Z	NA B,Z	<30	<30	<30	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	<2000	<2000	<2100	<2000	--	<2000	--	<2000	--	<2000	--	<2000	<2100
Potassium	--	--	--	<94700	<96200	<99800	<96300	--	<96500	--	<96500	--	<94300	--	<95700	<125000
Selenium	410 B	4000 B	400 B	50 B	50	<50	110 W	--	110 W	--	110 W	--	100 W	--	110 W	<110
Sodium	--	2500000	NA	13600	8800	8100	29200 B	--	18300 B	--	25600 B	--	24300 B	--	27200 B	34600 B
Thallium	--	2300 B	4200 B,X	<90	<100	<100	<530	--	<530	--	<530	--	<520	--	<530	<550
Vanadium	--	72000	190000	1200	1400	1100	2000 B	--	2700 B	--	2200 B	--	2100 B	--	2200 B	2600 B
Zinc	47000 B	2400000 B	380000 B, G	2000	2600	1900	5200	--	6800	--	9100	--	940 B	--	<950	2700
SVOCs																
Acenaphthene	--	300000	4400	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Anthracene	--	41000	ID	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location Date Dup	**Statewide Default Background Levels 2/11/02**	**Drinking Water Protection Criteria 2/11/02**	**Groundwater Surface Water Interface Protection Criteria 2/11/02**	**SB06-104 9/7/90**	**SB06-105 9/7/90**	**SB06-106 9/7/90**	**SB07-101 9/9/90**	**SB07-101 9/10/90**	**SB07-102 9/9/90**	**SB07-102 9/10/90**	**SB07-103 9/9/90**	**SB07-103 9/10/90**	**SB07-104 9/9/90**	**SB07-104 9/10/90**	**SB07-105 9/9/90**	**SB07-105 9/9/90**
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	110 JB	140 JB	220 JB	--	1800 B	--	190 JB	--	67 JB	--	150 JB	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	52 J	<666	35 J	--	<670	--	<670	--	<670	--	<670	--	--
Chrysene	--	NLL Q	NLL Q	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Di-n-butyl phthalate	--	760000 C	11000	48 J	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Fluoranthene	--	730000	5500	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Pentachlorophenol	--	22	G,X	<3330	<3330	<3330	--	<3350	--	<3350	--	<3350	--	<3350	--	--
Phenanthrene	--	56000	5300	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
Pyrene	--	480000	ID	<666	<666	<666	--	<670	--	<670	--	<670	--	<670	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	<10000	--	<10000	--	<10000	--	<10000	--	--
VOCs																
1,1,1-Trichloroethane	--	4000	4000	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Acetone	--	15000 I	34000 I	29 B	65 B	14 B	--	11 B	--	<10	--	4 JB	--	<10	--	--
Benzene	--	100 I	4000 I,X	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Carbon disulfide	--	16000 I,R	ID I,R	<5	<5	<5	--	<5	--	<5	--	5	--	<5	--	--
Chlorobenzene	--	2000 I	940 I	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Chloroform	--	2000 W	3400 X	<5	2 J	2 J	--	<5	--	<5	--	<5	--	<5	--	--
Ethyl benzene	--	1500 I	360 I	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Methyl ethyl ketone	--	260000 I	44000 I	<10	<10	<10	--	<10	--	<10	--	<10	--	<10	--	--
Methylene chloride	--	100	19000 X	46	29	27	--	76	--	86	--	7	--	95	--	--
Styrene	--	2700	2200	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Tetrachloroethylene	--	100	900 X	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Toluene	--	16000 I	2800 I	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Trichloroethylene	--	100	4000 X	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--
Xylenes total	--	5600 I	700 I	<5	<5	<5	--	<5	--	<5	--	<5	--	<5	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB07-105 9/9/90 DUP	SB07-105 9/10/90	SB07-105 9/10/90 DUP	SB07-106 9/10/90	SB08-101 9/22/90	SB08-102 9/22/90	SB08-103 9/22/90	SB08-104 9/22/90	SB08-104 9/22/90 DUP	SB08-105 9/22/90	SB08-106 9/22/90	SB08-107 9/22/90	SB08-108 9/22/90
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	571000	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	310 W	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	<120	--	--	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	6800 B	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	22500	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	<2000	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	<95000	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	100 W	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	22500 B	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	<520	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	1900 B	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	1700 B	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	--	<670	<670	<670	<330	1500	400	<330	<330	<330	<330	<330	<330
Anthracene	--	41000	ID	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB07-105 9/9/90 DUP	SB07-105 9/10/90	SB07-105 9/10/90 DUP	SB07-106 9/10/90	SB08-101 9/22/90	SB08-102 9/22/90	SB08-103 9/22/90	SB08-104 9/22/90	SB08-104 9/22/90 DUP	SB08-105 9/22/90	SB08-106 9/22/90	SB08-107 9/22/90	SB08-108 9/22/90
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	230 JB	180 JB	160 JB	86 JB	480 B	<330	86 JB	97 JB	230 JB	350 B	<330	114 JB
Butyl benzyl phthalate	--	310000 C	26000 X	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Di-n-butyl phthalate	--	760000 C	11000	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluoranthene	--	730000	5500	--	<670	<670	<670	<330	100 J	<330	<330	<330	<330	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	<3350	<3350	<3350	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650
Phenanthrene	--	56000	5300	--	<670	<670	<670	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyrene	--	480000	ID	--	<670	<670	<670	<330	300 J	130 J	<330	<330	<330	<330	<330	<330
<u>TPHs</u>																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	<10000	<10000	<10000	<10000	65000	15000	15000	<10000	<10000	<10000	<10000	<10000
<u>VOCs</u>																
1,1,1-Trichloroethane	--	4000	4000	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	--	8 JB	12 B	<10	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	16000 I,R	ID I,R	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Methyl ethyl ketone	--	260000 I	44000 I	--	<10	<10	<10	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	59	89	84	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Trichloroethylene	--	100	4000 X	--	<5	<5	<5	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	<5	<5	<5	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	SB08-109	SB09-101	SB09-102	SB10-101	SB10-102	SB10-103	SB11-101	SB11-102	SB11-102	SB11-103	SB12-101	SB12-102	SB12-103
Date	2/11/02	2/11/02	2/11/02	9/22/90	6/26/91	6/26/91	6/26/91	6/26/91	6/26/91	6/27/91	6/27/91	6/27/91	6/27/91	6/28/91	6/28/91	6/28/91
Dup												DUP				
Exceedance Key	Bold	Underline	Box													
General Parameters																
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	97.0	82.0	85.0	96.0	85.0	--	--	--	--	--	--	--
Metals																
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Acenaphthene	--	300000	4400	<330	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	<330	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria															
Location	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	SB08-109	SB09-101	SB09-102	SB10-101	SB10-102	SB10-103	SB11-101	SB11-102	SB11-102	SB11-103	SB12-101	SB12-102	SB12-103
Date	2/11/02	2/11/02	2/11/02	9/22/90	6/26/91	6/26/91	6/26/91	6/26/91	6/26/91	6/27/91	6/27/91	6/27/91	6/27/91	6/28/91	6/28/91	6/28/91
Dup												DUP				
Exceedance Key	Bold	Underline	Box													
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	1600 B	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	<330	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	<330	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	<330	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	<330	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	<1650	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	<330	--	--	--	--	--	--	--	--	--	--	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	<10000	1900	<2000	<1900	1900	<1900	<10000	<10000	<10000	<10000	<10000	<10000	<10000
VOCs																
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location **Date** **Dup**	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB13-101 6/30/91	SB13-102 6/30/91	SB13-103 6/30/91	SB13-104 6/30/91	SB13-105 6/30/91	SB13-106 6/30/91	SB13-107 6/30/91	SB13-107 6/30/91 DUP	SB13-108 6/30/91	SB13-109 6/30/91	SB14-101 7/1/91	SB14-102 7/1/91
Exceedance Key	Bold	Underline	Box												
General Parameters															
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum	6900000 B	1000 B	NA B	865000 N	972000 N	788000 N	487000 N	574000 N	721000 N	615000 N	808000 N	570000 N	661000 N	1100000 N	866000 N
Antimony	--	500 M	94000	<3100	<3400	<3200	<3200	<3200	<3200	<3200	<3300	<3200	<3500	<3200	<3100
Arsenic	5800	23000	70000 X	<210	<220	210 W	<210	<210	<210	<210	<220	210 W	230 W	210 W	210 W
Barium	75000 B	1300000 B	1200000 B,G,X	4100 B	8400 B	7700 B	4700 B	5400 B	5500 B	5800 B	7200 B	4900 B	6400 B	4200 B	5000 B
Cadmium	1200 B	6000 B	7400 GX B	<520	<560	<530	<530	<530	<530	<530	<550	<530	<580	<530	<520
Calcium	--	--	--	191000 BE	337000 BE	324000 BE	215000 BE	235000 BE	301000 BE	310000 BE	331000 BE	247000 BE	395000 BE	319000 BE	247000 BE
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	2200 *	3500 *	21100 *	4400 *	2800 *	3000 *	4400 *	15600 *	10900 *	5500 *	2600 *	2500 *
Copper	32000 B	5800000 B	170000 B,G	2500 B	1900 B	2100 B	1800 B	1500 B	1800 B	2400 B	2200 B	1700 B	1700 B	1700 B	2200 B
Iron	12000000 B	6000 B	NA B	1440000 *	2110000 *	2960000 *	1470000 *	1440000 *	2000000 *	1630000 *	1990000 *	1400000 *	1950000 *	2730000 *	2630000 *
Lead	21000 B	700000 B	7900000 B,G,M,X	400	350	590	500	470	490	360	800	440	570	740	550
Magnesium	--	8000000 B	NA B	251000 B	255000 B	251000 B	174000 B	204000 B	253000 B	195000 B	264000 B	240000 B	233000 B	252000 B	253000 B
Manganese	440000 B	1000 B	130000 B,G, X	17500	22400	26300	17400	23200	22600	19700	24100	16900	19900	27600	22400
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	<2100	<2200	<2100	<2100	<2100	<2100	<2100	4300 B	<2100	2900 B	<2100	<2100
Potassium	--	--	--	106000 B	130000 B	127000 B	<106000	<106000	127000 B	142000 B	154000 B	<106000	127000 B	127000 B	<104000
Selenium	410 B	4000 B	400 B	210 W	<220	<210	<210	<210	<210	<210	<220	<210	<230	<210	210 W
Sodium	--	2500000	NA	30100 B	36900 B	37000 B	30200 B	31400 B	35500 B	35900 B	42100 B	39600 B	41800 B	31600 B	33800 B
Thallium	--	2300 B	4200 B,X	<4200	<4500	<4200	<4200	<4200	<4300	<4200	<4400	<4300	<4600	<4300	<4200
Vanadium	--	72000	190000	2800 B	3400 B	5400	2800 B	2500 B	3600 B	3000 B	3500 B	2500 B	3700 B	5500	5200
Zinc	47000 B	2400000 B	380000 B, G	5000	3700	3300	4000	3900	3900	4000	3600	3500	3400	6300	6500
SVOCs															
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB13-101 6/30/91	SB13-102 6/30/91	SB13-103 6/30/91	SB13-104 6/30/91	SB13-105 6/30/91	SB13-106 6/30/91	SB13-107 6/30/91	SB13-107 6/30/91 DUP	SB13-108 6/30/91	SB13-109 6/30/91	SB14-101 7/1/91	SB14-102 7/1/91
Exceedance Key	Bold	Underline	Box												
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--	--	--
<u>TPHs</u>															
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>VOCs</u>															
1,1,1-Trichloroethane	--	4000	4000	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Acetone	--	15000 I	34000 I	<10	<11	<10	<10	<11	<10	<11	--	<10	<12	<11	<11
Benzene	--	100 I	4000 I,X	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Carbon disulfide	--	16000 I,R	ID I,R	<10	<11	<10	<10	<11	<10	<11	--	<10	<12	<11	<11
Chlorobenzene	--	2000 I	940 I	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Chloroform	--	2000 W	3400 X	<5	<6	7	6	<5	<5	<5	--	<5	<6	<5	<5
Ethyl benzene	--	1500 I	360 I	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Methyl ethyl ketone	--	260000 I	44000 I	<10	<11	<10	<10	<11	<10	<11	--	<10	<12	<11	<11
Methylene chloride	--	100	19000 X	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Styrene	--	2700	2200	<10	<11	<10	<10	<11	<10	<11	--	<10	<12	<11	<11
Tetrachloroethylene	--	100	900 X	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Toluene	--	16000 I	2800 I	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Trichloroethylene	--	100	4000 X	<5	<6	<5	<5	<5	<5	<5	--	<5	<6	<5	<5
Xylenes total	--	5600 I	700 I	<10	<11	<10	<10	<11	<10	<11	--	<10	<12	<11	<11

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB14-103 7/1/91	SB14-104 7/1/91	SB14-105 7/1/91	SB14-106 7/1/91	SB14-106 7/1/91 DUP	SB14-107 7/1/91	SB14-108 7/1/91	SB14-109 7/1/91	SB15-101 7/1/91	SB15-102 7/1/91	SB15-103 7/1/91	SB15-104 7/1/91
Exceedance Key	Bold	Underline	Box												
General Parameters															
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum	6900000 B	1000 B	NA B	744000 N	810000 N	618000 N	634000 N	462000	606000	733000	579000	1000000	680000	630000	530000
Antimony	--	500 M	94000	<3200	<3200	<3200	<3300	<3200	<3200	<3200	<3500	<20000	<20000	<20000	<20000
Arsenic	5800	23000	70000 X	<210	<210	<210	220 W	220 W	<210	<220	<230	300	200	<200	<200
Barium	75000 B	1300000 B	1200000 B,G,X	8900 B	10000 B	4200 B	8500 B	5400 B	6100 B	7400 B	5400 B	4900	3600	5800	7900
Cadmium	1200 B	6000 B	7400 GX B	<530	<530	<530	<560	<540	<530	<540	<580	<400	<400	<400	<400
Calcium	--	--	--	216000 BE	286000 BE	244000 BE	258000 BE	231000 B	247000 B	334000 B	269000 B	220000	160000	150000	170000
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	24500 *	27300 *	3000 *	5300 *	2100	25200	8000	3100	1500	<2000	<2000	<2000
Copper	32000 B	5800000 B	170000 B,G	2500 B	2500 B	2100 B	2000 B	2100 B	2100 B	2200 B	2100 B	1300	<2000	<2000	<1000
Iron	12000000 B	6000 B	NA B	1850000 *	2260000 *	1530000 *	1300000 *	982000 *	1560000 *	1830000 *	1430000 *	1500000	1100000	1000000	890000
Lead	21000 B	700000 B	7900000 B,G,M,X	790	440	590 W	620	340	490	450	640	780	620	640	360
Magnesium	--	8000000 B	NA B	211000 B	216000 B	255000 B	227000 B	176000 B	204000 B	246000 B	206000 B	290000	210000	210000	130000
Manganese	440000 B	1000 B	130000 B,G, X	20700	25800	28600	17300	15000	18600	22800	17700	21000	20000	23000	19000
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	<50	<50	<50	<50
Nickel	20000 B	100000 B	180000 B, G	8800	7600	<2100	<2200	<2200	4300	<2200	<2300	<4000	<4000	<400	<4000
Potassium	--	--	--	147000 B	162000 B	<107000	<112000	<108000	136000 B	152000 B	<116000	<200000	<200000	<200000	<200000
Selenium	410 B	4000 B	400 B	<210	<210	<210	<220	<220	<210	<220	<230	<200	<200	<200	<200
Sodium	--	2500000	NA	40400 B	48300 B	31600 B	36100 B	31600 B	46900 B	44600 B	34900 B	47000	43000	46000	40000
Thallium	--	2300 B	4200 B,X	<4300	<4200	<4300	<4500	<4300	<4200	<4300	<4600	<50000	<50000	<50000	<50000
Vanadium	--	72000	190000	3300 B	3700 B	2800 B	1900 B	1700 B	2600 B	3300 B	2700 B	3000	2300	<2000	2200
Zinc	47000 B	2400000 B	380000 B, G	3900	3500	4900	3500	4400	3700	4100	3800	3600	2200	2100	2100
SVOCs															
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location **Date** **Dup**	**Statewide Default Background Levels** **2/11/02**	**Drinking Water Protection Criteria** **2/11/02**	**Groundwater Surface Water Interface Protection Criteria** **2/11/02**	**SB14-103** 7/1/91	**SB14-104** 7/1/91	**SB14-105** 7/1/91	**SB14-106** 7/1/91	**SB14-106** 7/1/91 DUP	**SB14-107** 7/1/91	**SB14-108** 7/1/91	**SB14-109** 7/1/91	**SB15-101** 7/1/91	**SB15-102** 7/1/91	**SB15-103** 7/1/91	**SB15-104** 7/1/91
Exceedance Key	Bold	Underline	Box												
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--	--	--
TPHs															
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs															
1,1,1-Trichloroethane	--	4000	4000	<5	<5	<5	<5	--	<5	<5	<6	<5	2 J	<5	<5
Acetone	--	15000 I	34000 I	<11	<10	<11	<10	--	<10	<11	<12	46	13	14	44
Benzene	--	100 I	4000 I,X	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Carbon disulfide	--	16000 I,R	ID I,R	<11	<10	<11	<10	--	<10	<11	<12	<5	<5	<5	<5
Chlorobenzene	--	2000 I	940 I	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Chloroform	--	2000 W	3400 X	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Ethyl benzene	--	1500 I	360 I	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Methyl ethyl ketone	--	260000 I	44000 I	<11	<10	<11	<10	--	<10	<11	<12	<10	<10	<10	<10
Methylene chloride	--	100	19000 X	<5	<5	<5	<5	--	<5	<5	<6	150 B	32 B	32 B	160 B
Styrene	--	2700	2200	<11	<10	<11	<10	--	<10	<11	<12	<5	<5	<5	<5
Tetrachloroethylene	--	100	900 X	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Toluene	--	16000 I	2800 I	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Trichloroethylene	--	100	4000 X	<5	<5	<5	<5	--	<5	<5	<6	<5	<5	<5	<5
Xylenes total	--	5600 I	700 I	<11	<10	<11	<10	--	<10	<11	<12	<5	<5	<5	<5

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	SB15-105 7/1/91	SB15-106 7/1/91	SB16(0-1) 6/6/96	SB16(5-6) 6/6/96	SB16(10-11) 6/6/96	SB16(15-16) 6/6/96	SB16(20-21) 6/6/96	SB16(25-26) 6/6/96	SB16(30-31) 6/6/96	SB16(35-36) 6/6/96	SB16(40-41) 6/6/96
Exceedance Key	Bold	Underline	Box											
General Parameters														
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum	6900000 B	1000 B	NA B	530000	450000	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	<20000	<20000	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	<200	<200	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	7800	4200	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	<400	<400	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	180000	200000	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	<100	<100	<100 J	<100	<100	<100	<100	<100	<100
Chromium	--	--	--	<2000	<2000	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	<1000	<1000	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	910000	880000	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	560	620	7400	900	600 J	600	500	600	500	500	700
Magnesium	--	8000000 B	NA B	210000	240000	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	21000	18000	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	<50	<50	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	<4000	<4000	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	<200000	<200000	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	<200	<200	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	58000	37000	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	<50000	<50000	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	<2000	<2000	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	4500	1800	--	--	--	--	--	--	--	--	--
SVOCs														
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria													
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB15-105 7/1/91	SB15-106 7/1/91	SB16(0-1) 6/6/96	SB16(5-6) 6/6/96	SB16(10-11) 6/6/96	SB16(15-16) 6/6/96	SB16(20-21) 6/6/96	SB16(25-26) 6/6/96	SB16(30-31) 6/6/96	SB16(35-36) 6/6/96	SB16(40-41) 6/6/96
Exceedance Key	Bold	Underline	Box											
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--	--
TPHs														
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs														
1,1,1-Trichloroethane	--	4000	4000	4 J	<5	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	42	5	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<5	<5	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	16000 I,R	ID I,R	<5	3 J	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	<5	<5	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	<5	<5	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<5	<5	--	--	--	--	--	--	--	--	--
Methyl ethyl ketone	--	260000 I	44000 I	<10	<10	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	29 B	10 B	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	<5	<5	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	<5	<5	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<5	<5	--	--	--	--	--	--	--	--	--
Trichloroethylene	--	100	4000 X	<5	<5	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<5	<5	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB16(45-46) 6/6/96	SB16-101 7/2/91	SB16-102 7/2/91	SB16-103 7/2/91	SB16-104 7/2/91	SB16-105 7/2/91	SB16-106 7/2/91	SB16-107 7/2/91	SB16-108 7/2/91	SB16-109 7/2/91	SB17(0-1) 6/6/96	SB17(5-7) 6/6/96
Exceedance Key	Bold	Underline	Box												
General Parameters															
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	<100	--	--	--	--	--	--	--	--	--	<100	<100
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	600	--	--	--	--	--	--	--	--	--	2200	400
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs															
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria: Statewide Default Background Levels 2/11/02	Michigan Part 201 Criteria: Drinking Water Protection Criteria 2/11/02	Michigan Part 201 Criteria: Groundwater Surface Water Interface Protection Criteria 2/11/02	SB16(45-46) 6/6/96	SB16-101 7/2/91	SB16-102 7/2/91	SB16-103 7/2/91	SB16-104 7/2/91	SB16-105 7/2/91	SB16-106 7/2/91	SB16-107 7/2/91	SB16-108 7/2/91	SB16-109 7/2/91	SB17(0-1) 6/6/96	SB17(5-7) 6/6/96
Exceedance Key	Bold	Underline	Box												
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--	--	--
<u>TPHs</u>															
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>VOCs</u>															
1,1,1-Trichloroethane	--	4000	4000	--	5 J	6	5 J	4 J	5 J	5 J	4 J	5 J	4 J	--	--
Acetone	--	15000 I	34000 I	--	20	<10	20	15	29	19	<10	12	17	--	--
Benzene	--	100 I	4000 I,X	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Carbon disulfide	--	16000 I,R	ID I,R	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Chlorobenzene	--	2000 I	940 I	--	<5	5	<5	<5	<5	<5	<5	<5	<5	--	--
Chloroform	--	2000 W	3400 X	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Ethyl benzene	--	1500 I	360 I	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Methyl ethyl ketone	--	260000 I	44000 I	--	<10	<10	<10	<10	<10	<10	<10	10	<10	--	--
Methylene chloride	--	100	19000 X	--	22 B	30 B	26 B	<23 B	25 B	21 B	30 B	23 B	25 B	--	--
Styrene	--	2700	2200	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Tetrachloroethylene	--	100	900 X	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Toluene	--	16000 I	2800 I	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Trichloroethylene	--	100	4000 X	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Xylenes total	--	5600 I	700 I	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB17(10-11) 6/6/96	SB17(15-16) 6/6/96	SB17(20-21) 6/6/96	SB17(25-26) 6/6/96	SB17(30-31) 6/6/96	SB17(35-36) 6/6/96	SB17(40-42) 6/6/96	SB17(45-46) 6/6/96	SB18(0-1) 6/7/96	SB18(5-6) 6/7/96
Exceedance Key	Bold	Underline	Box										
General Parameters													
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	<100 J	<100	<100	<100	<100	<100 J	<100	<100	<100	<100
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	900 J	500	600	600	400	500 J	700	700	1330	500
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB17(10-11) 6/6/96	SB17(15-16) 6/6/96	SB17(20-21) 6/6/96	SB17(25-26) 6/6/96	SB17(30-31) 6/6/96	SB17(35-36) 6/6/96	SB17(40-42) 6/6/96	SB17(45-46) 6/6/96	SB18(0-1) 6/7/96	SB18(5-6) 6/7/96
Exceedance Key	Bold	Underline	Box										
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--
TPHs													
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	--	--	--	--	--	--	--	--	--
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	--	--	--	--	--	--	--	--	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	SB18(10-11) 6/7/96	SB18(15-16) 6/7/96	SB18(20-21) 6/7/96	SB18(25-26) 6/7/96	SB18(30-31) 6/7/96	SB18(35-36) 6/7/96	SB18(40-41) 6/7/96	SB18(45-46) 6/7/96	SB19(0-1) 6/7/96	SB19(5-6) 6/7/96
Exceedance Key	Bold	Underline	Box										
General Parameters													
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	700	400	500	400	400	500	700	400	4800	500
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB18(10-11) 6/7/96	SB18(15-16) 6/7/96	SB18(20-21) 6/7/96	SB18(25-26) 6/7/96	SB18(30-31) 6/7/96	SB18(35-36) 6/7/96	SB18(40-41) 6/7/96	SB18(45-46) 6/7/96	SB19(0-1) 6/7/96	SB19(5-6) 6/7/96
Exceedance Key	Bold	Underline	Box										
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--
TPHs													
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	--	--	--	--	--	--	--	--	--
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	--	--	--	--	--	--	--	--	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB19(10-11) 6/7/96	SB19(14-16) 6/7/96	SB19(20-21) 6/7/96	SB19(25-26) 6/7/96	SB19(29-31) 6/7/96	SB19(35-36) 6/7/96	SB19(40-41) 6/7/96	SB19(45-46) 6/7/96	Tank 2S (S) 5/27/87	Tank 7N (S) 5/27/87
Exceedance Key	Bold	Underline	Box										
General Parameters													
Oil and Grease	--	--	--	--	--	--	--	--	--	--	--	--	--
Flash Point	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, %	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	6900000 B	1000 B	NA B	--	--	--	--	--	--	--	--	--	--
Antimony	--	500 M	94000	--	--	--	--	--	--	--	--	--	--
Arsenic	5800	23000	70000 X	--	--	--	--	--	--	--	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--	--	--	--	--	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	<100	<100	<100	<100	<100	<100	<100	<100	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--	--	--	--	--	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--	--	--	--	--	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	400	600	400	500	300	600	700	1000	--	--
Magnesium	--	8000000 B	NA B	--	--	--	--	--	--	--	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--	--	--	--	--	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--	--	--	--	--	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--	--	--	--	--	--	--	--
Sodium	--	2500000	NA	--	--	--	--	--	--	--	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--	--	--	--	--	--	--	--
Vanadium	--	72000	190000	--	--	--	--	--	--	--	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	--	--	--	--	--	--	--	--	--	--
Anthracene	--	41000	ID	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	SB19(10-11) 6/7/96	SB19(14-16) 6/7/96	SB19(20-21) 6/7/96	SB19(25-26) 6/7/96	SB19(29-31) 6/7/96	SB19(35-36) 6/7/96	SB19(40-41) 6/7/96	SB19(45-46) 6/7/96	Tank 2S (S) 5/27/87	Tank 7N (S) 5/27/87
Exceedance Key	Bold	Underline	Box										
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--	--	--	--	--	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	760000 C	*11000*	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	730000	5500	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	--	--	--	--	--	--	--	--	--
Pyrene	--	480000	ID	--	--	--	--	--	--	--	--	--	--
TPHs													
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	<100000	<100000
Acetone	--	15000 I	34000 I	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	--	--	--	--	--	--	--	4200000	1100000
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	1100000	<100000
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	<100000	<100000
Ethyl benzene	--	1500 I	360 I	--	--	--	--	--	--	--	--	17000000	5100000
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	<100000	<100000
Styrene	--	2700	2200	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	<200000	<200000
Toluene	--	16000 I	2800 I	--	--	--	--	--	--	--	--	42000000	18000000
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	<100000	<100000
Xylenes total	--	5600 I	700 I	--	--	--	--	--	--	--	--	310000000	85000000

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria					
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water *Protection* Criteria 2/11/02	Groundwater Surface Water Interface *Protection* Criteria 2/11/02	Tank B-1 (S) 5/27/87	Tank C-1 5/27/87	Tank C-2 5/27/87
Exceedance Key	Bold	Underline	Box			
General Parameters						
Oil and Grease	--	--	--	--	--	--
Flash Point	--	--	--	--	>140	>140
Solids, %	--	--	--	--	--	--
Metals						
Aluminum	6900000 B	1000 B	NA B	--	--	--
Antimony	--	500 M	94000	--	--	--
Arsenic	5800	23000	70000 X	--	--	--
Barium	75000 B	1300000 B	1200000 B,G,X	--	--	--
Cadmium	1200 B	6000 B	7400 GX B	--	--	--
Calcium	--	--	--	--	--	--
Chromium, hexavalent	18000 B,H	30000	3300	--	--	--
Chromium	--	--	--	--	--	--
Copper	32000 B	5800000 B	170000 B,G	--	--	--
Iron	12000000 B	6000 B	NA B	--	--	--
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--
Magnesium	--	8000000 B	NA B	--	--	--
Manganese	440000 B	1000 B	130000 B,G, X	--	--	--
Mercury	130 B,Z	1700 B,Z	NA B,Z	--	--	--
Nickel	20000 B	100000 B	180000 B, G	--	--	--
Potassium	--	--	--	--	--	--
Selenium	410 B	4000 B	400 B	--	--	--
Sodium	--	2500000	NA	--	--	--
Thallium	--	2300 B	4200 B,X	--	--	--
Vanadium	--	72000	190000	--	--	--
Zinc	47000 B	2400000 B	380000 B, G	--	--	--
SVOCs						
Acenaphthene	--	300000	4400	--	--	--
Anthracene	--	41000	ID	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	--	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria					
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	Tank B-1 (S) 5/27/87	Tank C-1 5/27/87	Tank C-2 5/27/87
Exceedance Key	Bold	Underline	Box			
Bis(2-ethylhexyl)phthalate	--	NLL	NLL	--	--	--
Butyl benzyl phthalate	--	310000 C	26000 X	--	--	--
Chrysene	--	NLL Q	NLL Q	--	--	--
Di-n-butyl phthalate	--	760000 C	11000	--	--	--
Fluoranthene	--	730000	5500	--	--	--
Pentachlorophenol	--	22	G,X	--	--	--
Phenanthrene	--	56000	5300	--	--	--
Pyrene	--	480000	ID	--	--	--
TPHs						
Total Petroleum Hydrocarbons	--	--	--	--	--	--
TPH as Diesel	--	--	--	--	--	--
VOCs						
1,1,1-Trichloroethane	--	4000	4000	<100000	<100000	<100000
Acetone	--	15000 I	34000 I	--	--	--
Benzene	--	100 I	4000 I,X	<100000	<100000	<100000
Carbon disulfide	--	16000 I,R	ID I,R	--	--	--
Chlorobenzene	--	2000 I	940 I	<100000	<100000	<100000
Chloroform	--	2000 W	3400 X	<100000	<100000	<100000
Ethyl benzene	--	1500 I	360 I	<100000	<100000	<100000
Methyl ethyl ketone	--	260000 I	44000 I	--	--	--
Methylene chloride	--	100	19000 X	<100000	<100000	<100000
Styrene	--	2700	2200	--	--	--
Tetrachloroethylene	--	100	900 X	<200000	<200000	<200000
Toluene	--	16000 I	2800 I	<100000	<100000	<100000
Trichloroethylene	--	100	4000 X	<100000	<100000	<100000
Xylenes total	--	5600 I	700 I	$\boxed{\underline{380000}}$	<200000	<200000

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria														
Location **Date** **Dup**	**Statewide Default Background Levels 2/11/02**	**Drinking Water Protection Criteria 2/11/02**	**Groundwater Surface Water Interface Protection Criteria 2/11/02**	**A1B1 5-7' 11/3/95**	**A1B1 5-7' 11/3/95**	**A1B1 10-12' 11/3/95**	**A1B1 10-12' 11/3/95**	**A1B2 2-4' 11/3/95**	**A1B2 2-4' 11/3/95**	**A1B2 5-7' 11/3/95**	**A1B3 2-4' 11/3/95**	**A1B3 2-4' 11/3/95**	**A1B3 5-7' 11/3/95**	**A1B4 2-4' 11/3/95**	**A1B4 6-8' 11/3/95**
Exceedance Key	Bold	Underline	Box												
Solids, %	--	--	--	91	--	94	--	94	--	--	94	--	--	--	94
Metals															
Lead	21000 B	700000 B	7900000 B,G,M,X	1300	--	<800	--	1100	--	--	--	--	--	--	<800
SVOCs															
Acenaphthene	--	300000	4400	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Anthracene	--	41000	ID	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	<330	--	<330	--	<330	<330	320	<330	<330	<330	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	<330	--	<330	--	<330	<330	330	<330	<330	<330	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	<330	--	<330	--	<330	<330	290	<330	<330	<330	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Chrysene	--	NLL Q	NLL Q	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Fluoranthene	--	730000	5500	--	<330	--	<330	--	<330	<330	340	<330	<330	<330	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	<330	--	<330	--	<330	<330	<260	<330	<330	<330	--
Pyrene	--	480000	ID	--	<330	--	<330	--	<330	<330	350	<330	<330	<330	--
VOCs															
1,1,1-Trichloroethane	--	4000	4000	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Benzene	--	100 I	4000 I,X	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Chlorobenzene	--	2000 I	940 I	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Chloroform	--	2000 W	3400 X	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Ethyl benzene	--	1500 I	360 I	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Methylene chloride	--	100	19000 X	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Tetrachloroethylene	--	100	900 X	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Toluene	--	16000 I	2800 I	--	<10	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Trichloroethylene	--	100	4000 X	--	26	--	<10	--	<10	<10	<8.0	<10	<10	<10	--
Xylenes total	--	5600 I	700 I	--	<30	--	<30	--	<30	<30	<24	<30	<30	<30	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	A1B4 6-8' 11/3/95	A1B4 10-12' 11/4/95	A1B5 2-4' 11/3/95	A1B5 2-4' 11/3/95	A1B5 5-7' 11/3/95	A1B5 5-7' 11/3/95	A1B6 5-7' 11/8/95	A1B6 10-12' 11/8/95	A2B1 10-12' 11/3/95	A2B1 10-12' 11/3/95	A2B1 14-16' 11/3/95
Exceedance Key	Bold	Underline	Box											
Solids, %	--	--	--	--	--	93	--	92	--	--	--	89	--	--
Metals														
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	2500	--	--	--	--	--	900	--	--
SVOCs														
Acenaphthene	--	300000	4400	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Anthracene	--	41000	ID	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Fluoranthene	--	730000	5500	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	<1700	<1700
Phenanthrene	--	56000	5300	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
Pyrene	--	480000	ID	<330	<330	--	<330	<270	<330	<330	<330	--	<330	<330
VOCs														
1,1,1-Trichloroethane	--	4000	4000	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Benzene	--	100 I	4000 I,X	<10	--	--	<10	<8.2	<10	<10	<10	--	<10	<10
Chlorobenzene	--	2000 I	940 I	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Chloroform	--	2000 W	3400 X	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	--	--	<10	<8.2	<10	<10	<10	--	<10	<10
Methylene chloride	--	100	19000 X	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Tetrachloroethylene	--	100	900 X	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Toluene	--	16000 I	2800 I	<10	--	--	<10	<8.2	<10	<10	<10	--	<10	<10
Trichloroethylene	--	100	4000 X	<10	--	--	<10	<8.2	<10	<10	<10	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	--	<30	<24	<30	<30	<30	--	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A2B2 11-12' 11/3/95	A2B2 14-16' 11/3/95	A2B2 14-16' 11/3/95	A2B2A 23-24' 11/5/95	A2B2A 26-28' 11/5/95	A2B2A 26-28' 11/5/95	A2B3 10-12' 11/3/95	A2B3 14-16' 11/3/95	A2B4 14-16' 11/3/95
Exceedance Key	Bold	Underline	Box									
Solids, %	--	--	--	--	89	--	--	93	--	--	--	92
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	<840	--	--	--	--	--	--	--
SVOCs												
Acenaphthene	--	300000	4400	<330	--	<330	<330	<270	<330	<330	<330	<270
Anthracene	--	41000	ID	<330	--	<330	<330	<270	<330	<330	<330	<270
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	<330	<330	<270	<330	<330	<330	<270
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	<330	<330	<270	<330	<330	<330	<270
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<330	<270	<330	<330	<330	<270
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	<330	<330	<270	<330	<330	<330	<270
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<330	<270	<330	<330	<330	<270
Chrysene	--	NLL Q	NLL Q	<330	--	<330	<330	<270	<330	<330	<330	<270
Fluoranthene	--	730000	5500	<330	--	570	<330	<270	<330	<330	<330	<270
Pentachlorophenol	--	22	G,X	<1700	--	<1700	<1700	<1400	<1700	<1700	<1700	<1400
Phenanthrene	--	56000	5300	<330	--	400	<330	<270	<330	<330	<330	<270
Pyrene	--	480000	ID	<330	--	350	<330	<270	<330	<330	<330	<270
VOCs												
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	--	<10	<10	<8.1	<10	<10	<10	<8.2
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	--	<10	<10	<8.1	<10	<10	<10	<8.2
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	--	<10	<10	<8.1	<10	<10	<10	<8.2
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	<30	<30	<24	<30	<30	<30	<24

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria *Statewide* Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater *Surface Water* Interface Protection Criteria 2/11/02	A2B4 14-16' 11/3/95	A2B4 18-20' 11/3/95	A2B5 14-16' 11/3/95	A2B5 18-20' 11/3/95	A2B5 18-20' 11/3/95	A2B6 10-12' 11/3/95	A2B6 10-12' 11/3/95	A2B6 14-16' 11/3/95	A2B7 10-12' 11/3/95	A2B7 10-12' 11/3/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	--	93	--	87	--	--	92	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	<860	--	--	<820	--
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Anthracene	--	41000	ID	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Fluoranthene	--	730000	5500	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Pentachlorophenol	--	22	G,X	<1700	<1700	<1700	<1400	<1700	--	<1700	<1700	--	<1700
Phenanthrene	--	56000	5300	<330	<330	<330	<270	<330	--	<330	<330	--	<330
Pyrene	--	480000	ID	<330	<330	<330	<270	<330	--	<330	<330	--	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<10	<8.1	<10	--	<10	<10	--	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<10	<8.1	<10	--	<10	<10	--	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<10	<8.1	<10	--	<10	<10	--	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<30	<24	<30	--	<30	<30	--	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	A2B8 10-12' 11/3/95	A2B9 10-12' 11/3/95	A2B9 10-12' 11/3/95	A2B9 14-16' 11/3/95	A2B10 10-12' 11/3/95	A2B10 10-12' 11/3/95	A2B10 14-16' 11/3/95	A2B11 10-12' 11/8/95	A2B11 2-4' 11/8/95	A3B1 10-12' 11/3/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	92	--	--	94	--	--	--	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	<820	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Anthracene	--	41000	ID	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Fluoranthene	--	730000	5500	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Pentachlorophenol	--	22	G,X	<1700	--	<1700	<1700	<1400	<1700	<1700	<1700	<1700	<1700
Phenanthrene	--	56000	5300	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
Pyrene	--	480000	ID	<330	--	<330	<330	<260	<330	<330	<330	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	--	<10	<10	<8.0	<10	<10	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	--	<10	<10	<8.0	<10	<10	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	--	<10	<10	<8.0	<10	<10	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	<30	<30	<24	<30	<30	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A3B1 14-16' 11/3/95	A3B1 14-16' 11/3/95	A3B2 10-12' 11/3/95	A3B2 14-16' 11/3/95	A3B2 14-16' 11/3/95	A3B3 10-12' 11/4/95	A3B3 14-16' 11/4/95	A3B3 14-16' 11/5/95	A3B4 10-12' 11/4/95	A3B4 14-16' 11/4/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	94	--	--	83	--	--	--	--	--	92
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	<800	--	--	<900	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Anthracene	--	41000	ID	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Benzo(a)anthracene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Benzo(a)pyrene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Benzo(g,h,i)perylene	--	NLL	NLL	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Chrysene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Fluoranthene	--	730000	5500	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Pentachlorophenol	--	22	G,X	<1400	<1700	<1700	--	<1700	<1700	<1700	<1700	<1700	<1400
Phenanthrene	--	56000	5300	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
Pyrene	--	480000	ID	<260	<330	<330	--	<330	<330	<330	<330	<330	<270
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<8.0	<10	<10	--	<10	<10	<10	--	<10	<8.2
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<8.0	<10	<10	--	<10	<10	<10	--	<10	<8.2
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<8.0	<10	<10	--	<10	<10	<10	--	<10	<8.2
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<24	<30	<30	--	<30	<30	<30	--	<30	<24

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A3B4 14-16' 11/4/95	A3B5 10-12' 11/4/95	A3B5 18-20' 11/4/95	A3B5 18-20' 11/4/95	A3B6 10-12' 11/4/95	A3B6 18-20' 11/4/95	A3B6 18-20' 11/4/95	A3B7 10-12' 11/4/95	A3B7 18-20' 11/4/95	A3B8 10-12' 11/4/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	93	--	--	94	--	--	--	91
<u>Metals</u>													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	<810	--	--	<800	--	--	--	<820
<u>SVOCs</u>													
Acenaphthene	--	300000	4400	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Anthracene	--	41000	ID	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Chrysene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Fluoranthene	--	730000	5500	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Pentachlorophenol	--	22	G,X	<1700	<1700	<1400	<1700	<1700	--	<1700	<1700	<1700	--
Phenanthrene	--	56000	5300	<330	<330	<270	<330	<330	--	<330	<330	<330	--
Pyrene	--	480000	ID	<330	<330	<270	<330	<330	--	<330	<330	<330	--
<u>VOCs</u>													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<8.1	<10	<10	--	<10	<10	<10	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<8.1	<10	<10	--	<10	<10	<10	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<8.1	<10	<10	--	<10	<10	<10	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<24	<30	<30	--	<30	<30	<30	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria: Statewide Default Background Levels 2/11/02	Michigan Part 201 Criteria: Drinking Water Protection Criteria 2/11/02	Michigan Part 201 Criteria: Groundwater Surface Water Interface Protection Criteria 2/11/02	A3B8 10-12' 11/4/95	A3B8 18-20' 11/4/95	A3B9 10-12' 11/4/95	A3B9 10-12' 11/4/95	A3B9 14-16' 11/4/95	A3B10 10-12' 11/4/95	A3B10 14-16' 11/4/95	A3B11 14-16' 11/4/95	A3B11 22-24' 11/4/95
Exceedance Key	Bold	Underline	Box									
Solids, %	--	--	--	--	--	93	--	--	--	--	--	95
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--
SVOCs												
Acenaphthene	--	300000	4400	<330	<330	<270	<330	<330	<330	<330	<330	<260
Anthracene	--	41000	ID	<330	<330	<270	<330	<330	<330	<330	<330	<260
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<330	<330	<330	<260
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<330	<330	<330	<260
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<330	<330	<330	<260
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<270	<330	<330	<330	<330	<330	<260
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<330	<330	<330	<260
Chrysene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<330	<330	<330	<260
Fluoranthene	--	730000	5500	<330	<330	<270	<330	<330	<330	<330	<330	<260
Pentachlorophenol	--	22	G,X	<1700	<1700	<1400	<1700	<1700	<1700	<1700	<1700	<1300
Phenanthrene	--	56000	5300	<330	<330	<270	<330	<330	<330	<330	<330	<260
Pyrene	--	480000	ID	<330	<330	<270	<330	<330	<330	<330	<330	<260
VOCs												
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<8.1	<10	<10	<10	<10	<10	<7.9
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<24	<30	<30	<30	<30	<30	<24

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria													
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A3B11 22-24' 11/4/95	A3B12 11-12' 11/8/95	A3B12 2-4' 11/8/95	A3B12 2-4' 11/8/95	A3B13 11-12' 11/8/95	A3B13 2-4' 11/8/95	A4B1 6-8' 11/4/95	A4B1 6-8' 11/4/95	A4B1 14-16' 11/4/95	A4B2 6-8' 11/4/95	A4B2 6-8' 11/4/95
Exceedance Key	Bold	Underline	Box											
Solids, %	--	--	--	--	--	95	--	--	--	94	--	--	93	--
<u>Metals</u>														
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	<800	--	--	2400	--
<u>SVOCs</u>														
Acenaphthene	--	300000	4400	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Anthracene	--	41000	ID	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Fluoranthene	--	730000	5500	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Pentachlorophenol	--	22	G,X	<1700	<1700	<1300	<1700	<1700	<1700	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
Pyrene	--	480000	ID	<330	<330	<260	<330	<330	<330	--	<330	<330	--	<330
<u>VOCs</u>														
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	<10	<10	--	<10
Benzene	--	100 I	4000 I,X	<10	<10	<7.9	<10	<10	<10	--	<10	<10	--	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	<10	<10	--	<10
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	<10	<10	--	<10
Ethyl benzene	--	1500 I	360 I	<10	<10	<7.9	<10	<10	<10	--	<10	<10	--	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	<10	<10	--	<10
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	<10	<10	--	<10
Toluene	--	16000 I	2800 I	<10	<10	<7.9	<10	<10	<10	--	<10	<10	--	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	<10	<10	--	<10
Xylenes total	--	5600 I	700 I	<30	<30	<24	<30	<30	<30	--	<30	<30	--	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A4B2 14-16' 11/4/95	A4B3 6-8' 11/4/95	A4B3 10-12' 11/4/95	A4B3 10-12' 11/4/95	A4B4 6-8' 11/4/95	A4B4 6-8' 11/4/95	A4B4 14-16' 11/4/95	A4B5 8-10' 11/4/95	A4B5 8-10' 11/4/95	A4B5 14-16' 11/4/95	A4B6 8-10' 11/4/95
Exceedance Key	Bold	Underline	Box											
Solids, %	--	--	--	--	--	93	--	94	--	--	91	--	--	94
<u>Metals</u>														
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	<810	--	--	--	--	<820	--	--	--
<u>SVOCs</u>														
Acenaphthene	--	300000	4400	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Anthracene	--	41000	ID	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Chrysene	--	NLL Q	NLL Q	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Fluoranthene	--	730000	5500	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
Pyrene	--	480000	ID	<330	<330	--	<330	<260	<330	<330	--	<330	<330	<260
<u>VOCs</u>														
1,1,1-Trichloroethane	--	4000	4000	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Benzene	--	100 I	4000 I,X	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Chlorobenzene	--	2000 I	940 I	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Chloroform	--	2000 W	3400 X	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Ethyl benzene	--	1500 I	360 I	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Methylene chloride	--	100	19000 X	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Tetrachloroethylene	--	100	900 X	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Toluene	--	16000 I	2800 I	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Trichloroethylene	--	100	4000 X	<10	<10	--	<10	<8.0	<10	<10	--	<10	<10	<8.0
Xylenes total	--	5600 I	700 I	<30	<30	--	<30	<24	<30	<30	--	<30	<30	<24

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A4B6 8-10' 11/4/95	A4B6 14-16' 11/4/95	A4B6 14-16' 11/4/95	A4B7 2-4' 11/8/95	A4B7 2-4' 11/8/95	A4B7 8-9' 11/8/95	A5B1 10-12' 11/5/95	A5B1 10-12' 11/5/95	A5B1 18-20' 11/5/95	A5B1 18-20' 11/5/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	97	--	94	--	--	94	--	92	--
<u>Metals</u>													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	<770	--	--	--	--	<800	--	--	--
<u>SVOCs</u>													
Acenaphthene	--	300000	4400	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Anthracene	--	41000	ID	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Chrysene	--	NLL Q	NLL Q	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Fluoranthene	--	730000	5500	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	--	<330	<260	<330	<330	--	<330	<270	<330
Pyrene	--	480000	ID	<330	--	<330	<260	<330	<330	--	<330	<270	<330
<u>VOCs</u>													
1,1,1-Trichloroethane	--	4000	4000	<10	--	<10	<8.0	<10	<10	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	--	<10	<8.0	<10	<10	--	<10	<8.2	<10
Chlorobenzene	--	2000 I	940 I	<10	--	<10	<8.0	<10	<10	--	--	--	--
Chloroform	--	2000 W	3400 X	<10	--	<10	<8.0	<10	<10	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	--	<10	<8.0	<10	<10	--	<10	<8.2	<10
Methylene chloride	--	100	19000 X	<10	--	<10	<8.0	<10	<10	--	--	--	--
Tetrachloroethylene	--	100	900 X	<10	--	<10	<8.0	<10	<10	--	--	--	--
Toluene	--	16000 I	2800 I	<10	--	<10	<8.0	<10	<10	--	<10	<8.2	<10
Trichloroethylene	--	100	4000 X	<10	--	<10	<8.0	<10	<10	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	<30	<24	<30	<30	--	<30	<24	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A5B2 14-16' 11/5/95	A5B2 14-16' 11/5/95	A5B2 22-24' 11/5/95	A5B3 10-12' 11/5/95	A5B3 10-12' 11/5/95	A5B3 18-20' 11/5/95	A5B4 14-16' 11/5/95	A5B4 18-20' 11/5/95	A5B4 18-20' 11/5/95	A5B5 10-12' 11/5/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	95	--	--	91	--	--	--	87	--	93
<u>Metals</u>													
Lead	21000 B	700000 B	7900000 B,G,M,X	<790	--	--	<820	--	--	--	<860	--	<810
<u>SVOCs</u>													
Acenaphthene	--	300000	4400	--	<330	<330	--	<330	<330	<330	--	<330	--
Anthracene	--	41000	ID	--	<330	<330	--	<330	<330	580	--	<330	--
Benzo(a)anthracene	--	NLL Q	NLL Q	--	380	<330	--	<330	<330	<330	--	<330	--
Benzo(a)pyrene	--	NLL Q	NLL Q	--	<330	<330	--	<330	<330	<330	--	<330	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	<330	<330	--	<330	<330	<330	--	<330	--
Benzo(g,h,i)perylene	--	NLL	NLL	--	<330	<330	--	<330	<330	<330	--	<330	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	<330	<330	--	<330	<330	<330	--	<330	--
Chrysene	--	NLL Q	NLL Q	--	<330	<330	--	<330	<330	<330	--	<330	--
Fluoranthene	--	730000	5500	--	560	<330	--	<330	<330	3700	--	<330	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	<330	<330	--	<330	<330	<330	--	<330	--
Pyrene	--	480000	ID	--	410	<330	--	<330	<330	750	--	<330	--
<u>VOCs</u>													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	<10	<10	--	<10	<10	<10	--	<10	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	<10	<10	--	<10	<10	<10	--	<10	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	<10	<10	--	<10	<10	<10	--	<10	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	<30	<30	--	<30	<30	57	--	<30	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A5B5 10-12' 11/5/95	A5B5 18-20' 11/5/95	A5B6 10-12' 11/5/95	A5B6 10-12' 11/5/95	A5B6 18-20' 11/5/95	A5B7 10-12' 11/5/95	A5B7 10-12' 11/5/95	A5B7 18-20' 11/5/95	A5B8 10-12' 11/5/95	A5B8 14-16' 11/5/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	91	--	--	95	--	--	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Anthracene	--	41000	ID	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Fluoranthene	--	730000	5500	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Pyrene	--	480000	ID	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<25	<30	<30	<24	<30	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A5B5 10-12' 11/5/95	A5B5 18-20' 11/5/95	A5B6 10-12' 11/5/95	A5B6 10-12' 11/5/95	A5B6 18-20' 11/5/95	A5B7 10-12' 11/5/95	A5B7 10-12' 11/5/95	A5B7 18-20' 11/5/95	A5B8 10-12' 11/5/95	A5B8 14-16' 11/5/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	91	--	--	95	--	--	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Anthracene	--	41000	ID	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Fluoranthene	--	730000	5500	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
Pyrene	--	480000	ID	<330	<330	<270	<330	<330	<260	--	<330	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<8.2	<10	<10	<7.9	<10	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<25	<30	<30	<24	<30	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A6B5 10-12' 11/5/95	A6B5 18-20' 11/5/95	A6B5 18-20' 11/5/95	A6B6 10-12' 11/5/95	A6B6 18-20' 11/5/95	A6B6 18-20' 11/5/95	A6B7 10-12' 11/5/95	A6B7 18-20' 11/5/95	A6B7 18-20' 11/5/95	A6B8 10-12' 11/6/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	93	--	--	94	--	--	94	--	94
<u>Metals</u>													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	<800	--	--	<800	--	--
<u>SVOCs</u>													
Acenaphthene	--	300000	4400	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Anthracene	--	41000	ID	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Chrysene	--	NLL Q	NLL Q	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Fluoranthene	--	730000	5500	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<270	<330	<330	--	<330	<330	--	<330	<260
Pyrene	--	480000	ID	<330	<270	<330	<330	--	<330	<330	--	<330	<260
<u>VOCs</u>													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<8.1	<10	<10	--	<10	<10	--	<10	<8.0
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<8.1	<10	<10	--	<10	<10	--	<10	<8.0
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<8.1	<10	<10	--	<10	<10	--	<10	<8.0
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<24	<30	<30	--	<30	<30	--	<30	<24

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria											
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A6B8 10-12' 11/6/95	A6B8 18-20' 11/6/95	A6B9 10-12' 11/6/95	A6B9 18-20' 11/6/95	A6B10 10-12' 11/6/95	A6B10 14-16' 11/6/95	A6B10 14-16' 11/6/95	A6B11 10-12' 11/6/95	A6B11 18-20' 11/6/95
Exceedance Key	Bold	Underline	Box									
Solids, %	--	--	--	--	--	--	--	--	95	--	--	--
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--
SVOCs												
Acenaphthene	--	300000	4400	<330	<330	<330	<330	<330	<260	<330	<330	<330
Anthracene	--	41000	ID	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<330	<330	<330	<260	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<260	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<260	<330	<330	<330
Fluoranthene	--	730000	5500	<330	<330	<330	<330	<330	<260	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<330	<330	<330	<260	<330	<330	<330
Pyrene	--	480000	ID	<330	<330	<330	<330	<330	<260	<330	<330	<330
VOCs												
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<10	<10	<10	<7.9	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<30	<30	<30	<24	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria											
Location **Date** **Dup**	**Statewide Default Background Levels** **2/11/02**	**Drinking Water Protection Criteria** **2/11/02**	**Groundwater Surface Water Interface Protection Criteria** **2/11/02**	**A6B12 14-15'** **11/8/95**	**A6B12 14-15'** **11/8/95**	**A6B13 2-4'** **11/8/95**	**A6B13 14-15'** **11/8/95**	**A7B1 10-12'** **11/6/95**	**A7B1 28-30'** **11/6/95**	**A7B1 36-38'** **11/6/95**	**A7B10 14-16'** **11/6/95**	**A7B10 14-16'** **11/6/95**
Exceedance Key	Bold	Underline	Box									
Solids, %	--	--	--	94	--	--	--	--	--	--	95	--
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--
SVOCs												
Acenaphthene	--	300000	4400	960	<330	<330	<330	<330	<330	<330	<260	<330
Anthracene	--	41000	ID	<260	<330	<330	<330	<330	<330	<330	<260	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	370	<330	<330	<330	<330	<330	<330	<260	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	<330	<330	<260	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	310	<330	<330	<330	<330	<330	<330	<260	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<260	<330	<330	<330	<330	<330	<330	<260	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	<330	<330	<260	<330
Chrysene	--	NLL Q	NLL Q	320	<330	<330	<330	<330	<330	<330	<260	<330
Fluoranthene	--	730000	5500	1400	<330	<330	<330	<330	<330	<330	<260	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	860	<330	<330	<330	<330	<330	<330	<260	<330
Pyrene	--	480000	ID	<260	<330	<330	<330	<330	<330	<330	<260	<330
VOCs												
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<8.0	<10	<10	<10	<10	<10	<10	<7.9	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<8.0	<10	<10	<10	560	<10	<10	<7.9	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<8.0	<10	<10	<10	510	<10	<10	<7.9	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<24	<30	<30	<30	3400	<30	<30	<24	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	 Drinking Water Protection Criteria 2/11/02	 Groundwater Surface Water Interface Protection Criteria 2/11/02	A7B10 22-24' 11/6/95	A7B12 10-12' 11/6/95	A7B12 18-20' 11/6/95	A7B13 10-12' 11/6/95	A7B13 18-20' 11/6/95	A7B13 18-20' 11/6/95	A7B14 14-15' 11/8/95	A7B14 2-4' 11/8/95	A7B16 2-4' 11/8/95
Exceedance Key	Bold	Underline	Box									
Solids, %	--	--	--	--	--	--	--	93	--	--	--	--
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	--
SVOCs												
Acenaphthene	--	300000	4400	<330	<330	<330	<330	<270	<330	<330	<330	<330
Anthracene	--	41000	ID	<330	<330	<330	<330	<270	<330	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<330	<330	<270	<330	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<330	<330	<270	<330	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<270	<330	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<330	<330	<270	<330	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<270	<330	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<330	<330	<270	<330	<330	<330	<330
Fluoranthene	--	730000	5500	<330	<330	<330	<330	<270	<330	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<330	<330	<270	<330	<330	<330	<330
Pyrene	--	480000	ID	<330	<330	<330	<330	<270	<330	<330	<330	<330
VOCs												
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<10	<10	<8.1	<10	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<10	<10	<8.1	<10	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<10	<10	<8.1	<10	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<30	<30	<24	<30	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Michigan Part 201 Criteria Drinking Water Protection Criteria 2/11/02	Michigan Part 201 Criteria Groundwater Surface Water Interface Protection Criteria 2/11/02	A7B16 14-15' 11/8/95	A7B16 14-15' 11/8/95	A7B2 14-16' 11/6/95	A7B2 22-24' 11/6/95	A7B2 22-24' 11/6/95	A7B3 14-16' 11/6/95	A7B3 14-16' 11/6/95	A7B3 18-20' 11/6/95	A7B3 18-20' 11/6/95	A7B4 14-15' 11/6/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	94	--	--	95	--	95	--	92	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	<790	--	--	--	<820	--	--
SVOCs													
Acenaphthene	--	300000	4400	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Anthracene	--	41000	ID	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Chrysene	--	NLL Q	NLL Q	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Fluoranthene	--	730000	5500	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	<1700	--
Phenanthrene	--	56000	5300	<260	<330	<330	--	<330	<260	<330	--	<330	<330
Pyrene	--	480000	ID	<260	<330	<330	--	<330	<260	<330	--	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<8.0	<10	<10	--	<10	<7.9	<10	--	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<8.0	<10	<10	--	<10	<7.9	<10	--	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<8.0	<10	<10	--	<10	<7.9	<10	--	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<24	<30	<30	--	<30	<24	<30	--	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A7B5 10-12' 11/6/95	A7B5 10-12' 11/6/95	A7B5 18-20' 11/6/95	A7B5 18-20' 11/6/95	A7B6 10-12' 11/6/95	A7B6 18-20' 11/6/95	A7B6 18-20' 11/6/95	A7B7 18-20' 11/6/95	A7B7 22-24' 11/6/95	A7B7 22-24' 11/6/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	95	--	95	--	--	93	--	--	96	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	<790	--	--	--	--	<810	--	--	<780	--
SVOCs													
Acenaphthene	--	300000	4400	--	<330	<260	<330	<330	--	<330	<330	--	<330
Anthracene	--	41000	ID	--	<330	<260	<330	<330	--	<330	<330	--	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	--	<330	<260	<330	<330	--	<330	<330	--	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	--	<330	<260	<330	<330	--	<330	<330	--	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	--	<330	<260	<330	<330	--	<330	<330	--	<330
Benzo(g,h,i)perylene	--	NLL	NLL	--	<330	<260	<330	<330	--	<330	<330	--	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	--	<330	<260	<330	<330	--	<330	<330	--	<330
Chrysene	--	NLL Q	NLL Q	--	<330	<260	<330	<330	--	<330	<330	--	<330
Fluoranthene	--	730000	5500	--	<330	<260	<330	<330	--	<330	<330	--	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	--	<330	<260	<330	<330	--	<330	<330	--	<330
Pyrene	--	480000	ID	--	<330	<260	<330	<330	--	<330	<330	--	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	--	<10	<7.9	<10	<10	--	<10	<10	--	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	--	<10	<7.9	<10	<10	--	<10	<10	--	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	--	<10	<7.9	<10	<10	--	<10	<10	--	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	--	<30	<24	<30	<30	--	<30	<30	--	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria										
Location				A7B7 28-30'	A7B8 10-12'	A7B8 18-20'	A7B8 18-20'	A7B9 14-16'	A7B9 18-20'	A8B1 10-12'	A8B1 10-12'	A8B1 18-20'	A8B2 18-20'
Date	2/11/02	2/11/02	2/11/02	11/6/95	11/6/95	11/6/95	11/6/95	11/6/95	11/6/95	11/7/95	11/7/95	11/7/95	11/7/95
Dup													
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	96	--	--	--	93	--	--	94
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	<810	--	--	<800
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Anthracene	--	41000	ID	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Chrysene	--	NLL Q	NLL Q	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Fluoranthene	--	730000	5500	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<260	<330	<330	<330	--	<330	<330	--
Pyrene	--	480000	ID	<330	<330	<260	<330	<330	<330	--	<330	<330	--
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<7.8	<10	<10	<10	--	<10	<10	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<7.8	<10	<10	<10	--	<10	<10	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<7.8	<10	<10	<10	--	<10	<10	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<23	<30	<30	<30	--	<30	<30	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location **Date** **Dup**	**Statewide Default Background Levels** **2/11/02**	**Drinking Water Protection Criteria** **2/11/02**	**Groundwater Surface Water Interface Protection Criteria** **2/11/02**	**A8B2 18-20'** **11/7/95**	**A8B2 22-24'** **11/7/95**	**A8B3 10-12'** **11/7/95**	**A8B3 10-12'** **11/7/95**	**A8B3 18-20'** **11/7/95**	**A8B3 18-20'** **11/7/95**	**A8B4 18-20'** **11/7/95**	**A8B4 22-24'** **11/7/95**	**A8B4 22-24'** **11/7/95**	**A8B5 10-12'** **11/7/95**
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	96	--	95	--	--	94	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	<790	--	--	<800	--	--
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Anthracene	--	41000	ID	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Fluoranthene	--	730000	5500	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	<1700	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<260	<330	--	<330	<330	--	<330	<330
Pyrene	--	480000	ID	<330	<330	<260	<330	--	<330	<330	--	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<7.8	<10	--	<10	<10	--	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<7.8	<10	--	<10	<10	--	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<7.8	<10	--	<10	<10	--	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<23	<30	--	<30	<30	--	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A8B5 18-20' 11/7/95	A8B5 18-20' 11/7/95	A8B6 18-20' 11/7/95	A8B6 22-24' 11/7/95	A8B7 10-12' 11/7/95	A8B7 10-12' 11/7/95	A8B7 18-20' 11/7/95	A8B7 18-20' 11/7/95	A8B9 10-12' 11/7/95	A8B9 18-20' 11/7/95
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	93	--	--	--	95	--	94	--	--	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	<800	--	--	--
SVOCs													
Acenaphthene	--	300000	4400	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Anthracene	--	41000	ID	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Chrysene	--	NLL Q	NLL Q	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Fluoranthene	--	730000	5500	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
Pyrene	--	480000	ID	<270	<330	<330	<330	<260	<330	--	<330	<330	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<8.1	<10	<10	<10	<7.9	<10	--	<10	<10	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<8.1	<10	<10	<10	<7.9	<10	--	<10	<10	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<8.1	<10	<10	<10	<7.9	<10	--	<10	<10	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<24	<30	<30	<30	<24	<30	--	<30	<30	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria												
Location Date Dup	**Statewide Default Background Levels 2/11/02**	**Drinking Water Protection Criteria 2/11/02**	**Groundwater Surface Water Interface Protection Criteria 2/11/02**	**A8B10 10-12' 11/7/95**	**A8B10 18-20' 11/7/95**	**A8B11 15-16' 11/8/95**	**A8B11 2-4' 11/8/95**	**A8B12 15-16' 11/8/95**	**A8B12 2-4' 11/8/95**	**A9B1 10-12' 11/7/95**	**A9B1 10-12' 11/7/95**	**A9B1 18-20' 11/7/95**	**A9B1 18-20' 11/7/95**
Exceedance Key	Bold	Underline	Box										
Solids, %	--	--	--	--	--	--	--	--	--	95	--	95	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	--	--	--	<790	--
SVOCs													
Acenaphthene	--	300000	4400	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Anthracene	--	41000	ID	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Chrysene	--	NLL Q	NLL Q	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Fluoranthene	--	730000	5500	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
Pyrene	--	480000	ID	<330	<330	<330	<330	<330	<330	<260	<330	--	<330
VOCs													
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	<10	<10	<10	<10	<10	<7.9	<10	--	--
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	<10	<10	<10	<10	<10	<7.9	<10	--	--
Methylene chloride	--	100	19000 X	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	<10	<10	<10	<10	<10	<7.9	<10	--	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	<30	<30	<30	<30	<30	<24	<30	--	--

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A9B2 10-12' 11/7/95	A9B2 18-20' 11/7/95	A9B2 18-20' 11/7/95	A9B3 10-12' 11/7/95	A9B3 10-12' 11/7/95
Exceedance Key	Bold	Underline	Box					
Solids, %	--	--	--	--	95	--	95	--
Metals								
Lead	21000 B	700000 B	7900000 B,G,M,X	--	<790	--	<790	--
SVOCs								
Acenaphthene	--	300000	4400	<330	--	<330	<260	<330
Anthracene	--	41000	ID	<330	--	<330	<260	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	<330	<260	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	<330	<260	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<260	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	<330	<260	<330
Benzo(k)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<260	<330
Chrysene	--	NLL Q	NLL Q	<330	--	<330	<260	<330
Fluoranthene	--	730000	5500	<330	--	<330	<260	<330
Pentachlorophenol	--	22	G,X	--	--	--	--	--
Phenanthrene	--	56000	5300	<330	--	<330	<260	<330
Pyrene	--	480000	ID	<330	--	<330	<260	<330
VOCs								
1,1,1-Trichloroethane	--	4000	4000	--	--	--	--	--
Benzene	--	100 I	4000 I,X	<10	--	<10	<7.9	<10
Chlorobenzene	--	2000 I	940 I	--	--	--	--	--
Chloroform	--	2000 W	3400 X	--	--	--	--	--
Ethyl benzene	--	1500 I	360 I	<10	--	<10	<7.9	<10
Methylene chloride	--	100	19000 X	--	--	--	--	--
Tetrachloroethylene	--	100	900 X	--	--	--	--	--
Toluene	--	16000 I	2800 I	<10	--	<10	<7.9	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	<30	<24	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

Location Date Dup	Michigan Part 201 Criteria Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A9B3 18-20' 11/7/95	A9B4 14-16' 11/7/95	A9B4 14-16' 11/7/95	A9B4 18-20' 11/7/95	A9B5 10-12' 11/7/95	A9B5 18-20' 11/7/95	A9B5 18-20' 11/7/95	A9B6 10-12' 11/7/95	A9B6 18-20' 11/7/95	A9B6 18-20' 11/7/95
Exceedance Key	Bold	Underline	Box										
General Parameters													
Solids, %	--	--	--	--	95	--	--	--	95	--	--	96	--
Metals													
Lead	21000 B	700000 B	7900000 B,G,M,X	--	<790	--	--	--	--	--	--	<780	--
SVOCs													
Acenaphthene	--	300000	4400	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Anthracene	--	41000	ID	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Benzo(a)anthracene	--	NLL Q	NLL Q	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Benzo(a)pyrene	--	NLL Q	NLL Q	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Benzo(g,h,i)perylene	--	NLL	NLL	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Chrysene	--	NLL Q	NLL Q	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Fluoranthene	--	730000	5500	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Phenanthrene	--	56000	5300	<330	--	<330	<330	<330	<260	<330	<330	--	<330
Pyrene	--	480000	ID	<330	--	<330	<330	<330	<260	<330	<330	--	<330
VOCs													
Ethyl benzene	--	1500 I	360 I	<10	--	<10	<10	<10	<7.9	<10	<10	--	<10
Toluene	--	16000 I	2800 I	<10	--	<10	<10	<10	<7.9	<10	<10	--	<10
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<30	--	<30	<30	<30	<24	<30	<30	--	<30

Table 2
Soil Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/kg, unless noted otherwise)

	Michigan Part 201 Criteria											
Location Date Dup	Statewide Default Background Levels 2/11/02	Drinking Water Protection Criteria 2/11/02	Groundwater Surface Water Interface Protection Criteria 2/11/02	A9B7 2-4' 11/8/95	A9B7 2-4' 11/8/95	A9B7 15-16' 11/8/95	A9B8 2-4' 11/8/95	A9B8 14-15' 11/8/95	BG1 6-8 11/4/95	BG2 10-12' 11/4/95	Bkgrnd3 10-12' 11/7/95	Bkgrnd4 10-12' 11/7/95
Exceedance Key	Bold	Underline	Box									
General Parameters												
Solids, %	--	--	--	94	--	--	--	--	94	94	96	94
Metals												
Lead	21000 B	700000 B	7900000 B,G,M,X	--	--	--	--	--	<800	<800	<780	<800
SVOCs												
Acenaphthene	--	300000	4400	<260	<330	<330	<330	<330	--	--	--	--
Anthracene	--	41000	ID	<260	<330	<330	<330	<330	--	--	--	--
Benzo(a)anthracene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	--	--	--	--
Benzo(a)pyrene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	--	--	--	--
Benzo(b)fluoranthene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	--	--	--	--
Benzo(g,h,i)perylene	--	NLL	NLL	<260	<330	<330	<330	<330	--	--	--	--
Chrysene	--	NLL Q	NLL Q	<260	<330	<330	<330	<330	--	--	--	--
Fluoranthene	--	730000	5500	<260	<330	<330	<330	<330	--	--	--	--
Phenanthrene	--	56000	5300	530	<330	<330	<330	<330	--	--	--	--
Pyrene	--	480000	ID	<260	<330	<330	<330	<330	--	--	--	--
VOCs												
Ethyl benzene	--	1500 I	360 I	<8.0	<10	<10	<10	<10	--	--	--	--
Toluene	--	16000 I	2800 I	<8.0	<10	<10	<10	<10	--	--	--	--
Trichloroethylene	--	100	4000 X	--	--	--	--	--	--	--	--	--
Xylenes total	--	5600 I	700 I	<24	<30	<30	<30	<30	--	--	--	--

Data Qualifiers/Footnotes

--	Not analyzed/not available.
DLND	Not detected, detection limit not determined.
ND	Not detected.
a	Estimated value, calculated using some or all values that are estimates.
B	The reported value is less that the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
b	Potential false positive value based on blank data validation procedures.
c	Coeluting compound.
e	Estimated value, exceeded the instrument calibration range.
h	EPA sample extraction or analysis holding time was exceeded.
I	Indeterminate value based on failure of blind duplicate data to meet quality assurance criteria.
J	Associated value is an estimate.
j	Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
p	Small peak in chromatogram below method detection limit.
r	The presence of the compound is suspect based on the ID criteria of the retention time and relative retention time obtained from the examination of the chromatograms.
s	Potential false positive value based on statistical analysis of blank sample data.
U	Not detected.
*	Estimated value, QA/QC criteria not met. Matrix Spike recoveries for Iron exceeded acceptance criteria, however sample concentrations were greater than four times the spike amounts. Chromium duplicate RPDs were slightly higher than expected

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

Location	Michigan Part 201 Criteria: Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria	A7B1 37-39'	A7B1 scn 37-39'	A7B15	A7B15 37-42'	A7B15 scn37-42'	MW01	MW01	MW01	MW01	MW01	MW02	MW02
Date	2/11/02	2/11/02	2/11/02	11/6/95	11/6/95	11/8/95	11/7/95	11/8/95	6/4/87	9/25/90	11/12/90	7/11/91	6/9/96	6/4/87	9/25/90
Dup															
Exceedance Key	Bold	Underline	Box												
Metals															
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	--	--	--	--	--	<2000	--	--	--	--	<2000	--
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	--	--	--	--	--	<10	--	--	--	--	<10	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	<50	--	--	--	--	<50	--
Copper	1000 E,B	29 G,B	7400000 B	--	--	--	--	--	<10	--	--	--	--	<10	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	--	<2	--	--	<2	<50	--	--	--	**4 J**	<50	--
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	<50	--	--	--	--	<50	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	100 A,B	170 B,G	74000000 B	--	--	--	--	--	<10	--	--	--	--	<10	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	--	--	--	<20	--	--	--	--	<20	--
SVOCs															
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	--	--	--	--	--	**16 hB**	<10 h	<10	--	--	<10 hB	**6 Jh**
Diethyl phthalate	5500	110	1100000 S	--	--	--	--	--	<10 h	<10 h	<10	--	--	<10 h	<10 h
TPHs															
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs					--			--							
1,1,1-Trichloroethane	200 A	200	1300000 S	--	--	--	--	--	<5	<5	--	<5	--	<5	<5
1,1,2-Trichloroethane	5.0 A	330 X	21000	--	--	--	--	--	<5	<5	--	<5	--	<5	<5
Acetone	730	1700 I	31000000 I	--	--	--	--	--	--	<10	--	<10	--	--	<10
Benzene	5.0 A,I	200 I,X	11000 I	<1.0	<5	<1.0	--	<5	<5	<5	--	<5	<0.45	<5	<5
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	--	--	--	--	<5	--	<5	--	--	<5
Ethyl benzene	74 E,I	18 I	170000 I,S	1.1	<1	<1.0	--	<1	<5	<5	--	<5	<0.50	<5	<5
Methylene chloride	5.0 A	940 X	220000	--	--	--	--	--	<5	<5	--	<5	--	<5	<5
Toluene	790 E,I	140 I	530000 I,S	2.1	2	<1.0	--	<1	<5	<5	--	<5	<0.55	<5	<5
Trichloroethylene	5.0 A	200 X	37000	--	--	--	--	--	<5	<5	--	<5	--	<5	<5
Xylene m-	--	--	--	--	--	--	--	--	--	--	--	--	<1.4	--	--
Xylene o-	--	--	--	--	--	--	--	--	--	--	--	--	<0.60	--	--
Xylenes total	280 E,I	35 I	190000 S	19	<3	<3.0	--	<3	--	<5	--	<5	<1.4	--	<5

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria															
	Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria													
Location				MW02	MW02	MW03	MW03	MW03	MW03	MW03	MW03	MW03	MW03	MW03	MW03	MW03
Date	2/11/02	2/11/02	2/11/02	11/13/90	6/9/96	6/4/87	6/4/87	9/24/90	9/24/90	9/24/90	11/13/90	11/13/90	7/11/91	7/11/91	7/11/91	6/8/96
Dup							DUP		DUP	DUP		DUP		DUP	DUP	
Exceedance Key	Bold	Underline	Box													
Metals																
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	--	--	<2000	--	--	--	--	--	--	--	--	--	--
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	--	--	<10	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	<50	--	--	--	--	--	--	--	--	--	--
Copper	1000 E,B	29 G,B	7400000 B	--	--	<10	--	--	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	--	**4 J**	<50	--	--	--	--	--	--	--	--	--	3 J
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	<50	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	100 A,B	170 B,G	74000000 B	--	--	<10	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	<20	--	--	--	--	--	--	--	--	--	--
SVOCs																
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	<10	--	**11 hB**	**13 hB**	<10 h	<10 h	<10 h	<10	<10	--	--	--	--
Diethyl phthalate	5500	110	1100000 S	<10	--	<10 h	<10 h	<10 h	<10 h	<10 h	<10	79	--	--	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	200 A	200	1300000 S	--	--	<5	--	--	--	--	<5	<5	<5	<5	<5	--
1,1,2-Trichloroethane	5.0 A	330 X	21000	--	--	<5	--	--	--	--	<5	<5	<5	<5	<5	--
Acetone	730	1700 I	31000000 I	--	--	--	--	--	--	--	9 JB	30 B	<10	<10	<10	--
Benzene	5.0 A,I	200 I,X	11000 I	--	<0.45	<5	--	--	--	--	<5	<5	<5	<5	<5	<0.45
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	--	--	--	--	--	<5	<5	46	48	48	--
Ethyl benzene	74 E,I	18 I	170000 I,S	--	<0.50	<5	--	--	--	--	<5	<5	<5	<5	<5	<0.50
Methylene chloride	5.0 A	940 X	220000	--	--	<5	--	--	--	--	<5	<5	<5	<5	<5	--
Toluene	790 E,I	140 I	530000 I,S	--	<0.55	<5	--	--	--	--	<5	<5	<5	<5	<5	<0.55
Trichloroethylene	5.0 A	200 X	37000	--	--	<5	--	--	--	--	<5	<5	<5	<5	<5	--
Xylene m-	--	--	--	--	<1.4	--	--	--	--	--	--	--	--	--	--	<1.4
Xylene o-	--	--	--	--	<0.60	--	--	--	--	--	--	--	--	--	--	<0.60
Xylenes total	280 E,I	35 I	190000 S	--	<1.4	--	--	--	--	--	<5	<5	<5	<5	<5	<1.4

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria															
Location	Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria	MW04	MW04	MW04	MW05	MW05	MW05	MW05	MW06	MW06	MW06	MW06	MW07	MW07
Date	2/11/02	2/11/02	2/11/02	6/4/87	9/25/90	11/13/90	9/24/90	11/13/90	6/9/96	8/27/97	9/25/90	11/12/90	6/9/96	8/27/97	9/25/90	11/12/90
Dup																
Exceedance Key	Bold	Underline	Box													
Metals																
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	<2000	--	--	--	--	--	--	--	--	--	--	--	--
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	<10	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	<10	--	--	--	--	--	2.7 J	--	--	--	2.4 J	--	--
Copper	1000 E,B	29 G,B	7400000 B	<10	--	--	--	--	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	<50	--	--	--	--	**27 J**	2.2	--	--	**24 J**	<1	--	--
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	<50	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	100 A,B	170 B,G	74000000 B	<10	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	<20	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	<10 hB	<10 h	<10	<10 h	<10	--	--	<10 h	<10	--	--	<10 h	<10
Diethyl phthalate	5500	110	1100000 S	<10 h	<10 h	<10	<10 h	<10	--	--	<10 h	<10	--	--	<10 h	<10
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	200 A	200	1300000 S	8	<5	--	<5	--	--	--	<5	--	--	--	<5	--
1,1,2-Trichloroethane	5.0 A	330 X	21000	<5	<5	--	<5	--	--	--	<5	--	--	--	<5	--
Acetone	730	1700 I	31000000 I	--	<10	--	<10	--	--	--	<10	--	--	--	<10	--
Benzene	5.0 A,I	200 I,X	11000 I	<5	<5	--	<5	--	<0.45	--	<5	--	0.45	--	<5	--
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	<5	--	<5	--	--	--	<5	--	--	--	<5	--
Ethyl benzene	74 E,I	18 I	170000 I,S	<5	<5	--	<	--	<0.50	--	<5	--	0.50	--	<5	--
Methylene chloride	5.0 A	940 X	220000	<5	<5	--	<5	--	--	--	<5	--	--	--	<5	--
Toluene	790 E,I	140 I	530000 I,S	<5	<5	--	<5	--	<0.55	--	<5	--	0.55	--	<5	--
Trichloroethylene	5.0 A	200 X	37000	<5	<5	--	<5	--	--	--	<5	--	--	--	<5	--
Xylene m-	--	--	--	--	--	--	--	--	<1.4	--	--	--	1.4	--	--	--
Xylene o-	--	--	--	--	--	--	--	--	<0.60	--	--	--	0.60	--	--	--
Xylenes total	280 E,I	35 I	190000 S	--	<5	--	<5	--	<1.4	--	<5	--	1.4	--	<5	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria															
Location	Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria	MW07	MW07	MW08	MW08	MW08	MW08	MW08	MW09	MW09	MW09	MW09	MW10	MW10
Date	2/11/02	2/11/02	2/11/02	6/9/96	8/27/97	9/25/90	11/13/90	7/11/91	6/8/96	8/27/97	9/25/90	11/13/90	6/8/96	8/28/97	9/25/90	11/13/90
Dup																
Exceedance Key	Bold	Underline	Box													
Metals																
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	2.1 J	--	--	--	--	3 J	--	--	--	2.9 J	--	--
Copper	1000 E,B	29 G,B	7400000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	**18 J**	<1	--	--	--	<1	<1	--	--	**5 J**	<1	--	--
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	100 A,B	170 B,G	74000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	--	--	<10 h	<10	--	--	--	<10 h	<10	--	--	<10 h	<10
Diethyl phthalate	5500	110	1100000 S	--	--	<10 h	<10	--	--	--	<10 h	<10	--	--	<10 h	<10
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	200 A	200	1300000 S	--	--	<5	--	<5	--	--	<5	--	--	--	<5	--
1,1,2-Trichloroethane	5.0 A	330 X	21000	--	--	<5	--	<5	--	--	<5	--	--	--	<5	--
Acetone	730	1700 I	31000000 I	--	--	<10	--	<10	--	--	8 J	--	--	--	<10	--
Benzene	5.0 A,I	200 I,X	11000 I	<0.45	--	<5	--	<5	<0.45	--	<5	--	<0.45	--	<5	--
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	<5	--	<5	--	--	<5	--	--	--	<5	--
Ethyl benzene	74 E,I	18 I	170000 I,S	<0.50	--	<5	--	<5	<0.50	--	<5	--	<0.50	--	<5	--
Methylene chloride	5.0 A	940 X	220000	--	--	<5	--	<5	--	--	1 J	--	--	--	<5	--
Toluene	790 E,I	140 I	530000 I,S	<0.55	--	<5	--	<5	<0.55	--	1 J	--	<0.55	--	<5	--
Trichloroethylene	5.0 A	200 X	37000	--	--	3 J	--	3 J	--	--	<5	--	--	--	<5	--
Xylene m-	--	--	--	<1.4	--	--	--	--	<1.4	--	--	--	<1.4	--	--	--
Xylene o-	--	--	--	<0.60	--	--	--	--	<0.60	--	--	--	<0.60	--	--	--
Xylenes total	280 E,I	35 I	190000 S	<1.4	--	<5	--	<5	<1.4	--	<5	--	<1.4	--	<5	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria															
	Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria													
Location				MW10	MW10	MW10	MW11	MW11	MW11	MW11	MW12	MW12	MW12	MW12	MW12	MW12
Date	2/11/02	2/11/02	2/11/02	6/8/96	8/28/97	8/28/97	9/25/90	11/13/90	6/8/96	8/26/99	9/25/90	9/25/90	9/25/90	11/13/90	6/8/96	8/26/97
Dup												DUP	DUP			
Exceedance Key	Bold	Underline	Box													
Metals																
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	2.7 J	2.7 J	--	--	--	1.9 J	--	--	--	--	--	2.9 J
Copper	1000 E,B	29 G,B	7400000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	**49 J**	<1	<1	--	--	11 J	<1	--	--	--	--	16 J	<1
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	100 A,B	170 B,G	74000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	--	--	--	5 Jh	<10	--	--	<10 h	**16 h**	<10 h	<10	--	--
Diethyl phthalate	5500	110	1100000 S	--	--	--	<10 h	<10	--	--	<10 h	<10 h	<10 h	<10	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1-Trichloroethane	200 A	200	1300000 S	--	--	--	<5	--	--	--	<5	<5	<5	--	--	--
1,1,2-Trichloroethane	5.0 A	330 X	21000	--	--	--	<5	--	--	--	<5	<5	<5	--	--	--
Acetone	730	1700 I	31000000 I	--	--	--	<10	--	--	--	<10	<10	16	--	--	--
Benzene	5.0 A,I	200 I,X	11000 I	<0.45	--	--	<5	--	<0.45	--	<5	<5	<5	--	<0.45	--
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	--	<5	--	--	--	<5	<5	<5	--	--	--
Ethyl benzene	74 E,I	18 I	170000 I,S	<0.50	--	--	<5	--	<0.50	--	<5	<5	<5	--	<0.50	--
Methylene chloride	5.0 A	940 X	220000	--	--	--	<5	--	--	--	<5	<5	1 J	--	--	--
Toluene	790 E,I	140 I	530000 I,S	<0.55	--	--	<5	--	<0.55	--	<5	<5	2 J	--	<0.55	--
Trichloroethylene	5.0 A	200 X	37000	--	--	--	<5	--	--	--	<5	<5	<5	--	--	--
Xylene m-	--	--	--	<1.4	--	--	--	--	<1.4	--	--	--	--	--	<1.4	--
Xylene o-	--	--	--	<0.60	--	--	--	--	<0.60	--	--	--	--	--	<0.60	--
Xylenes total	280 E,I	35 I	190000 S	<1.4	--	--	<5	--	<1.4	--	<5	<5	<5	--	<1.4	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

Location	Michigan Part 201 Criteria: Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria	MW13	MW13	MW13	MW14	MW14	MW14	MW14	MW15	MW15	MW15	MW15	RG-1	RG-1
Date	2/11/02	2/11/02	2/11/02	7/11/91	6/8/96	8/26/97	7/11/91	7/11/91	6/8/96	8/27/97	7/11/91	7/11/91	6/9/96	8/27/97	1/13/87	1/13/87
Dup								DUP			DUP				DUP	
Exceedance Key	Bold	Underline	Box													
Metals																
Aluminum	50 B,V	NA B	64000000 B	--	--	--	**3400**	**2900**	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	--	--	--	1.4	<1	--	--	--	--	--	--	<3.5	<3.5
Barium	2000 A,B	1900 G,X	14000000 B	--	--	--	59	59	--	--	--	--	--	--	62	44
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	--	--	--	--	--	--	--	--	--	--	--	19	19
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	--	--	--	<2	<2	--	--	--	--	--	--	<1	<1
Calcium	--	--	--	--	--	--	4200	4000	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	2.1 J	<u>39</u>	<u>30</u>	--	2.9 J	--	--	--	1.6 J	6	<5
Copper	1000 E,B	29 G,B	7400000 B	--	--	--	20	16	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	**12000**	**9200**	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	--	**27 J**	<1	**9.5**	**11**	**4 J**	<1	--	--	**6 J**	<1	**9**	<5
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	--	--	--	--	--	--	--	--	--	--	--	<5	<5
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	1300	1100	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	**350**	**290**	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	<0.2	**<u>3</u>**	--	--	--	--	--	--	<200	<200
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	--	--	--	--	--	<200	<200
Nickel	100 A,B	170 B,G	74000000 B	--	--	--	32	24	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	1800	1700	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	1700	1100	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	--	27	24	--	--	--	--	--	--	--	--
SVOCs																
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	5500	110	1100000 S	--	--	--	--	--	--	--	--	--	--	--	--	--
TPHs																
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<500	<500
VOCs																
1,1,1-Trichloroethane	200 A	200	1300000 S	--	--	--	<5	<5	--	--	<5	<5	--	--	<1.2	<1.2
1,1,2-Trichloroethane	5.0 A	330 X	21000	--	--	--	<5	<5	--	--	**5**	<5	--	--	<1.6	<1.6
Acetone	730	1700 I	31000000 I	--	--	--	<10	<10	--	--	<10	<10	--	--	--	--
Benzene	5.0 A,I	200 I,X	11000 I	<1	<0.45	--	<5	<5	<0.45	--	<5	<5	<0.45	--	<0.5	<0.5
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	--	<5	<5	--	--	<5	<5	--	--	--	--
Ethyl benzene	74 E,I	18 I	170000 I,S	<1	<0.50	--	<5	<5	<0.50	--	<5	<5	<0.50	--	<0.4	<0.4
Methylene chloride	5.0 A	940 X	220000	--	--	--	1 J	<5	--	--	<5	2 JB	--	--	4.9 B	**5.5 B**
Toluene	790 E,I	140 I	530000 I,S	<1	<0.55	--	<5	<5	<0.55	--	<5	<5	<0.55	--	<1.0	<1.0
Trichloroethylene	5.0 A	200 X	37000	--	--	--	<5	<5	--	--	<5	<5	--	--	<1.3	<1.3
Xylene m-	--	--	--	--	<1.4	--	--	--	<1.4	--	--	--	<1.4	--	--	--
Xylene o-	--	--	--	--	<0.60	--	--	--	<0.60	--	--	--	<0.60	--	--	--
Xylenes total	280 E,I	35 I	190000 S	<1	<1.4	--	<5	<5	<1.4	--	<5	<5	<1.4	--	--	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

Location	Michigan Part 201 Criteria: Res. & Com. Drinking Water Criteria	Michigan Part 201 Criteria: Groundwater Surface Water Interface Criteria	Michigan Part 201 Criteria: Groundwater Contact Criteria	RG-1	RG-1	RG-2	RG-2	RG-3	RG-3	RG4	RG-4	RG-4	WELL INSTALL	WELL INSTALL
Date	2/11/02	2/11/02	2/11/02	1/13/87	8/27/97	1/15/87	8/28/97	1/15/87	8/28/97	6/7/96	1/13/87	8/26/97	12/3/86	12/3/86
Dup														
Exceedance Key	Bold	Underline	Box											
Metals														
Aluminum	50 B,V	NA B	64000000 B	--	--	--	--	--	--	--	--	--	--	--
Arsenic	50 A	150 X	4300	<5	--	<3.5	--	<3.5	--	--	<3.5	--	<3.5	--
Barium	2000 A,B	1900 G,X	14000000 B	38	--	29	--	78	--	--	19	--	14	--
Barium, dissolved	2000 A,B	1900 G,X	14000000 B	20	--	26	--	71	--	--	12	--	13	--
Cadmium	5.0 A,B	6.2 B,G,X	190000 B	<3.0	--	<1	--	<1	--	--	<1	--	<1	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	<10	2.8 J	<5	3 J	<5	3 J	--	<5	1.7 J	<5	--
Copper	1000 E,B	29 G,B	7400000 B	--	--	--	--	--	--	--	--	--	--	--
Iron	300 E,B	NA B	58000000 B	--	--	--	--	--	--	--	--	--	--	--
Lead	4.0 B,L	45 B,G,X	ID B	<50	<1	<5	<1	<5	<1	2	<5	<1	<5	--
Lead, dissolved	4.0 B,L	45 B,G,X	ID B	<50	--	<5	--	<5	--	--	<5	--	8	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	--	--	--	--	--
Manganese	50 E,B	6500 G,X B	9100000 B	--	--	--	--	--	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	<0.2	--	<200	--	<200	--	--	<200	--	870	--
Mercury, dissolved	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	<0.2	--	<200	--	<200	--	--	<200	--	<200	--
Nickel	100 A,B	170 B,G	74000000 B	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	--	--	--	--	--
Zinc	2400 B	380 B,G	110000000 B	--	--	--	--	--	--	--	--	--	--	--
SVOCs														
Bis(2-ethylhexyl)phthalate	6.0 A	32	320 AA	--	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	5500	110	1100000 S	--	--	--	--	--	--	--	--	--	--	--
TPHs														
Total Petroleum Hydrocarbons	--	--	--	--	--	<500	--	<1800	--	--	<500	--	1700	1700
VOCs														
1,1,1-Trichloroethane	200 A	200	1300000 S	<5.0	--	<1.2	--	<1.2	--	--	<1.2	--	<1.2	--
1,1,2-Trichloroethane	5.0 A	330 X	21000	<5.0	--	<1.6	--	<1.6	--	--	<1.6	--	<1.6	--
Acetone	730	1700 I	31000000 I	--	--	--	--	--	--	--	--	--	--	--
Benzene	5.0 A,I	200 I,X	11000 I	<5.0	--	<0.5	--	<0.5	--	<0.45	<0.5	--	<0.5	--
Carbon disulfide	800 I,R	ID I,R	1200000 I, R,S	--	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	74 E,I	18 I	170000 I,S	<5.0	--	<0.4	--	<0.4	--	<0.50	1.5	--	<0.4	--
Methylene chloride	5.0 A	940 X	220000	<5.0	--	3.5 B	--	3.8 B	--	--	4.6 B	--	**22.0 B**	--
Toluene	790 E,I	140 I	530000 I,S	<5.0	--	<1.0	--	<1.0	--	<0.55	1.9	--	<1.0	--
Trichloroethylene	5.0 A	200 X	37000	<5.0	--	<1.3	--	3.0	--	--	<1.3	--	<1.3	--
Xylene m-	--	--	--	--	--	--	--	--	--	<1.4	--	--	--	--
Xylene o-	--	--	--	--	--	--	--	--	--	<0.60	--	--	--	--
Xylenes total	280 E,I	35 I	190000 S	--	--	--	--	--	--	<1.4	--	--	--	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria														
Location	**Res. & Com. Drinking Water Criteria**	**Groundwater Surface Water Interface Criteria**	**Groundwater Contact Criteria**	**Barrette**	**Bennett**	**Natl Fish Hatch**	**Natl Fish Hatch**	**Natl Frst Camp**	**Natl Frst Rngr**	**RG-1**	**RG-2**	**RG-2**	**RG-3**	**Service Well**	**West 1-S**
Date	**2/11/02**	**2/11/02**	**2/11/02**	**5/8/89**	**5/8/89**	**5/1/89**	**5/1/89**	**5/1/89**	**5/1/89**	**8/21/89**	**8/21/89**	**8/21/89**	**8/21/89**	**8/21/89**	**6/1/85**
Dup							**DUP**					**DUP**			
Exceedance Key	Bold	Underline	Box												
General Parameters															
Carbon, total organic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30000
Metals															
Barium	2000 A,B	G,X	14000000 B	--	--	--	--	--	--	<50	<50	<50	130	150	--
Lead	4.0 B,L	B,G,X	ID B	--	--	--	--	--	--	**7**	**6**	**6**	**7**	**7**	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--	1400	2000	2000	1300	4200	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--	<0.2	<0.2	<0.2	<0.2	<u>0.4</u>	--
Silver	34 B	0.2 B,M	1500000 B	--	--	--	--	--	--	<10	<u>10</u>	<10	<u>10</u>	<10	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--	3.2	2.4	3.1	<4.9	4.1	--
Pesticides/PCBs															
Endrin	2.0 A	NA	160 AA	--	--	--	--	--	--	<0.05	<0.05	<0.05	0.50	<0.05	--
TPHs															
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--	5000	2000	2000	10000	2000	--

Table 3
Groundwater Analytical Data
Detected Parameters
Raco/Bomarc
(concentrations in ug/L)

	Michigan Part 201 Criteria								
Location	Res. & Com. Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Contact Criteria	West 2-S	West 3-N	West 4-N	West 5-N	West 6-N	Willis
Date	2/11/02	2/11/02	2/11/02	6/1/85	6/1/85	6/1/85	6/1/85	6/1/85	5/8/89
Dup									
Exceedance Key	Bold	Underline	Box						
General Parameters									
Carbon, total organic	--	--	--	9000	8000	6000	4000	8000	--
Metals									
Barium	2000 A,B	G,X	14000000 B	--	--	--	--	--	--
Lead	4.0 B,L	B,G,X	ID B	--	--	--	--	--	--
Magnesium	400000 B	NA B	1000000000 B,D	--	--	--	--	--	--
Mercury	2.0 A, B,Z	0.0013 B,Z	56 B, S,Z	--	--	--	--	--	--
Silver	34 B	0.2 B,M	1500000 B	--	--	--	--	--	--
Sodium	120000	NA	1000000000 D	--	--	--	--	--	--
Pesticides/PCBs									
Endrin	2.0 A	NA	160 AA	--	--	--	--	--	--
TPHs									
Total Petroleum Hydrocarbons	--	--	--	--	--	--	--	--	--

Data Qualifiers / Footnotes
Raco/Bomarc

--	Not analyzed.
A	The Tentatively Identified Compound is a suspected Aldol condensation product.(o)
B	The reported value is less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).(i)
B	The analyte is found in the associated blank as well as the sample. (When properly validated, this qualifier is replaced with a "U" or nothing.) (o)
C	The presence of this compound was confirmed by GC/MS analysis. (applies to pesticide results only)(o)
D	Used to indicate that a dilution was necessary to bring compound within the calibration range. The sample number is given the suffix DL. (o)
E	Estimated value because of interference. (i)
E	For GC/MS only when the compound is outside of the calibration range. (o)
J	Associated value is an estimate.
M	Precision of duplicates did not meet criteria. (i)
N	Spiked sample recovery not within control limits. (i)
N	Tentatively identified compound. (o)
P	Greater than 25 percent difference for detected concentrations between primary and confirmation GC columns. Result reported is the lower of the two values. (applies to pesticide results only, use the lower value on Form 1) (o)
R	Associated value is unusable. (o)
S	The reported value was determined by the Method of Standard Addition. (i)
U	Not detected or less than the IDL. (i)
U	Not detected. (o)
W	Post digestion spike for furnace AA analysis is beyond the 85-115% control limits. Sample absorbance is less than 5% of spike absorbance. (i)
X	Compound concentration has been manually modified or the EPA qualifier has been manually modified or added. (o)
h	EPA sample extraction or analysis holding time was exceeded.

This site is considered not protective for surface water that is used as a drinking water source, for a groundwater discharge to the great lakes and their connecting waters, or discharge in close proximity to a water supply intake in inland surface waters.

Footnotes X and G have been evaluated according to the MDEQ footnotes.

Where applicable, GSI Criteria were calculated assuming a receiving water hardness of 400mg/CaCO/L.

R 299.5750 FOOTNOTES FOR GENERIC CRITERIA TABLES.

RULE 750. (1) THE FOOTNOTES THAT APPLY TO THE GENERIC CRITERIA TABLES IN R 299.5744, R 299.5746, AND R 299.5748 ARE AS FOLLOWS:

(A) CRITERION IS THE STATE OF MICHIGAN DRINKING WATER STANDARD ESTABLISHED PURSUANT TO SECTION 5 OF 1976 PA 399, MCL 325.1005.

(B) BACKGROUND, AS DEFINED IN R 299.5701(b), MAY BE SUBSTITUTED IF HIGHER THAN THE CALCULATED CLEANUP CRITERION. BACKGROUND LEVELS MAY BE LESS THAN CRITERIA FOR SOME INORGANIC COMPOUNDS.

(C) VALUE PRESENTED IS A SCREENING LEVEL BASED ON THE CHEMICAL-SPECIFIC GENERIC SOIL SATURATION CONCENTRATION (Csat) SINCE THE CALCULATED RISK-BASED CRITERION IS GREATER THAN Csat. CONCENTRATIONS GREATER THAN Csat ARE ACCEPTABLE CLEANUP CRITERIA FOR THIS PATHWAY WHERE A SITE-SPECIFIC DEMONSTRATION INDICATES THAT FREE-PHASE MATERIAL CONTAINING A HAZARDOUS SUBSTANCE IS NOT PRESENT.

(D) CALCULATED CRITERION EXCEEDS 100%, HENCE IT IS REDUCED TO 100% OR 1.0E+9 ppb.

(E) CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120(1)(5) OF THE ACT. A NOTICE OF

AESTHETIC IMPACT OR APPROVED NOTICE OF AESTHETIC IMPACT MAY BE EMPLOYED AS AN INSTITUTIONAL CONTROL MECHANISM IF GROUNDWATER CONCENTRATIONS EXCEED THE AESTHETIC DRINKING WATER CRITERION, BUT DO NOT EXCEED THE APPLICABLE HEALTH-BASED DRINKING WATER VALUE PROVIDED IN THE FOLLOWING TABLE:

Hazardous Substance	Chemical Abstract Service Number	Residential Health-Based Drinking Water Value	Industrial-Commercial Health-Based Drinking Water Value
Aluminum	7429905	300	4,100
tertiary Amyl methyl ether	994058	910	2,600
Copper	7440508	1,400	4,000
Diethyl ether	60297	3,700	10,000
Ethylbenzene	100414	700	700
Iron	7439896	2,000	5,600
Manganese	7439965	860	2,500
Methyl-tert-butyl ether (MTBE)	1634044	240	690
Toluene	108883	1,000	1,000
1,2,4-Trimethylbenzene	95636	1,000	2,900
1,3,5-Trimethylbenzene	108678	1,000	2,900
Xylenes	1330207	10,000	10,000

(F) CRITERION IS BASED ON ADVERSE IMPACTS TO PLANT LIFE AND PHYTOTOXICITY.

(G) GROUNDWATER SURFACE WATER INTERFACE (GSI) CRITERION DEPENDS ON THE pH OR WATER HARDNESS, OR BOTH, OF THE RECEIVING SURFACE WATER. THE FINAL CHRONIC VALUE (FCV) FOR THE PROTECTION OF AQUATIC LIFE SHALL BE CALCULATED BASED ON THE pH OR HARDNESS OF THE RECEIVING SURFACE WATER. WHERE WATER HARDNESS EXCEEDS 400 mg $CaCO_3$/L, USE 400 mg $CaCO_3$/L FOR THE FCV CALCULATION. THE FCV FORMULA PROVIDES VALUES IN UNITS OF ug/L OR ppb. THE

GENERIC GSI CRITERION IS THE LESSER OF THE CALCULATED FCV, THE WILDLIFE VALUE (WV), AND THE SURFACE WATER HUMAN NON-DRINKING WATER VALUE (HNDV). THE SOIL GSI PROTECTION CRITERIA FOR THESE HAZARDOUS SUBSTANCES ARE THE GREATER OF THE 20 TIMES THE GSI CRITERION OR THE GSI SOIL-WATER PARTITION VALUES USING THE GSI CRITERIA DEVELOPED WITH THE PROCEDURE DESCRIBED IN THIS FOOTNOTE.

Hazardous Substance	FCV Formula ug/L	FCV Conversion Factor (CF)	WV ug/L	HNDV ug/L
Barium ⊗	EXP(1.0629*(LnH)+1.1869)	NA	NA	1.6E+5
Beryllium	EXP(2.5279*(LnH)-10.7689)	NA	NA	1,200
Cadmium ⊗	(EXP(0.7852*(LnH)-2.715))*CF	1.101672-((LnH)*(0.041838))	NA	130
Chromium (III) ⊗	(EXP(0.819*(LnH)+0.6848))*CF	0.86	NA	9,400
Copper	(EXP(0.8545*(LnH)-1.702)) *CF	0.96	NA	64,000
Lead ⊗	(EXP(1.273*(LnH)-3.296))*CF	1.46203-((LnH)*(0.14571))	NA	190
Manganese	EXP(0.8784*(LnH)+3.5199)	NA	NA	59,000
Nickel	(EXP(0.846*(LnH)+0.0584))*CF	0.997	NA	2.1E+5
Pentachlorophenol	EXP(1.005*(pH)-5.134)	NA	NA	2.8
Zinc	(EXP(0.8473*(LnH)+0.884))*CF	0.986	NA	22,000

WHERE,

EXP(x) = The base of the natural logarithm raised to power x (e^x).
LnH = The natural logarithm of water hardness in mg $CaCO_3$/L.
* = The multiplication symbol.
⊗ = The GSI criterion developed here may not be protective for surface water that is used as a drinking water source. Refer to footnote (X) for further guidance.

A SPREADSHEET THAT MAY BE USED TO CALCULATE GSI AND GSI PC FOR (G) FOOTNOTED HAZARDOUS SUBSTANCES IS AVAILABLE AT http://www.deq.state.mi.us/erd.

(H) VALENCE-SPECIFIC CHROMIUM DATA (CR III AND CR VI) SHALL BE COMPARED TO THE CORRESPONDING VALENCE-SPECIFIC CLEANUP CRITERIA. IF BOTH CR III AND CR VI ARE PRESENT IN GROUNDWATER, THE TOTAL CONCENTRATION OF BOTH CANNOT

EXCEED THE DRINKING WATER CRITERION OF 100 ug/L. IF ANALYTICAL DATA ARE PROVIDED FOR TOTAL CHROMIUM ONLY, THEY SHALL BE COMPARED TO THE CLEANUP CRITERIA FOR CR VI. CR III SOIL CLEANUP CRITERION FOR PROTECTION OF DRINKING WATER CAN ONLY BE USED AT SITES WHERE GROUNDWATER IS PREVENTED FROM BEING USED AS A PUBLIC WATER SUPPLY, CURRENTLY AND IN THE FUTURE, THROUGH AN APPROVED LAND OR RESOURCE USE RESTRICTION.

(l) HAZARDOUS SUBSTANCE MAY EXHIBIT THE CHARACTERISTIC OF IGNITABILITY AS DEFINED IN 40 C.F.R. §261.21 (REVISED AS OF JULY 1, 2001), WHICH IS ADOPTED BY REFERENCE IN THESE RULES AND WHICH IS AVAILABLE FOR INSPECTION A THE LANSING OFFICE OF THE DEPARTMENT, 525 WEST ALLEGAN STREET, LANSING, MICHIGAN. COPIES OF THE REGULATION MAY BE PURCHASED, AT A COST AS OF THE TIME OF ADOPTION OF THESE RULES OF $45.00, FROM THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20401 (STOCK NUMBER 869-044-00155-1), OR FROM THE DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL RESPONSE DIVISION, 525 WEST ALLEGAN STREET, LANSING, MI 48933, AT COST.

(J) HAZARDOUS SUBSTANCE MAY BE PRESENT IN SEVERAL ISOMER FORMS. ISOMER-SPECIFIC CONCENTRATIONS SHALL BE ADDED TOGETHER FOR COMPARISON TO CRITERIA.

(K) HAZARDOUS SUBSTANCE MAY BE FLAMMABLE OR EXPLOSIVE, OR BOTH.

(L) THE GENERIC RESIDENTIAL DRINKING WATER CRITERION OF 4 ug/L IS LINKED TO THE GENERIC RESIDENTIAL SOIL DIRECT CONTACT CRITERION OF 400 mg/kg. A HIGHER CONCENTRATION IN THE DRINKING WATER, UP TO THE STATE ACTION LEVEL OF 15 ug/L, MAY BE ALLOWED AS A SITE-SPECIFIC REMEDY, AND STILL ALLOW FOR DRINKING WATER USE, UNDER SECTION 20120a(2) OF THE ACT IF SOIL CONCENTRATIONS ARE APPROPRIATELY LOWER THAN 400 mg/kg. IF A SITE-SPECIFIC CRITERION IS APPROVED BASED ON THIS SUBDIVISION, A NOTICE SHALL BE FILED ON THE DEED FOR ALL PROPERTY WHERE THE GROUNDWATER CONCENTRATIONS WILL EXCEED 4 ug/L TO PROVIDE NOTICE OF THE POTENTIAL FOR UNACCEPTABLE RISK IF SOIL OR GROUNDWATER CONCENTRATIONS INCREASE. ACCEPTABLE COMBINATIONS OF SITE-SPECIFIC SOIL AND DRINKING WATER CONCENTRATIONS ARE PRESENTED IN THE FOLLOWING TABLE:

ACCEPTABLE COMBINATIONS OF LEAD IN DRINKING WATER AND SOIL

Drinking Water Concentration (ug/L)	Soil Concentration (mg/kg)
5	386-395
6	376-385
7	376-385
8	366-375

9	356-365
10	346-355
11	336-345
12	336-345
13	326-335
14	316-325
15	306-315

(M) CALCULATED CRITERION IS BELOW THE ANALYTICAL TARGET DETECTION LIMIT, THEREFORE, THE CRITERION DEFAULTS TO THE TARGET DETECTION LIMIT.

(N) THE CONCENTRATIONS OF ALL POTENTIAL SOURCES OF NITRATE-NITROGEN (e.g., AMMONIA-N, NITRITE-N, NITRATE-N) IN GROUNDWATER THAT IS USED AS A SOURCE OF DRINKING WATER SHALL NOT, WHEN ADDED TOGETHER, EXCEED THE NITRATE DRINKING WATER CRITERION OF 10,000 ug/L. WHERE LEACHING TO GROUNDWATER IS A RELEVANT PATHWAY, SOIL CONCENTRATIONS OF ALL POTENTIAL SOURCES OF NITRATE-NITROGEN SHALL NOT, WHEN ADDED TOGETHER, EXCEED THE NITRATE DRINKING WATER PROTECTION CRITERION OF 2.0E+5 ug/kg.

(O) THE CONCENTRATION OF ALL POLYCHLORINATED AND POLYBROMINATED DIBENZODIOXIN AND DIBENZOFURAN ISOMERS PRESENT AT A FACILITY, EXPRESSED AS AN EQUIVALENT CONCENTRATION OF 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN BASED UPON THEIR RELATIVE POTENCY, SHALL BE ADDED TOGETHER AND COMPARED TO THE CRITERIA FOR 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN.

(P) AMENABLE CYANIDE METHODS OR METHOD OIA-1677 SHALL BE USED TO QUANTIFY CYANIDE CONCENTRATIONS FOR COMPLIANCE WITH ALL GROUNDWATER CRITERIA. TOTAL CYANIDE METHODS OR METHOD OIA-1677 SHALL BE USED TO QUANTIFY CYANIDE CONCENTRATIONS FOR COMPLIANCE WITH SOIL CRITERIA. INDUSTRIAL/COMMERCIAL DIRECT CONTACT CRITERIA MAY NOT BE PROTECTIVE OF THE POTENTIAL FOR RELEASE OF HYDROGEN CYANIDE GAS. ADDITIONAL LAND OR RESOURCE USE RESTRICTIONS MAYBE NECESSARY TO PROTECT FOR THE ACUTE INHALATION CONCERNS ASSOCIATED WITH HYDROGEN CYANIDE GAS.

(Q) CRITERIA FOR CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS WERE DEVELOPED USING RELATIVE POTENTIAL POTENCIES TO BENZO(A)PYRENE.

(R) HAZARDOUS SUBSTANCE MAY EXHIBIT THE CHARACTERISTIC OF REACTIVITY AS DEFINED IN 40 C.F.R. §261.23 (REVISED AS OF JULY 1, 2001), WHICH IS ADOPTED BY REFERENCE IN THESE RULES AND WHICH IS AVAILABLE FOR INSPECTION A THE LANSING OFFICE OF THE DEPARTMENT, 525 WEST ALLEGAN STREET, LANSING, MICHIGAN. COPIES OF THE REGULATION MAY BE PURCHASED, AT A COST AS OF THE TIME OF ADOPTION OF THESE RULES OF $45.00, FROM THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20401

(STOCK NUMBER 869-044-00155-1), OR FROM THE DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL RESPONSE DIVISION, 525 WEST ALLEGAN STREET, LANSING, MI 48933, AT COST.

(S) CRITERION DEFAULTS TO THE HAZARDOUS SUBSTANCE-SPECIFIC WATER SOLUBILITY LMIT.

(T) REFER TO THE FEDERAL TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 C.F.R. §761, SUBPART D AND 40 C.F.R. §761, SUBPART G, TO DETERMINE THE APPLICABILITY OF TSCA CLEANUP STANDARDS. SUBPART D AND SUBPART G OF 40 C.F.R. §761 (JULY 1, 2001), ARE ADOPTED BY REFERENCE IN THESE RULES AND ARE AVAILABLE FOR INSPECTION A THE LANSING OFFICE OF THE DEPARTMENT, 525 WEST ALLEGAN STREET, LANSING, MICHIGAN. COPIES OF THE REGULATIONS MAY BE PURCHASED, AT A COST AS OF THE TIME OF ADOPTION OF THESE RULES OF $55.00, FROM THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20401, OR FROM THE DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL RESPONSE DIVISION, 525 WEST ALLEGAN STREET, LANSING, MI 48933, AT COST. ALTERNATIVES TO COMPLIANCE WITH THE TSCA STANDARDS LISTED BELOW ARE POSSIBLE UNDER 40 C.F.R. §761 SUBPART D. NEW RELEASES MAY BE SUBJECT TO THE STANDARDS IDENTIFIED IN 40 C.F.R. §761, SUBPART G. USE PART

201 SOIL DIRECT CONTACT CLEANUP CRITERIA IN THE FOLLOWING TABLE IF TSCA STANDARDS ARE NOT APPLICABLE:

LAND USE CATEGORY	TSCA, Subpart D Cleanup Standards	Part 201 Soil Direct Contact Cleanup Criteria
Residential & Commercial I	1,000 ppb, or 10,000 ppb if capped	4,000 ppb
Industrial & Commercial II	1,000 ppb, or 10,000 ppb if capped	16,000 ppb
Commercial III	1,000 ppb, or 10,000 ppb if capped	33,000 ppb
Commercial IV	1,000 ppb, or 10,000 ppb if capped	22,000 ppb

(U) HAZARDOUS SUBSTANCE MAY EXHIBIT THE CHARACTERISTIC OF CORROSIVITY AS DEFINED IN 40 C.F.R. §261.22 (REVISED AS OF JULY 1, 2001), WHICH IS ADOPTED BY REFERENCE IN THESE RULES AND WHICH IS AVAILABLE FOR INSPECTION A THE LANSING OFFICE OF THE DEPARTMENT, 525 WEST ALLEGAN STREET, LANSING, MICHIGAN. COPIES OF THE REGULATION MAY BE PURCHASED, AT A COST AS OF THE TIME OF ADOPTION OF THESE RULES OF $45.00, FROM THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20401 (STOCK NUMBER 869-044-00155-1), OR FROM THE DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL RESPONSE DIVISION, 525 WEST ALLEGAN STREET, LANSING, MI 48933, AT COST.

(V) CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120(a)(5) OF THE ACT.

CONCENTRATIONS UP TO 200 ug/L MAY BE ACCEPTABLE, AND STILL ALLOW FOR DRINKING WATER USE, AS PART OF A SITE-SPECIFIC CLEANUP UNDER SECTION 20120a(2) OF THE ACT.

(W) CONCENTRATIONS OF TRIHALOMETHANES IN GROUNDWATER SHALL BE ADDED TOGETHER TO DETERMINE COMPLIANCE WITH THE MICHIGAN DRINKING WATER STANDARD OF 100 ug/L. CONCENTRATIONS OF TRIHALOMETHANES IN SOIL SHALL BE ADDED TOGETHER TO DETERMINE COMPLIANCE WITH THE DRINKING WATER PROTECTION CRITERION OF 2,000 ug/kg.

(X) THE GROUNDWATER SURFACE WATER INTERFACE (GSI) CRITERION SHOWN IN THE GENERIC CLEANUP CRITERIA TABLES IS NOT PROTECTIVE FOR SURFACE WATER THAT IS USED AS A DRINKING WATER SOURCE. FOR A GROUNDWATER DISCHARGE TO THE GREAT LAKES AND THEIR CONNECTING WATERS OR DISCHARGE IN CLOSE PROXIMITY TO A WATER SUPPLY INTAKE IN INLAND SURFACE WATERS, THE GENERIC GSI CRITERION SHALL BE THE SURFACE WATER HUMAN DRINKING WATER VALUE (HDV) LISTED IN THE TABLE IN THIS FOOTNOTE, EXCEPT FOR THOSE HDV INDICATED WITH AN ASTERISK. FOR HDV WITH AN ASTERISK, THE GENERIC GSI CRITERION SHALL BE THE LOWEST OF THE HDV, THE WV, AND THE CALCULATED FCV. SEE FORMULAS IN FOOTNOTE (G). SOIL PROTECTION CRITERIA BASED ON THE HDV SHALL BE AS LISTED IN THE TABLE IN THIS FOOTNOTE, EXCEPT

FOR THOSE VALUES WITH AN ASTERISK. SOIL GSI PROTECTION CRITERIA BASED ON THE HDV SHALL BE AS LISTED IN THE TABLE IN THIS FOOTNOTE, EXCEPT FOR THOSE VALUES WITH AN ASTERISK. SOIL GSI PROTECTION CRITERIA FOR COMPOUNDS WITH AN ASTERISK SHALL BE THE GREATER OF 20 TIMES THE GSI CRITERION OR THE GSI SOIL-WATER PARTITION VALUES USING THE GSI CRITERIA DEVELOPED WITH THE PROCEDURE DESCRIBED IN THIS FOOTNOTE.

Hazardous Substance	Chemical Abstract Service Number	Surface Water Human Drinking Water Values (HDV) (ug/L)	Soil GSI Protection Criteria for HDV (ug/kg)
Acrylonitrile	107131	0.87	17
Alachlor	15972608	3.5	91
Antimony	7440360	2	1,400
Arsenic	7440382	50	23,000
Atrazine	1912249	4.3	86
Barium	7440393	1,900*	*
Benzene	71432	12	240
Butyl benzyl phthalate	85687	6.9	13,000
Cadmium	7440439	2.5*	*
Carbon tetrachloride	56235	5.6	110
Chloride	16887006	50,000	1.0E+6
Chloroform	67663	77	1,500
Chromium (III)	16065831	120*	*
Cyanazine	21725462	10 (M)	500 (M)
3,3'-Dichlorobenzidine	91941	0.3 (M)	2,000 (M)
1,2-Dichloroethane	107062	6	120
1,1-Dichloroethylene	75354	24	480
1,2-Dichloropropane	78875	9.1	180
N,N-Dimethylacetamide	127195	700	14,000
1,4-Dioxane	123911	34	680
Ethylene glycol	107211	56,000	1.1E+6
Heptachlor	76448	0.01 (M)	NLL
beta-Hexachlorocyclohexane	319857	0.024	20 (M)
Hexachloroethane	67721	5.3	310
Isophorone	78591	310	6,200
Lead	7439921	14*	*
Manganese	7439965	3600	72,000
Methyl-tert-butyl ether (MTBE)	1634044	100	2,000
Methylene chloride	75092	47	940
Mirex	2385855	0.02 (M)	NLL
Molybdenum	7439987	120	2,400

Hazardous Substance	Chemical Abstract Service Number	Surface Water Human Drinking Water Values (HDV) (ug/L)	Soil GSI Protection Criteria for HDV (ug/kg)
Nitrobenzene	98953	4.7	200 (M)
Pentachlorophenol	87865	1.8*	*
1,2,4,5-Tetrachlorobenzene	95943	2.8	3,300
1,1,2,2-Tetrachloroethane	79345	3.2	64
Tetrachloroethylene	127184	11	220
Tetrahydrofuran	109999	350	7,000
Thallium	7440280	1.2	1400
1,1,2-Trichloroethane	79005	12	240
Trichloroethylene	79016	29	580

(Y) SOURCE SIZE MODIFIERS SHOWN IN THE FOLLOWING TABLE SHALL BE USED TO DETERMINE SOIL INHALATION CRITERIA FOR AMBIENT AIR WHEN THE SOURCE SIZE IS NOT 1/2 ACRE. THE MODIFIER SHALL BE MULTIPLIED BY THE GENERIC SOIL INHALATION CRITERIA SHOWN IN THE TABLE OF GENERIC CLEANUP CRITERIA TO DETERMINE THE APPLICABLE CRITERION.

Source Size sq. feet or acres	Modifier
400 sq feet	3.17
1000 sq feet	2.2
2000 sq feet	1.76
1/4 acre	1.15
1/2 acre	1
1 acre	0.87
2 acre	0.77
5 acre	0.66
10 acre	0.6
32 acre	0.5
100 acre	0.43

(Z) MERCURY IS TYPICALLY MEASURED AS TOTAL MERCURY. THE GENERIC CLEANUP CRITERIA, HOWEVER, ARE BASED ON DATA FOR DIFFERENT SPECIES OF MERCURY. SPECIFICALLY, DATA FOR ELEMENTAL MERCURY, CHEMICAL ABSTRACT SERVICE

NUMBER 7439976, SERVE AS THE BASIS FOR THE SOIL VOLATILIZATION TO INDOOR AIR CRITERIA, GROUNDWATER VOLATILIZATION TO INDOOR AIR, AND SOIL INHALATION CRITERIA. DATA FOR METHYL MERCURY, CHEMICAL ABSTRACT SERVICE NUMBER 22967926, SERVE AS THE BASIS FOR THE GROUNDWATER SURFACE WATER INTERFACE CRITERION; AND DATA FOR MERCURIC CHLORIDE, CHEMICAL ABSTRACT SERVICE NUMBER 7487947, SERVE AS THE BASIS FOR THE DRINKING WATER, GROUNDWATER CONTACT, SOIL DIRECT CONTACT, AND THE GROUNDWATER PROTECTION CRITERIA. COMPARISON TO CRITERIA SHALL BE BASED ON SPECIES-SPECIFIC ANALYTICAL DATA ONLY IF SUFFICENT FACILITY CHARACTERIZATION HAS BEEN CONDUCTED TO RULE OUT THE PRESENCE OF OTHER SPECIES OF MERCURY.

(AA) COMPARISON TO THESE CRITERIA MAY TAKE INTO ACCOUNT AN EVALUATION OF WHETHER THE HAZARDOUS SUBSTANCES ARE ADSORBED TO PARTICULATES RATHER THAN DISSOLVED IN WATER AND WHETHER FILTERED GROUNDWATER SAMPLES WERE USED TO EVALUATE GROUNDWATER.

(BB) THE STATE DRINKING WATER STANDARD FOR ASBESTOS IS IN UNITS OF FIBERS PER MILLILITER OF WATER (f/mL) LONGER THAN 10 MILLIMICRONS. SOIL CONCENTRATIONS OF ASBESTOS ARE DETERMINED BY POLARIZED LIGHT MICROSCOPY.

(CC) GROUNDWATER: THE GENERIC GROUNDWATER SURFACE WATER INTERFACE CRITERIA ARE BASED ON THE TOXICITY OF UNIONIZED AMMONIA (NH_3); THE CRITERIA ARE 29 ug/L AND 53 ug/L FOR COLDWATER AND WARMWATER SURFACE WATER, RESPECTIVELY. AS A RESULT, THE GSI CRITERION SHALL BE COMPARED TO THE PERCENT OF THE TOTAL AMMONIA CONCENTRATION IN THE GROUNDWATER THAT WILL BECOME NH_3 IN THE SURFACE WATER. THIS PERCENT NH_3 IS A FUNCTION OF THE pH AND TEMPERATURE OF THE RECEIVING SURFACE WATER AND CAN BE ESTIMATED USING THE FOLLOWING TABLE, TAKEN FROM EMERSON, ET AL.[J. FISH. RES. BOARD CAN., VOL. 32(12):2382, 1975]

Percent NH3 in Aqueous Ammonia Solutions for 0-30 °C and pH 6-10

Temp (°F)	Temp (°C)	pH 6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
32.0	0	0.00827	0.0261	0.0826	0.261	0.820	2.55	7.64	20.7	45.3
33.8	1	0.00899	0.0284	0.0898	0.284	0.891	2.77	8.25	22.1	47.3
35.6	2	0.00977	0.0309	0.0977	0.308	0.968	3.00	8.90	23.6	49.4
37.4	3	0.0106	0.0336	0.106	0.335	1.05	3.25	9.60	25.1	51.5
39.2	4	0.0115	0.0364	0.115	0.363	1.14	3.52	10.3	26.7	53.5
41.0	5	0.0125	0.0395	0.125	0.394	1.23	3.80	11.1	28.3	55.6
42.8	6	0.0136	0.0429	0.135	0.427	1.34	4.11	11.9	30.0	57.6
44.6	7	0.0147	0.0464	0.147	0.462	1.45	4.44	12.8	31.7	59.5
46.4	8	0.0159	0.0503	0.159	0.501	1.57	4.79	13.7	33.5	61.4
48.2	9	0.0172	0.0544	0.172	0.542	1.69	5.16	14.7	35.3	63.3
50.0	10	0.0186	0.0589	0.186	0.586	1.83	5.56	15.7	37.1	65.1
51.8	11	0.0201	0.0637	0.201	0.633	1.97	5.99	16.8	38.9	66.8
53.6	12	0.0218	0.0688	0.217	0.684	2.13	6.44	17.9	40.8	68.5

55.4	13	0.0235	0.0743	0.235	0.738	2.30	6.92	19.0	42.6	70.2
57.2	14	0.0254	0.0802	0.253	0.796	2.48	7.43	20.2	44.5	71.7
59.0	15	0.0274	0.0865	0.273	0.859	2.67	7.97	21.5	46.4	73.3
60.8	16	0.0295	0.0933	0.294	0.925	2.87	8.54	22.8	48.3	74.7
62.6	17	0.0318	0.101	0.317	0.996	3.08	9.14	24.1	50.2	76.1
64.4	18	0.0343	0.108	0.342	1.07	3.31	9.78	25.5	52.0	77.4
66.2	19	0.0369	0.117	0.368	1.15	3.56	10.5	27.0	53.9	78.7
68.0	20	0.0397	0.125	0.396	1.24	3.82	11.2	28.4	55.7	79.9
69.8	21	0.0427	0.135	0.425	1.33	4.10	11.9	29.9	57.5	81.0
71.6	22	0.0459	0.145	0.457	1.43	4.39	12.7	31.5	59.2	82.1
73.4	23	0.0493	0.156	0.491	1.54	4.70	13.5	33.0	60.9	83.2
75.2	24	0.0530	0.167	0.527	1.65	5.03	14.4	34.6	62.6	84.1
77.0	25	0.0569	0.180	0.566	1.77	5.38	15.3	36.3	64.3	85.1
78.8	26	0.0610	0.193	0.607	1.89	5.75	16.2	37.9	65.9	85.9
80.6	27	0.0654	0.207	0.651	2.03	6.15	17.2	39.6	67.4	86.8
82.4	28	0.0701	0.221	0.697	2.17	6.56	18.2	41.2	68.9	87.3
84.2	29	0.0752	0.237	0.747	2.32	7.00	19.2	42.9	70.4	88.3
86.0	30	0.0805	0.254	0.799	2.48	7.46	20.3	44.6	71.8	89.0

THE GENERIC APPROACH FOR ESTIMATING NH_3 ASSUMES A DEFAULT pH OF 8 AND DEFAULT TEMPERATURES OF 68°F AND 85°F FOR COLDWATER AND WARMWATER SURFACE WATER, RESPECTIVELY. THE RESULTING PERCENT NH_3 IS 3.8% AND 7.2% FOR COLDWATER AND WARMWATER, RESPECTIVELY. THIS DEFAULT PERCENTAGE SHALL BE MULTIPLIED BY THE TOTAL AMMONIA-NITROGEN (NH_3-N) CONCENTRATION IN THE GROUNDWATER AND THE RESULTING NH_3 CONCENTRATION COMPARED TO THE APPLICABLE GROUNDWATER SURFACE WATER INTERFACE CRITERION. AS AN ALTERNATIVE, THE MAXIMUM pH AND TEMPERATURE DATA FROM THE SPECIFIC RECEIVING SURFACE WATER CAN BE USED TO ESTIMATE, FROM THE TABLE IN THIS FOOTNOTE, A LOWER PERCENT UNIONIZED

AMMONIA CONCENTRATION FOR COMPARISON TO THE GENERIC GROUNDWATER SURFACE WATER INTERFACE CRITERIA.

SOIL: THE GENERIC SOIL GROUNDWATER SURFACE WATER INTERFACE PROTECTION CRITERIA FOR UNIONIZED AMMONIA ARE 580 UG/KG AND 1,100 ug/kg FOR COLDWATER AND WARMWATER SURFACE WATER, RESPECTIVELY.

(DD) HAZARDOUS SUBSTANCE CAUSES DEVELOPMENTAL EFFECTS. RESIDENTIAL AND COMMERCIAL I DIRECT CONTACT CRITERIA ARE PROTECTIVE OF BOTH PRENATAL AND POSTNATAL EXPOSURE. INDUSTRIAL AND COMMERCIAL II, III AND IV DCC ARE PROTECTIVE FOR A PREGNANT ADULT RECEPTOR.

(EE) THE FOLLOWING ARE APPLICABLE GENERIC GROUNDWATER SURFACE WATER INTERFACE CRITERIA AS REQUIRED BY SECTION 20120a(15) OF THE ACT.

Hazardous Substance	GSI (ug/L)	Notes
Phosphorus	1,000	Criteria applicable unless receiving water is a surface water that has a phosphorus waste load allocation or is an inland lake. In those cases, contact the department for applicable values.
Total dissolved solids (TDS)	5.0E+5	If TDS data are not available, the TDS criterion may be used a screening level for the sum of the concentrations of the following substances: Calcium, Chlorides, Iron, Magnesium, Potassium, Sodium, Sulfate.
Dissolved Oxygen (DO): Cold receiving waters Warm receiving waters	 ≥ 7,000 ≥ 5,000	Since a low level of DO can be harmful to aquatic life, the criterion represents a minimum level that on-site samples must exceed. This is in contrast to other criteria which represent "not to exceed" concentrations. DO criteria are not applicable if groundwater Carbonaceous Biochemical Oxygen Demand (CBOD) is less than 10,000 ug/L and groundwater ammonia concentration is less than 2,000 ug/L.

(FF) THE CHLORIDE GROUNDWATER SURFACE WATER INTERFACE CRITERION SHALL BE 125 mg/L WHEN THE DISCHARGE IS TO SURFACE WATERS OF THE STATE DESIGNATED AS PUBLIC WATER SUPPLY SOURCES OR 50 mg/L WHEN THE DISCHARGE IS TO THE GREAT LAKES OR CONNECTING WATERS. CHLORIDE GSI CRITERIA SHALL NOT APPLY FOR SURFACE WATERS OF THE STATE THAT ARE NOT DESIGNATED AS A PUBLIC WATER SUPPLY SOURCE, HOWEVER, THE TOTAL DISSOLVED SOLIDS CRITERION IS APPLICABLE.

(2) WHEN USED IN THE GENERIC CLEANUP CRITERIA TABLES IN R 299.5744, R 299.5746, AND R 299.5748, ABBREVIATIONS HAVE THE FOLLOWING MEANINGS:

(A) "ID" MEANS INSUFFICIENT DATA TO DEVELOP CRITERION.

(B) "NA" MEANS A CRITERION OR VALUE IS NOT AVAILABLE OR, IN THE CASE OF BACKGROUND AND CHEMICAL ABSTRACT SERVICE NUMBERS, NOT APPLICABLE.

(C) "NLL" MEANS HAZARDOUS SUBSTANCE IS NOT LIKELY TO LEACH UNDER MOST SOIL CONDITIONS.

(D) "NLV" MEANS HAZARDOUS SUBSTANCE IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS.

Table 4

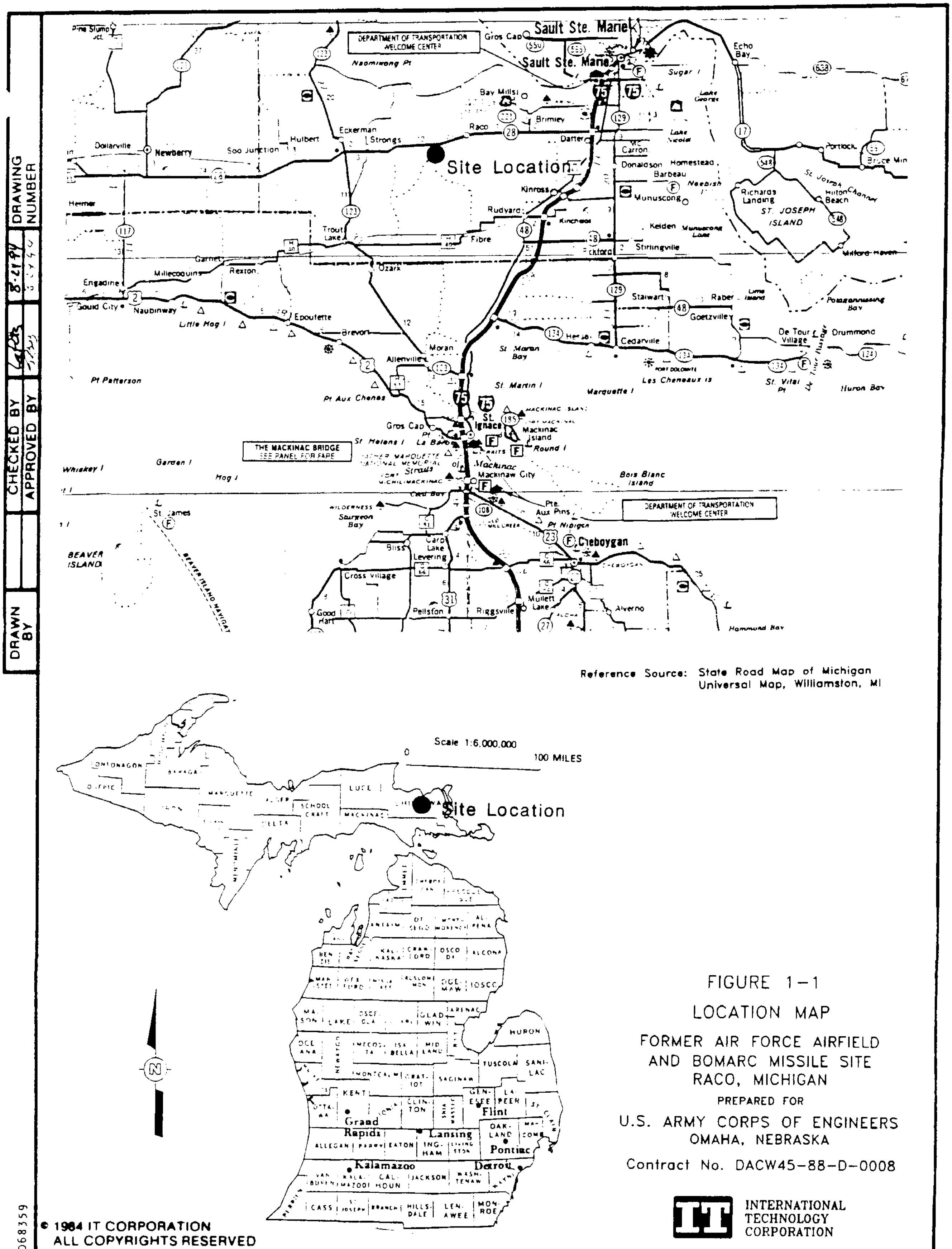
Lead Exposure Concentrations [1]

Exposure Media	Values
Air ($\mu g/m^3$) Outdoors Indoors [2]	 1.4×10^{-8} 4.0×10^{-9}
Soil (mg/kg) Maximum measured concentration	19
House dust (mg/kg) [3] Maximum calculated concentration	13.3
Average dietary uptake (μg/day)	3.0
Average drinking water uptake (μg/day)	0.98
Maternal blood (μg/dl)	2.50

[1] IEUBK model predicts blood lead concentrations in children of critical years (ages 0-7).

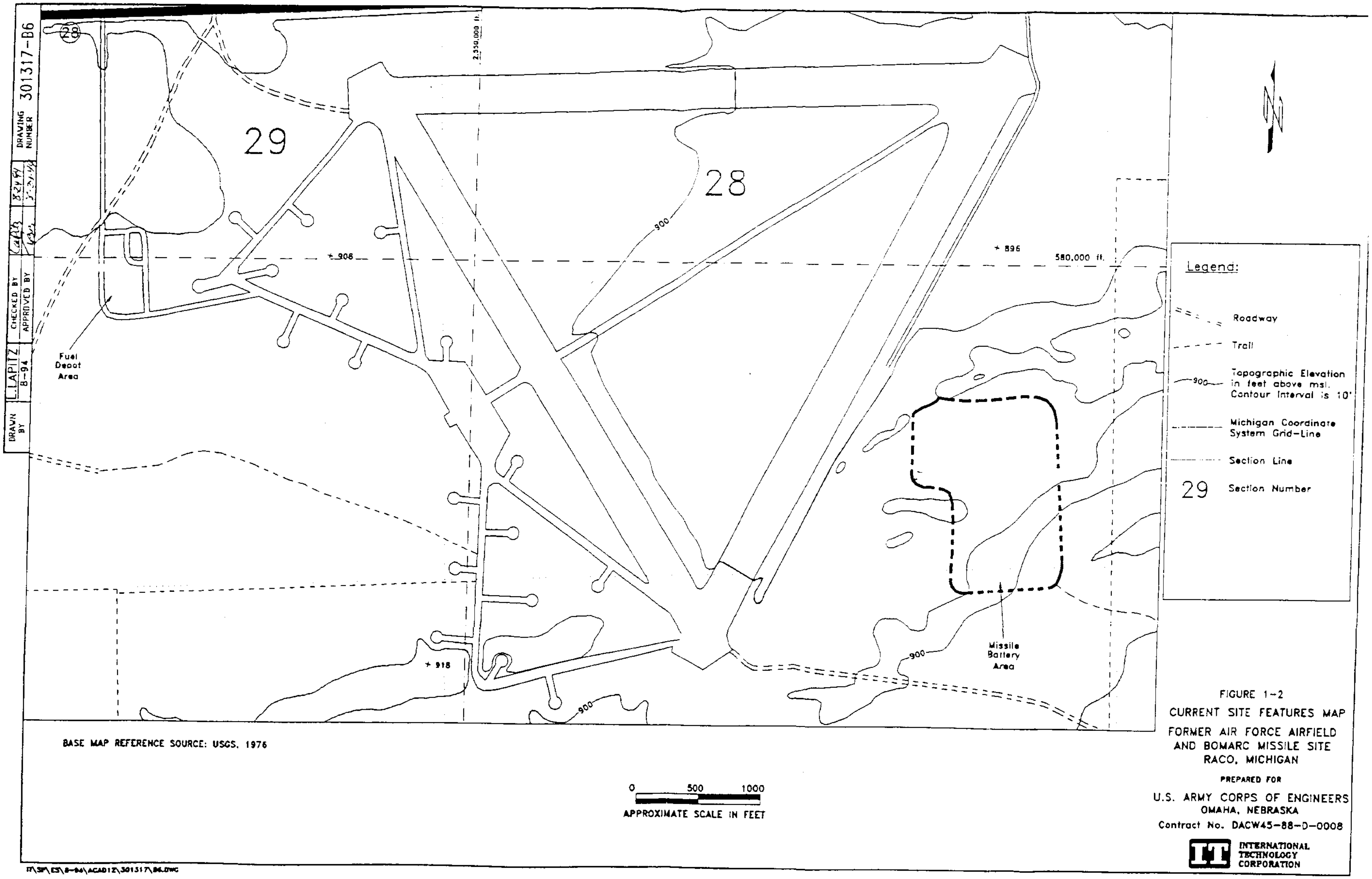
[2] IEUBK model default indoor air lead as a percent of outdoor air lead concentration = 30%.

[3] Assumes indoor dust concentration = (0.7 x soil concentration) + (100 μg/g x $\mu g/m^3$ in air)



Source: IT Corp. (1994)

Figure 1
Site Location



Source: IT Corp. (1994)

Figure 2
Site Map

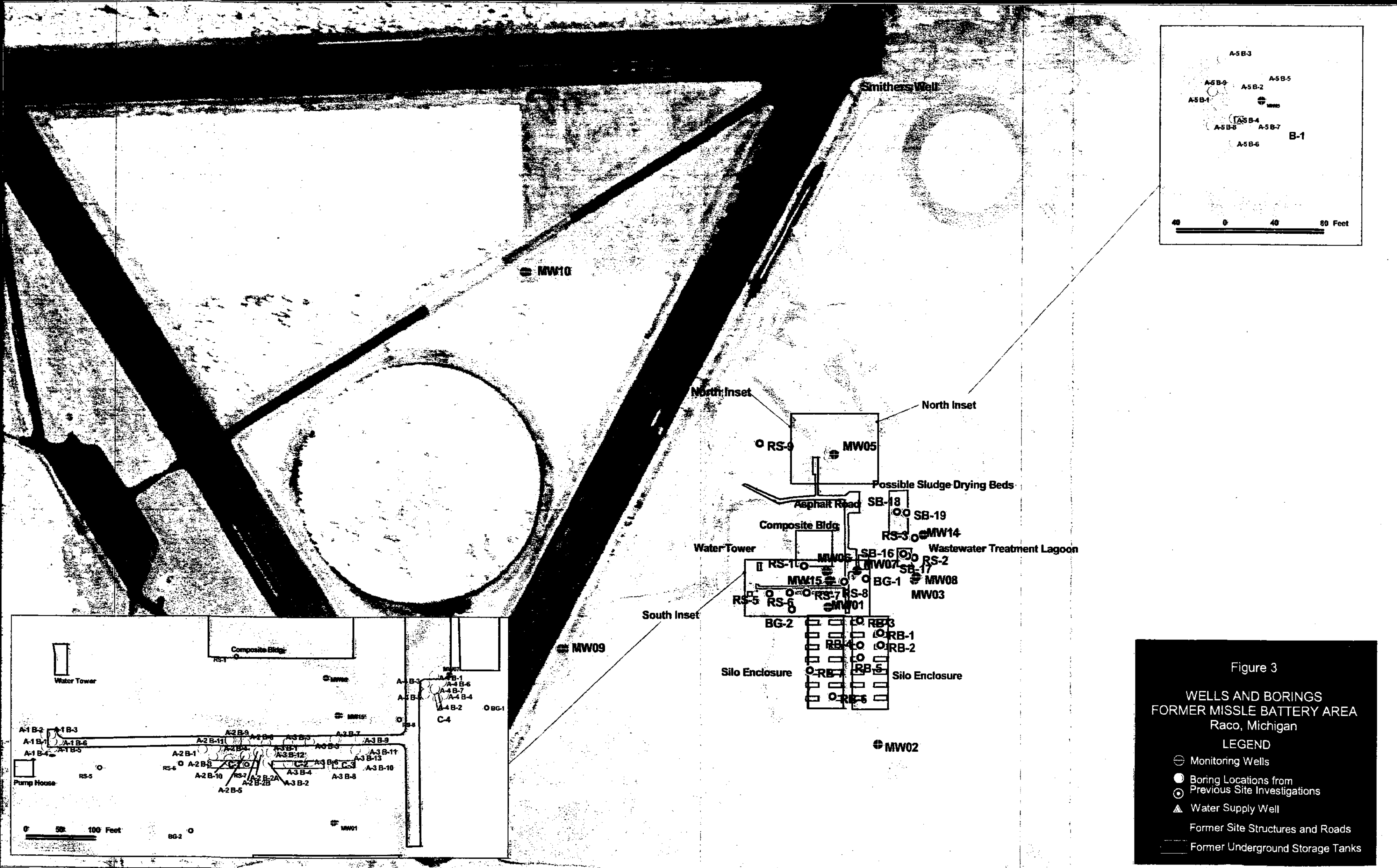


Image: USGS DOQ April 28, 1998 (TerraServer)

300 0 300 600 900 1200 Feet

Figure 3

WELLS AND BORINGS
FORMER MISSLE BATTERY AREA
Raco, Michigan

LEGEND

- Monitoring Wells
- Boring Locations from Previous Site Investigations
- Water Supply Well
- Former Site Structures and Roads
- Former Underground Storage Tanks

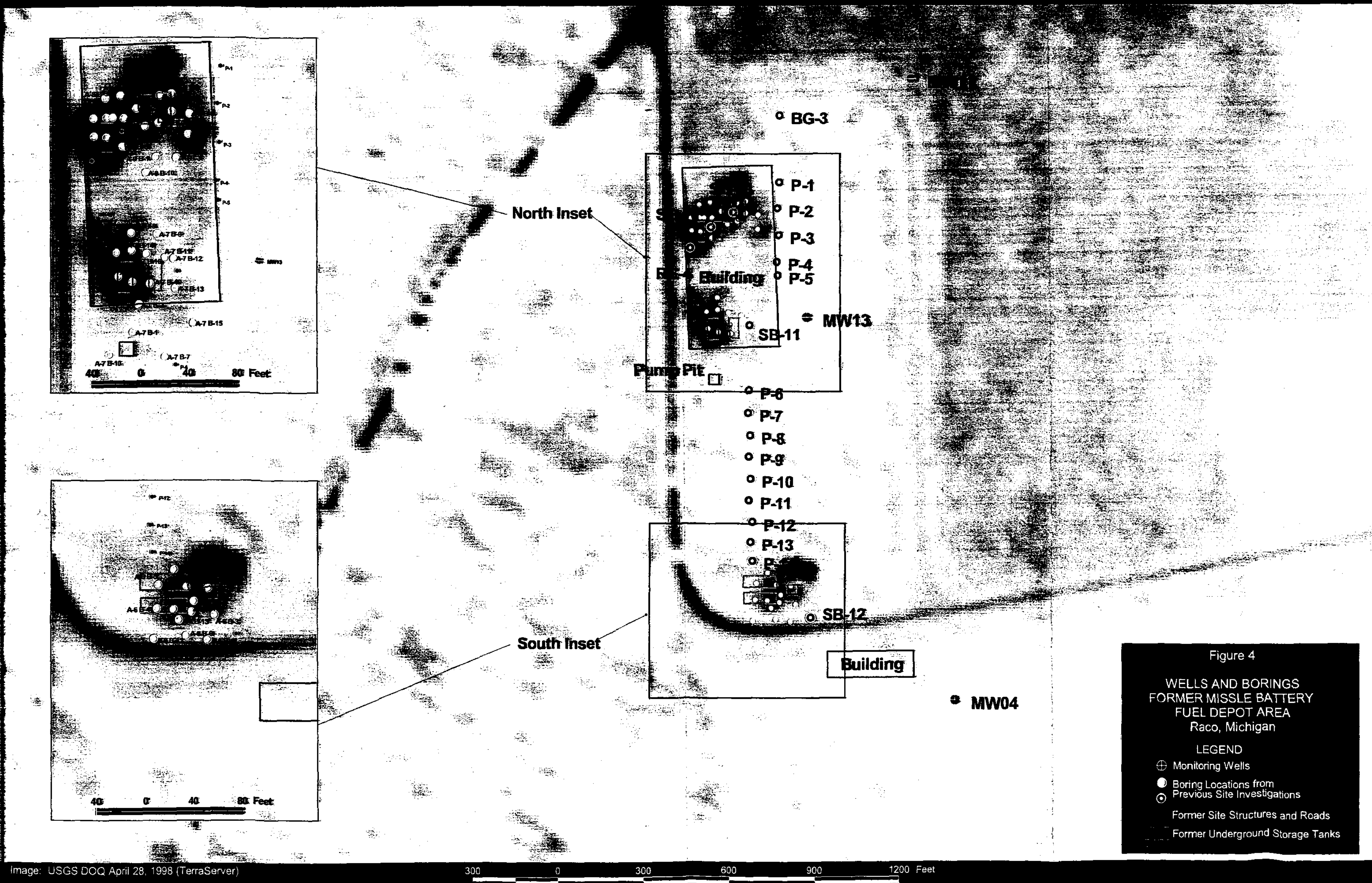


Figure 4

WELLS AND BORINGS
FORMER MISSLE BATTERY
FUEL DEPOT AREA
Raco, Michigan

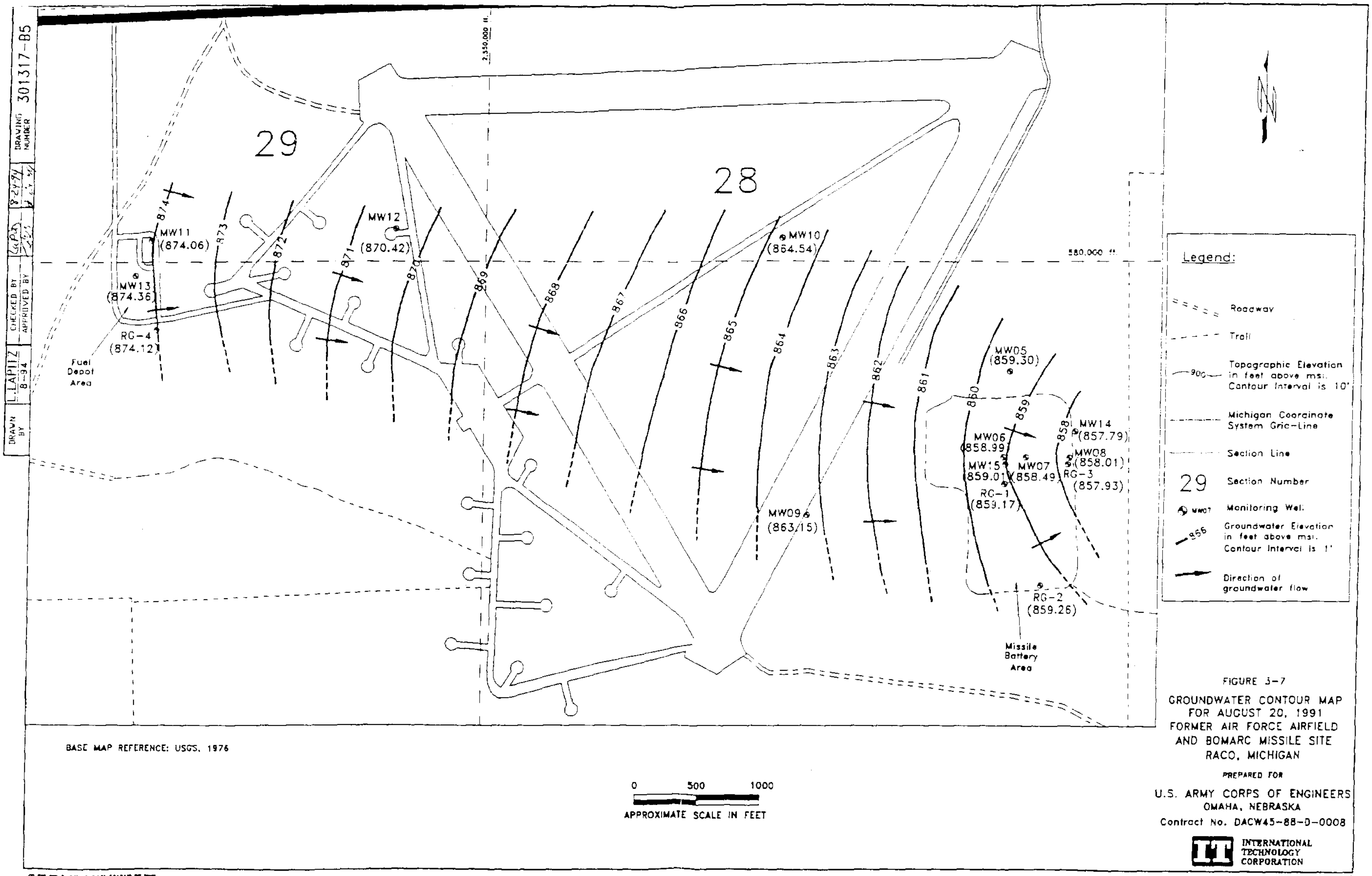
LEGEND

Monitoring Wells

Boring Locations from Previous Site Investigations

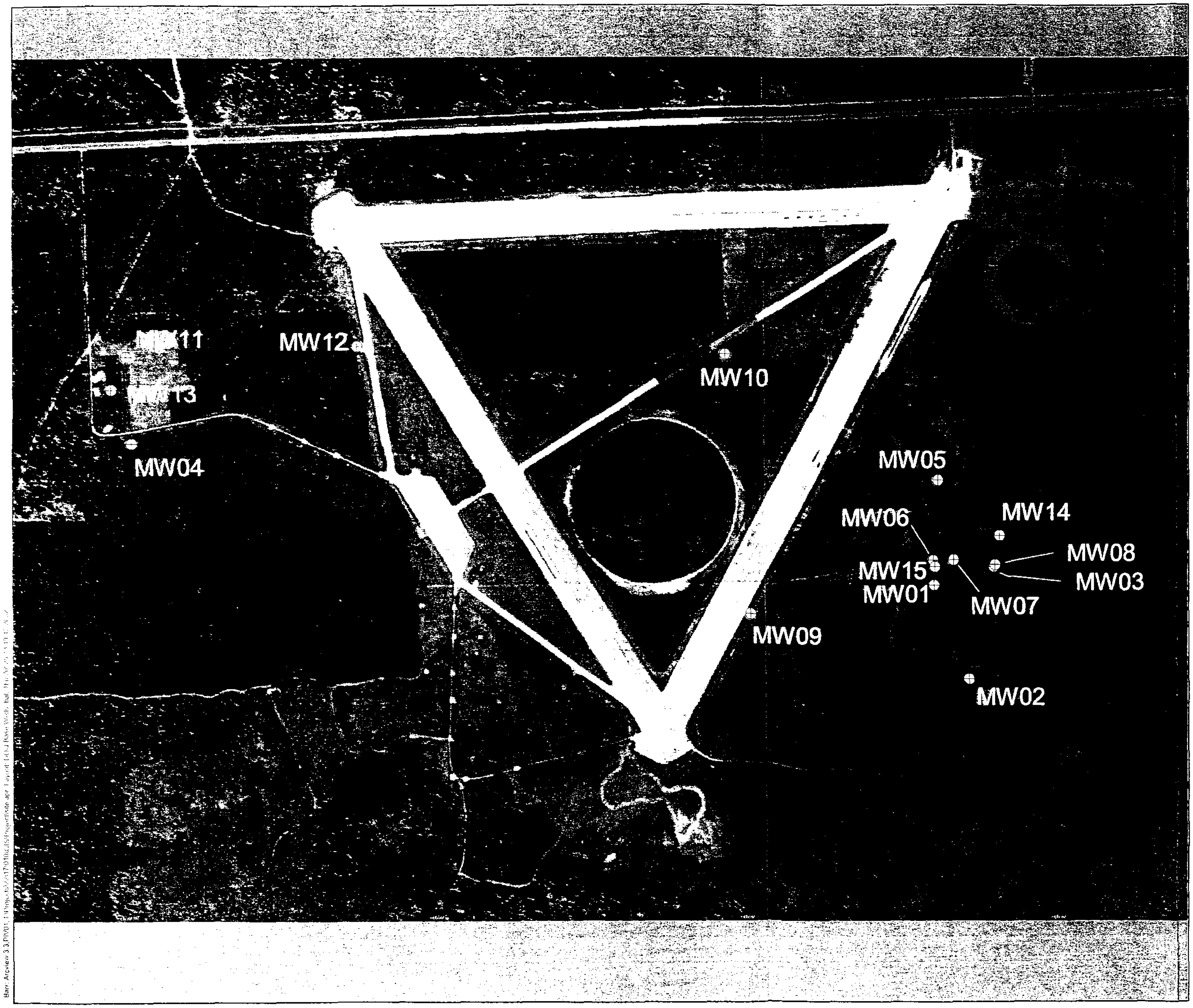
Former Site Structures and Roads

Former Underground Storage Tanks



Source: IT Corp. (1994)

Figure 5
Groundwater Elevations



Monitoring Well Location

400 0 400 800 1200 Feet

100 0 100 200 300 400 Meters

Figure 6

MONITOIRING WELL LOCATIONS
Raco BOMARC Site

[redacted]

Appendix A

Summary of May 7, 2002 Telephone Interview of James Traynor

At 9:32 a.m. on May 7, 2002, Dean Malotky and John Greer of Barr Engineering Company phoned Mr. James Traynor. Purpose of the phone call was to interview Mr. Traynor regarding items in his letter of April 9, 2001 to the USDA Forest Service related to demolition work at the Raco BOMARC Missile Site (the Site). The phone interview is summarized in the following bullet list:

- Dean Malotky began the interview by telling Mr. Traynor that the USDA Forest Service has asked Barr to review the files on the Site, give our opinion on what, if any, data gaps exist, and make recommendations on how work needed to fill the data gaps.

- James Traynor worked at the Site in June 1988 for Anderson Excavating. He was injured at work on June 24, 1988 and did not work at the Site after that. Mr. Traynor worked as a heavy equipment operator at the Site. Anderson Excavating worked at the Site from May 1988 through November 1988.

- Mr. Traynor identified Tom Morningstar and a heavy equipment operator named Emmett (he could not recall the last name) as coworkers at the Site. To the best of Mr. Traynor's knowledge, Tom Morningstar now lives in Grand Rapids.

- Mr. Traynor stated that, as directed by his supervisor, he buried plain, non-coated, galvanized pipe between the 2nd and 3rd missile silos (on left or south side of the access road). The pipe pile was approximately 4 to 5 ft high and buried at a depth of approximately 2 ft. Mr. Traynor also stated that he buried concrete and masonry material on the right side of the silos. Mr. Traynor returned to the site last year with a metal detector and was able to detect buried metal in the area where he buried the pipes.

- Mr. Traynor's supervisor was Fred Payne. (Mr. Payne is from Superior, WI.) A representative of the U.S. Army Corps of Engineers (COE) was onsite once or twice a week during the time Mr. Traynor worked at the Site. Mr. Traynor indicated that the COE representative would come on site, drive around and then leave.

- Emmett, the other heavy equipment operator, buried material including lumber, insulation, pipes, and concrete in a sand borrow pit in the woods to the southeast of the missile silos. The area of the borrow pit in which the material was buried was approximately 100 ft x 100 ft and up to 15 ft deep. The area was backfilled and covered with logs. The logs are still there. Mr. Traynor returned to the site last year with a metal detector and was able to detect buried metal at the borrow pit. He stated that if a steel rod were pushed into the ground it would encounter concrete at a depth of about 3 to 4 ft. He is sure it is concrete because there are no rocks on site.

- Approximately 5 gallons of a clear liquid was spilled from a tank that Mr. Traynor was directed to move. Mr. Traynor was told that the liquid was pumped out of the missile silos before they were filled. He stated that the liquid could have been water. However, he recalls his supervisor being angry that the liquid was spilled.
- Transformer had been moved to a storage area and leaked oil in the storage area. The area affected was 10 to 15 ft in diameter. Mr. Traynor does not know if the soil affected by the oil that leaked out of the transformer was removed after he left work at the Site.
- For approximately the first two weeks that Mr. Traynor worked at the Site, demolition debris was placed in dumpsters that were taken to Dafter Sanitary Landfill. Frank Huyck and Sons Excavating (from Pickford, MI) was responsible for hauling the dumpsters to the landfill. The last two weeks Mr. Traynor worked at the Site, demolition debris was not placed in dumpsters or taken offsite. During this period, demolition debris was buried onsite.
- No USTs were emptied or removed while Mr. Traynor worked at the Site. Mr. Traynor stated that his supervisor asked if he knew anyone that wanted a job cleaning out the tanks with 5-gallon buckets.
- The USTs were cleaned and removed after Mr. Traynor left the Site.
- Mr. Traynor didn't recall if there any plastic bags mixed in with the demolition debris.
- Mr. Traynor stated that he was unaware of any asbestos-containing materials at the Site while he worked there. He learned that asbestos-containing materials were present at the Site about 6 or 8 years after he worked there.
- The missile silos had been capped before Mr. Traynor began working at the Site.
- Other than those that one might expect for the maintenance of heavy equipment, Mr. Traynor does not recall any drums being present on the Site.

- Mr. Traynor said he is willing to meet at the Site to show where the pipes and other materials are buried.

- Mr. Traynor asked if he should not talk about the interview to anyone. If we wanted him to refrain from talking about the interview Mr. Traynor said that he would not mention it to anybody. Dean Malotky told Mr. Traynor that Barr had not been instructed that the interview was confidential. John Greer told Mr. Traynor that he could direct the question to Rick Kell at the Hiawatha National Forest office in Escanaba.

Appendix B

Site Inspection Summary
Former Raco BOMARC Missile Site

On 5/16/2002 John Greer of Barr Engineering Company, Rick Kell and Joe Carrick of the USDA Forest Service, and James Traynor (a former employee of the demolition contractor for the site) visited the former BOMARC Missile Base in Raco, Michigan. Purpose of the visit was to familiarize Barr Engineering Staff with the Site, inspect the site for any obvious visual evidence of burial of inappropriate material during demolition of the missile base facilities or visual evidence of surficial soil contamination remaining at the site. James Traynor stated that he injured his back after working on the demolition at the site for about 1 month. The following is a summary of the site inspection.

- While gathering at the site entrance, a local TV reporter unexpectedly arrived and stated that she had been told that there was illegal dumping occurring at the site. Rick Kell spoke with the reporter, provided some limited background on the site, and told her that none of the people there for the site inspection were prepared to give an interview. He also provided the reporter with names and phone numbers of contacts within the USDA Forest Service, MDEQ and Corps Of Engineers that could answer questions regarding the site. Finally, Rick stated that the reporter and her cameraman were welcome to follow along during the site inspection and were free to film anything they saw. The reporter and cameraman did follow along for most of the site inspection.

- In a phone interview with Barr Engineering Company prior to the site visit, James Traynor indicated that, while working as a heavy equipment operator for the demolition contractor, he had buried various types of pipe removed from site structures in the area between some of the old missile silos (see attached map). During the inspection, James Traynor showed everyone where he had buried the pipe and stated that the pipe is about 2 feet below grade and the pile is about 5 feet high. He also stated that the procedure for abandoning the missile silo area was to place demolition debris, mainly concrete, between the silos and then to cover the debris with topsoil. Mr. Traynor did not recall seeing any painted concrete , painted or insulated pipe, or material like floor tiles buried in the missile silo area. The former missile silo area was inspected and two short (approximately 2-feet long) pieces of uninsulated steel pipe were found laying on the surface. John Greer took a photograph of one of the pieces of pipe. A small amount of concrete debris was observed at the surface in the former missile silo area, including what appeared to be old fence post footings with steel posts still embedded in them. John Greer took a photo of one of these footings.

- James Traynor noted that it looked like someone had disturbed the surface (and might have been trying to dig) in the former missile silo area. John Greer took a photograph of the surface disturbance. It appeared some type of track vehicle had driven over the area. Based on vegetation regrowth it appeared to have occurred 1 – 2 years ago.

- A small section of steel reinforcing bar (i.e., rebar) was observed sticking a few inches out of the ground in the former missile silo area. Some blue plastic flagging was tied near the end of the rebar. John Greer took a photograph of the rebar.

- After completing the visual inspection of the former missile silo area, the group followed the road off the southeast corner of the former missile silo area to and area where, according to James Traynor, topsoil had been stored (see attached map).

- Some roofing material consisting of metal with what appeared to be roofing tar was observed sticking out of the ground near the southwest corner of the topsoil storage yard. John Greer took two photographs of this material. A few concrete blocks were observed at the south end of the topsoil storage area near the road. No photographs of the blocks were taken.

- After the topsoil storage area inspection was completed, the group continued along the road to the borrow pits. These areas are off the east side of the attached map and were used as a sand source for the base and during demolition work. James Traynor stated that, while working at the site, he saw trucks carrying demolition debris go toward the borrow pits and return a few minutes later empty. He did not personally observe any debris being buried in the borrow pit area. The road splits the borrow pit area into a northern area and a southern area. There is a pile of wood just off the road in the northern borrow pit area (see photographs). James Traynor stated that he believed that demolition debris had been buried beneath the woodpile. (During the previous phone interview, James Traynor stated that he had been to the site with a metal detector last year and that he detected metal beneath the woodpile.) He also stated that it looked like someone had been digging in the woodpile since the last time he was at the site. John took three photographs of the woodpile.

- In the southern borrow pit area, what appeared to be the concrete base of a light pole was observed lying on the surface along the road that went down into the pit.. Steel bolts were observed on one end of the base and conduit was observed sticking through it. No photograph was taken of the concrete.

- On the east side of the southern borrow pit area, a crushed and rusted drum was observed under a tree between the road and the edge of the pit. No photograph of the drum was taken.

- Just south of the road on the south side of the southern borrow pit area, some household debris was observed lying on the surface.

- After leaving the borrow pit area, the group headed for the fuel depot area and encountered several motorcyclists at the end of the runway (see attached map). Rick Kell and Joe Carrick spoke with the motorcyclists for a few minutes.

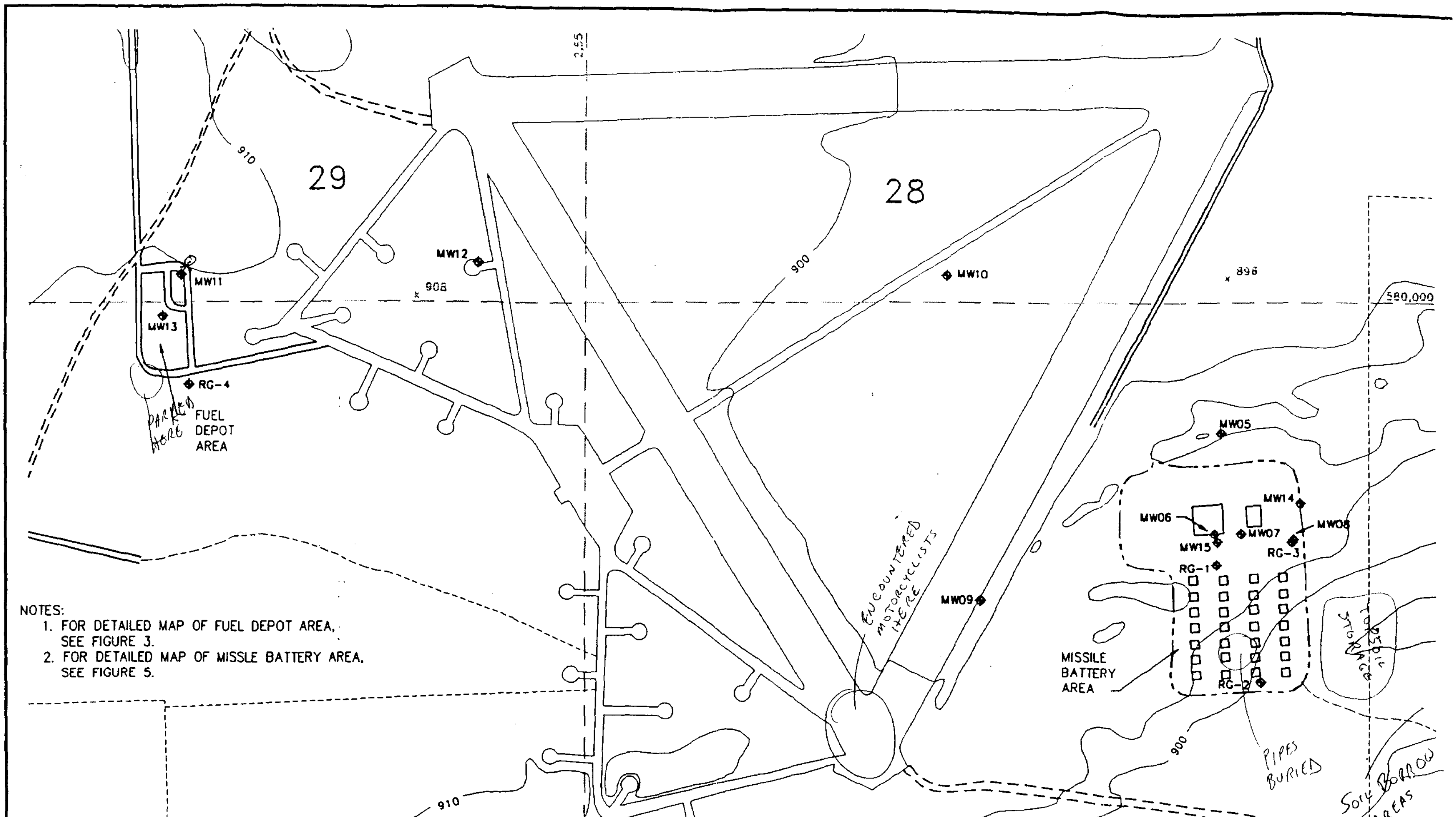
- In the fuel depot area, a large number of acetate sleeves were observed sticking out of the ground. These sleeves appeared to be marking the locations of Geoprobe borings installed in the area during a previous site investigation. John Greer took a photograph of some of the sleeves.

- Joe Carrick noted that the site maps show well MW11 on the south side of the road (the inside of the corner) when the well is actually on the north side (the outside of the corner) (see attached map).

- North and west of well MW13, a metal band (presumably a UST holddown strap) was observed sticking out of the ground near the road. John Greer took a photograph of this metal band.

- The group then inspected the former sludge drying area and the transformer pad area and saw no obvious signs of soil contamination. A small amount of miscellaneous demolition debris was observed on the surface. No photographs were taken.

- Last stop on the site inspection was the onsite water supply well. John Greer took a photograph of the wellhead.



LEGEND

- APPROXIMATE MONITORING WELL LOCATION
- RUNWAYS
- BUILDINGS
- GRID
- 800 CONTOURS
- ROADS
- TRAILS
- LIMITS

N

0 300 600
FEET

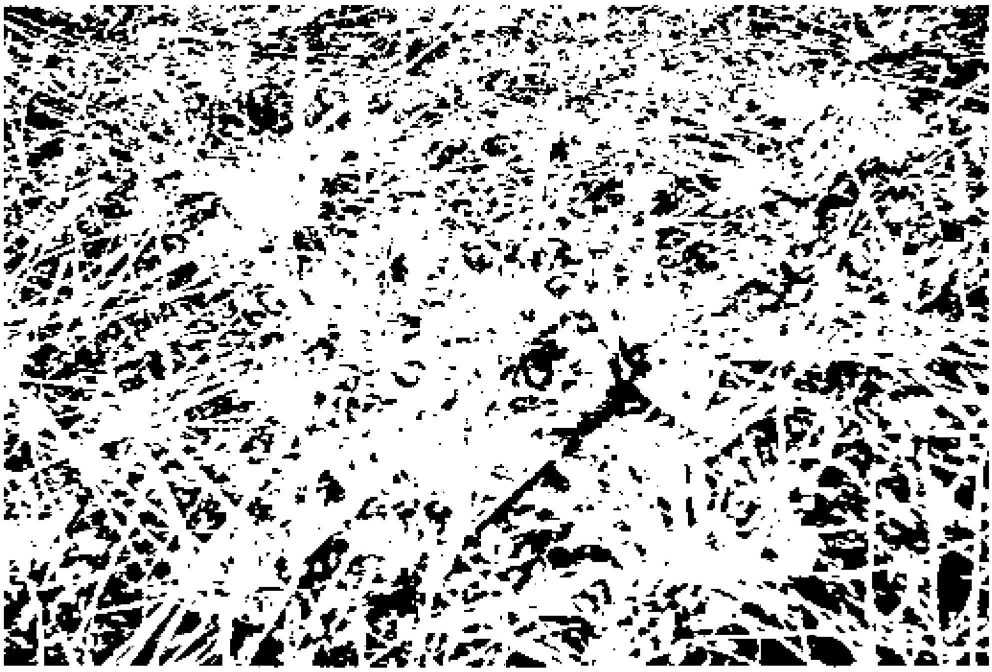
US Army Corps of Engineers Omaha District

Sverdrup ENVIRONMENTAL

SITE LOCATION MAP
FUEL DEPOT AREA AND
MISSILE BATTERY AREA
RACO, MICHIGAN

DWN: BSM	DES.:	PROJECT NO.: 000101
CHKD:	APPD:	
DATE: AUG 96	REV.:	FIGURE NO.: 2

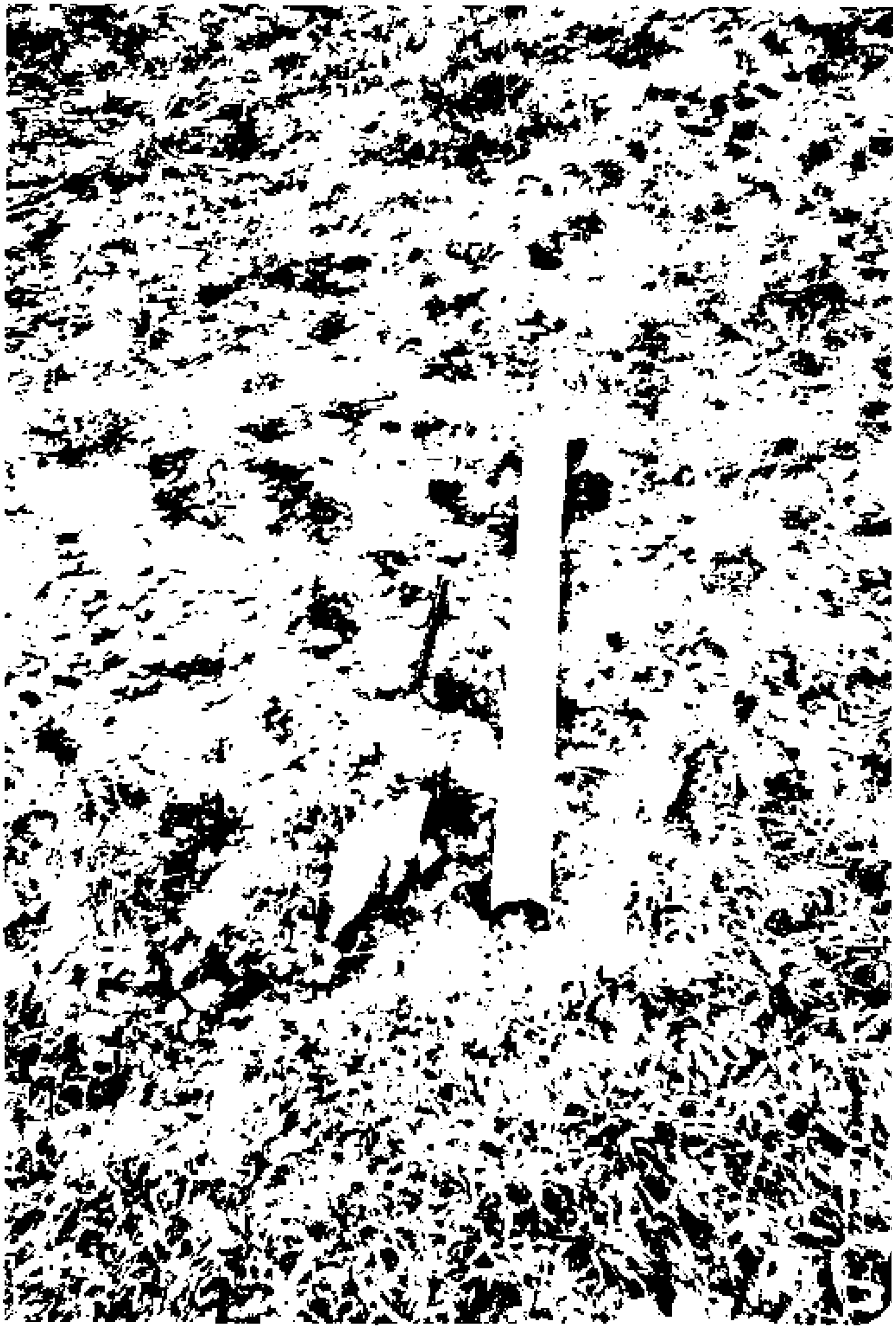
Photos from May 16, 2002 Site Visit



Rebar sticking out of the ground in the Missile Battery Area

[illegible]

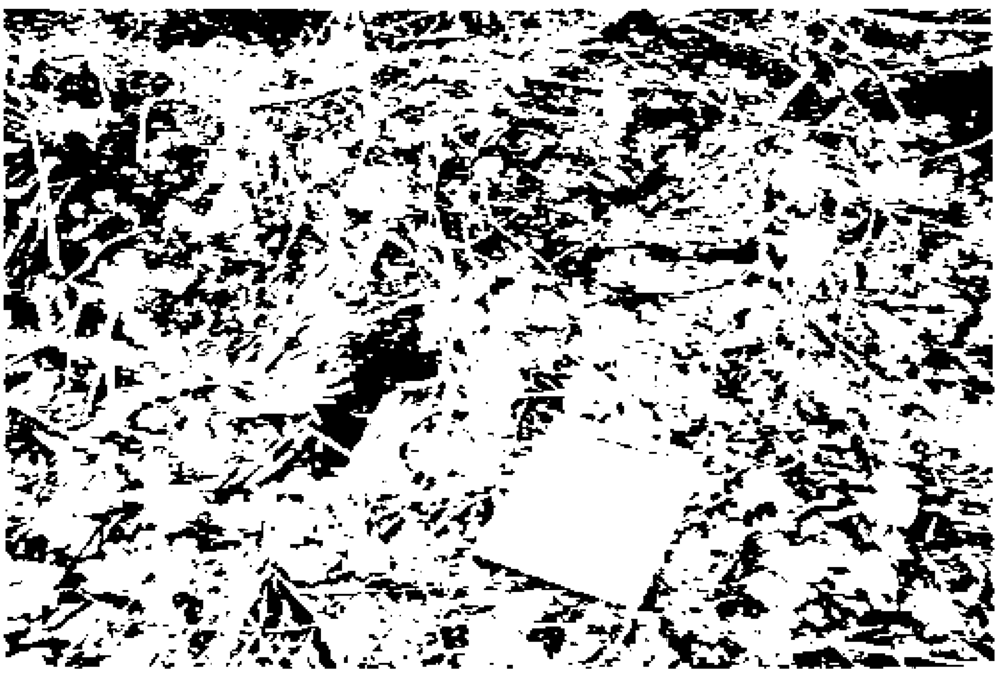
Photos from May 16, 2002 Site Visit



Piece of steel pipe observed in the Missile Battery Area

Photos from May 16, 2002 Site Visit

Apparent tire ruts in the Missile Battery Area



Apparent roofing debris along the edge of the topsoil storage area near the [illegible] corner of the Missile Battery Area

Photos from May 16, 2002 Site Visit

Apparent roofing debris along the edge of the topsoil storage area near the southeast corner of the Missile Battery Area.

Wood pile in the northern soil borrow area

Photos from May 16, 2002 Site Visit

Wood pile in the northern soil borrow area.

Northern soil borrow area looking approximately north-northeast past the wood pile.

Photos from May 16, 2002 Site Visit

[illegible] portion of the Fuel Depot Area – white posts are Geoprobe acetate [illegible] sleeves marking boring locations from BCM investigat[illegible]

[illegible]

Photos from May 16, 2002 Site Visit

Appendix C

Barr Engineering Company Staff for Document Review

The following Barr Engineering Company staff worked on the review of documents or other tasks related to the Raco Airfield and BOMARC Missile site:

Staff Person	Project Responsibilities
Dean Malotky	Project Principal-in-Charge, Reviewed project information to address various Tri-Copc charges.
John Greer	Project Manager, Reviewed information on site geology/hydrogeology and contaminant distribution
Harry Debye	Reviewed risk assessment
Marta Nelson	Reviewed information on quality assurance evaluation of analytical data
Ward Swanson	Assisted with review of quality assurance evaluation information

Resumes for these staff are presented on the following pages.

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name and Title: Dean Malotky, Ph.D. Water Chemist	**d. Years of Experience:** **With This Firm:** 24 **With Other Firms:** 7
b. Project Assignment: Chemist / Chemical Engineering	**e. Education: Degree(s)/Year/Specialization** Ph.D./1978/Water Chemistry B.A./1971/Chemistry
c. Name of Firm With Which Associated: ***Barr Engineering Company***	**f. Active Registration: Year First Registered/Discipline**

g. Other experience and qualifications relevant to the proposed project

Dr. Malotky is particularly experienced in projects involving CERCLA site investigations and cleanups. He is presently principal of more than 100 MGP projects which include more than 30 intrusive investigations. He has served as an expert witness on several occasions for litigation involving cost recovery under CERCLA. Examples of his experience include:

- Principal-in-charge for extensive waste-management services at an abandoned steel mill for USX in Duluth. Activities included remedial investigation and feasibility study of contaminated soil and groundwater; plans and specifications to demolish a coke plant, including the treatment and discharge of millions of gallons of water; inventory and disposal planning for contents of 100s of tanks and drums; feasibility study, plans and specifications, and implementation of the reuse of coal tar residues, including blending the tars to produce a fuel supplement that was subsequently burned in an industrial boiler; and investigation and evaluation of appropriate response actions to address the impacts of sediment contamination.
- Completed preliminary design for a sulfide precipitation process that removes 98 percent of the soluble zinc from a mine dewatering waste stream with an initial zinc concentration of approximately 1,000 parts per billion. Considered innovative at the time, this technique is now widely accepted.
- Participated in award-winning remedial investigation and cleanup of an industrial disposal site on National Priority List. The cleanup at Oakdale, Minnesota, site involved groundwater pumpout, plugging of 40 wells, excavation of drums and contaminated soil, and ongoing monitoring.
- The US Forest Service, through a congressional mandate, was charged with converting more than 23 square miles of the former Joliet Army Ammunition Plant into the Midewin Tall Grass Prairie. Dean led a team of experts in the review of the administrative record for the cleanup to determine if the proposed response actions were adequate to be protection of human health and the environment.
- Managed and directed numerous Phase I and II investigations for property transfers. Included in these projects was the acquisition of a company with manufacturing locations in seven states. Also included was the assessment of potential liability associated with the acquisition of natural gas service for a substantial portion of Nebraska.
- Managed studies that assessed environmental impacts of wood preserving, oil refining, mining, steel manufacturing, and coke production operations.
- Managed feasibility study, design, construction, startup, and operation of a treatment plant for contaminated groundwater at former wood treating site in Cass Lake, Minnesota. The 150-gpm plant is capable of removing greater than 99.9 percent of influent polynuclear aromatic hydrocarbon contaminants.
- Managed two projects that involved investigating and remediating fire impacts at pesticide warehouses. One project was for Minnesota Department of Health and won an award for engineering excellence—this project included a phase 2 investigation and the design and implementation of a response action. Also, Barr worked for the insurance carrier at a pesticide warehouse fire in Minot, North Dakota. Barr helped the insurance carrier direct the response activities to minimize costs and protect the environment.
- Has been involved at more than 15 National Priority List sites and dozens of sites that are not on the National Priority List. Has been involved in work at several of these sites in from initial investigation through final cleanup.
- Managed and directed Phase I and Phase II investigations of dozens of parcels of land being acquired for the reconversion of agricultural land to tree farming.
- Directed numerous investigations and cleanups for the USDA Forest Service.
- Managed investigations, feasibility studies or remedial actions in Minnesota, Wisconsin, Iowa, South Dakota, North Dakota, Illinois, Missouri, Indiana, Illinois, Michigan, Florida, Ohio, Maine, New Hampshire, Nebraska, Texas, Washington, and the District of Columbia.
- Evaluated the potential for acid leachate production from a proposed mining operation in the State of Washington. The scope of work for this project also included an audit of proposed environmental monitoring programs for the project.

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name and Title: John Greer, P.G., C.P.G. **Hydrogeologist**	**d. Years of Experience:** **With This Firm:** 13 **With Other Firms:** 3
b. Project Assignment: Delivery Order Project Manager Hydrogeology	**e. Education: Degree(s)/Year/Specialization** M.S./1986/Geophysics B.S./1983/Physics and Earth Science
c. Name of Firm With Which Associated: ***Barr Engineering Company***	**f. Active Registration: Year First Registered/Discipline** 1994/Certified Professional Geologist (AIPG) 1996/Professional Geologist (MN, WI, MO-pending)

g. Other experience and qualifications relevant to the proposed project

Mr. Greer is a hydrogeologist with significant project management experience in HTRW site remediation design and investigations. He has over 15 years of experience in geologic and hydrogeologic evaluations related to remediation and groundwater protection. Relevant project experience includes:

- Project manager for multiple USDA Forest Service projects including site investigations at the following sites: seven dump sites in the Hiawatha National Forest, Camp Gibbs Dump site in the Ottawa National Forest, Argonne Experimental Forest Office site in Nicollet National Forest, and East Tawas Warehouse site in East Tawas, Michigan. Work at these sites included one or more of the following: preliminary assessment; investigation of soil, groundwater, or sediment contamination; risk evaluation; and limited remedial action. In addition, managed the document review for a DDT disposal area in the Ottawa National Forest and currently managing the groundwater monitoring program at the Baldwin Administrative Site in Baldwin, Michigan.
- Project manager for investigations at three U.S. Army Corps of Engineers-St. Paul District flood control project sites and the Fountain City Service Base. The investigations delineated the extent of soil contamination at the sites. Contaminants of concern included petroleum products, PCBs, and metals. Remedial alternatives were addressed in the reports.
- Project manager and hydrogeologist for investigation and remediation work at a petroleum refinery in St. Paul Park, MN. Work included investigation, groundwater monitoring, permitting assistance, corrective measures design and implementation, and reporting under a RCRA permit for hazardous waste impoundments; design and implementation of remedial actions under a Consent Order for the refinery; and emergency responses/investigations of multiple spills at the refinery.
- Designed and managed an investigation of contaminated soil and groundwater at a site in Maine that had multiple manufacturing uses including a foundry, electroplating and machine tool manufacturing. Extent of soil and groundwater contamination was evaluated, a geophysical survey was done in an attempt to locate metal cyanide pots from the electroplating operation that were reportedly buried onsite, and a shallow dry well containing hazardous wastes was removed.
- Designed, managed, and evaluated data for aquifer tests at a variety of sites. Tests ranged from slug tests and simple recovery tests in a few wells to long-term (1 to 7 days) pumping tests in municipal wells.
- Conducted geophysical surveys at a number of sites.
- Technical resource for site investigations at multiple sites including former manufactured gas plants, a petroleum refinery, and a former municipal dump.
- Performed groundwater modeling using MODFLOWP to assess the impact of solvent and petroleum releases at a manufacturing site in Ohio.
- Designed, managed, and analyzed the results of pumping tests to support design of a remedial system at a former municipal waste landfill in Minnesota, as part of a redevelopment at the site. Pumping test results were used in the development of a groundwater flow model for the site. The groundwater flow model was used to design a groundwater extraction system to contain the contaminant plume at the site.
- Prepared a SLAEM groundwater model for a former municipal landfill in Minnesota. The model was used to design a groundwater extraction system that was installed as part of the site's redevelopment.
- Project manager for a limited remedial investigation at site contaminated by chlorinated solvents in Winona, Minnesota. The project involved geophysical site surveys, installation of soil borings and monitoring wells, groundwater sampling, and data interpretation.

Mr. Greer is currently hazardous waste operations safety trained in accordance with 29 CFR 1910.120 OSHA requirements.

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name and Title: **Harry Debye, Ph.D.** **Senior Toxicologist**	**d. Years of Experience:** **With This Firm:** 10 **With Other Firms:** 24
b. Project Assignment: Industrial Hygiene / Toxicology	**e. Education: Degree(s)/Year/Specialization** B.S./1959/Mining Engineering Ph.D./1963/Biochemistry
c. Name of Firm With Which Associated: ***Barr Engineering Company***	**f. Active Registration: Year First Registered/Discipline**

g. Other experience and qualifications relevant to the proposed project

Harry Debye has more than 32 years of experience in the areas of toxicology, human health and ecological risk assessment, environmental impact studies, epidemiology, noise studies, and occupational health. An internationally-known expert, Dr. Debye has worked with state, national, and international government agencies; he has a thorough understanding of SOP, GLP, and GMP standards and broad knowledge of U.S. and international environmental regulations and analytical methodologies. His experience includes:

- Conducted an evaluation of potential human health impacts associated with an aviation fuel spill. Calculated emissions for approximately 30 compounds. A short-term dispersion model was used to estimate ambient air concentrations. Based on the risk analysis, it was concluded that ambient air concentrations were well below levels of concern.
- Conducted an ecological risk assessment to assess the potential impact to terrestrial and aquatic organisms at a large mine-tailings area. The assessment was conducted as a follow-up to a screening-level risk assessment performed by a state agency. Dr. Debye's assessment used probability distributions for risk parameters, resulting in a more realistic assessment of risk.
- Performed a human health and ecological risk analysis in support of a permit application for a metal shredder. The dispersion, deposition, and environmental fates (air, soil, water) of fine metal particles were major focuses. The risk analysis was based on a probabilistic approach that showed far lower risk than had the risk assessment conducted by the state agency. Dr. Debye also provided litigation support.
- Participated in an air toxics review for a major mining facility expansion. The review focused on the potential for human health impacts associated with emissions of organic compounds, inorganic compounds, and metals from combustion sources, ore processing, stockpiles, and fugitive sources.
- Prepared a radiation survey work plan for the site of a former facility that had processed ore containing uranium. Reviewed survey results and assessed the potential risk associated with exposure to alpha, beta, and gamma radiation under present conditions and future development plans.
- Conducted an environmental impact study to assess the potential impact on the environment of a copper-smelter tailings pond renovation and expansion project in the western U.S., which included the relocation of several streams, wetlands, a major highway, and a railway. This study included a wetlands enhancement and replacement feasibility assessment.
- Participated in an environmental impact study for a taconite production facility. Of special concern were the potential effects of acid and mercury deposition on aquatic and terrestrial habitat in a classified wilderness area.
- Provided technical support to the U.S. Forest Service during the redevelopment of a former Department of Defense facility as a prairie preserve. Developed cleanup levels protective of the public and forest service workers. Developed a sampling plan to determine extent of contamination due to DOD activities.
- Provided toxicological support in obtaining U.S. Fish and Wildlife approval for novel shot configurations. Reviewed feeding studies and conducted thorough toxicological literature searches. Prepared reports on the toxicological effects of the shot components on terrestrial and aquatic life.

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name and Title: Marta Nelson **Analytical Services Coordinator**	**d. Years of Experience:** **With This Firm:** 17 **With Other Firms:** 5
b. Project Assignment: Laboratory Coordination/Data Quality Assurance	**e. Education: Degree(s)/Year/Specialization** Coursework at University of So. Colorado
c. Name of Firm With Which Associated: ***Barr Engineering Company***	**f. Active Registration: Year First Registered/Discipline**

g. Other experience and qualifications relevant to the proposed project

Ms. Harding-Smith has been with Barr for more than 17 years. She currently serves as the analytical services coordinator. Her general job duties include the following:

- Processes analytical requests with subcontracting laboratories.
- Performs quality control (QC) reviews of all analytical data.
- Assists in Quality Assurance Project Plan (QAPP) preparation/submittals.
- Assists in quarterly and annual report preparation.
- Maintains sample tracking system and performs follow-up procedures.

Specific projects on which Ms. Harding has participated include the following:

- Produced a quality control evaluation based on EPA guidelines for quality control review for variety of sites, including landfills.
- Wrote Quality Assurance Project Plans for Grand Rapids and Iron Range landfills. Both of these plans have been approved by the State of Minnesota.
- Produced quarterly and annual monitoring reports for Koch Refining Company's land treatment facility in Rosemount, Minnesota.
- Presently working with MPCA on a well abandonment, NPDES reporting, and consent orders for a former industrial site in Faribault, Minnesota.
- Provides laboratory coordination, quality control review of analytical data, and assistance with preparation of monitoring reports for the Marathon Ashland St. Paul Park refinery groundwater monitoring programs.
- Participated with the Barr Information Technology System team in the design, beta-testing, data conversion, system documentation, and employee training for the Barr Laboratory Information Management System (LIMS).

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name and Title: Ward Swanson **Data Quality Specialist**	**d. Years of Experience:** **With This Firm:** 4 **With Other Firms:** 9
b. Project Assignment: Laboratory Coordination/Data Quality Assurance	**e. Education: Degree(s)/Year/Specialization** B.A./1991/Chemistry
c. Name of Firm With Which Associated: ***Barr Engineering Company***	**f. Active Registration: Year First Registered/Discipline**

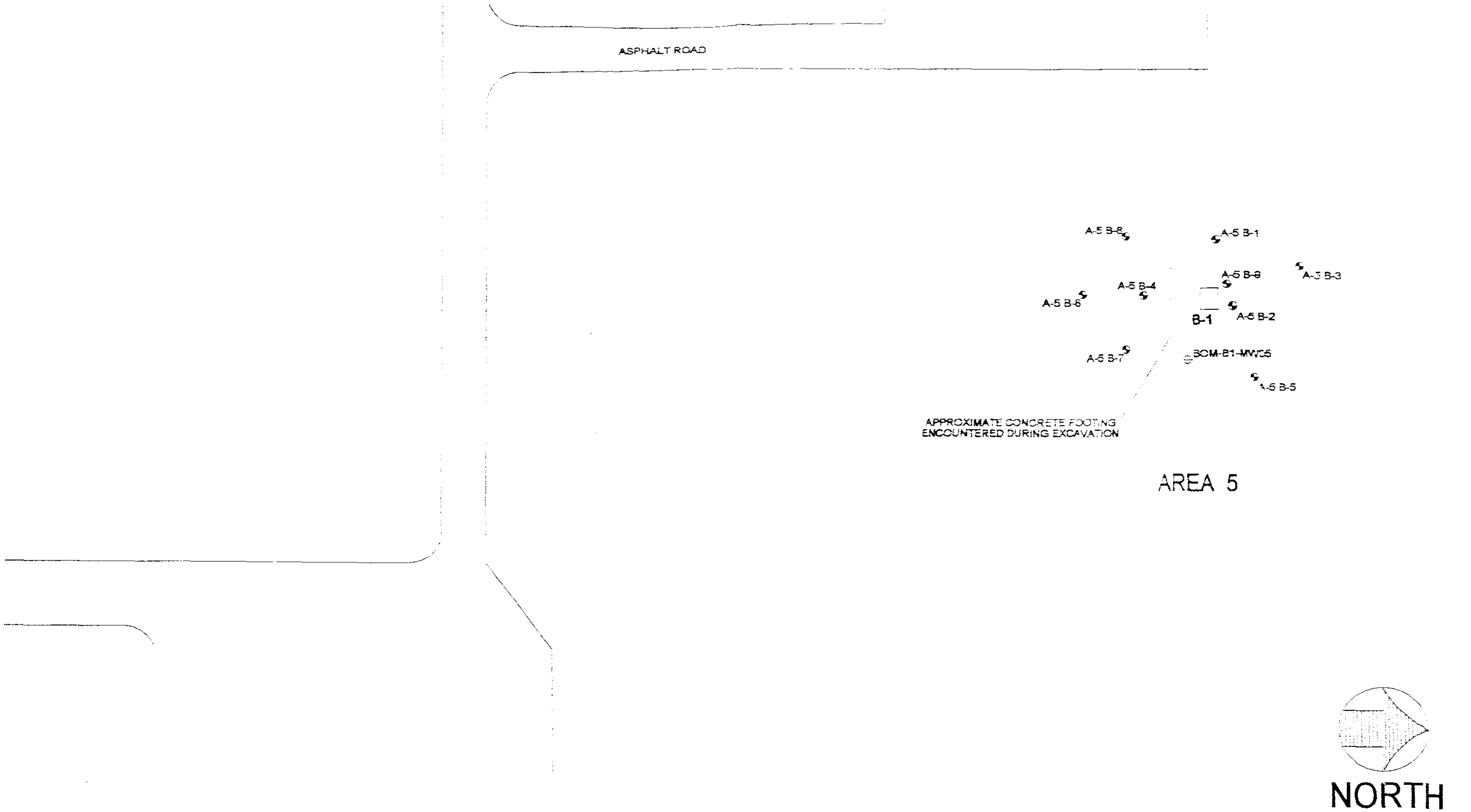
g. Other experience and qualifications relevant to the proposed project

Mr. Swanson joined Barr in 1998 with more than eight years of experience in environmental laboratory analysis and quality assurance/quality control. While at Barr, Mr. Swanson's responsibilities have included:

- Writing QAPPs (quality assurance project plans), validating CLP (contract laboratory program) and non-CLP data, coordinating laboratory analysis, and writing analytical data validation reports.
- Writing field sampling plans and coordinating field sampling events.
- Coordinating with laboratories on specialty analyses such as hydrocarbon finger printing and low level mercury analysis.

Examples of his experience prior to joining Barr include:

- Acting as Operations Manager for Matrix Technologies, Inc., a company which specializes in direct-push sampling and mobile laboratory services for site assessment data gathering. Responsibilities included project management, laboratory direction, chemist training, quality control, chemical inventory control, and establishing laboratory and standard operating procedures.
- Operating a gas chromatograph (GC), HPLC, UV-Vis Spectrophotometer, IR, total halogen analyzer, as well as software such as HP Chemstation, EZ Chrome, and Apex Chromatography Software.



SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION
BCM ENGINEERS
13485 STAMFORD COURT LIVONIA, MICHIGAN 48150

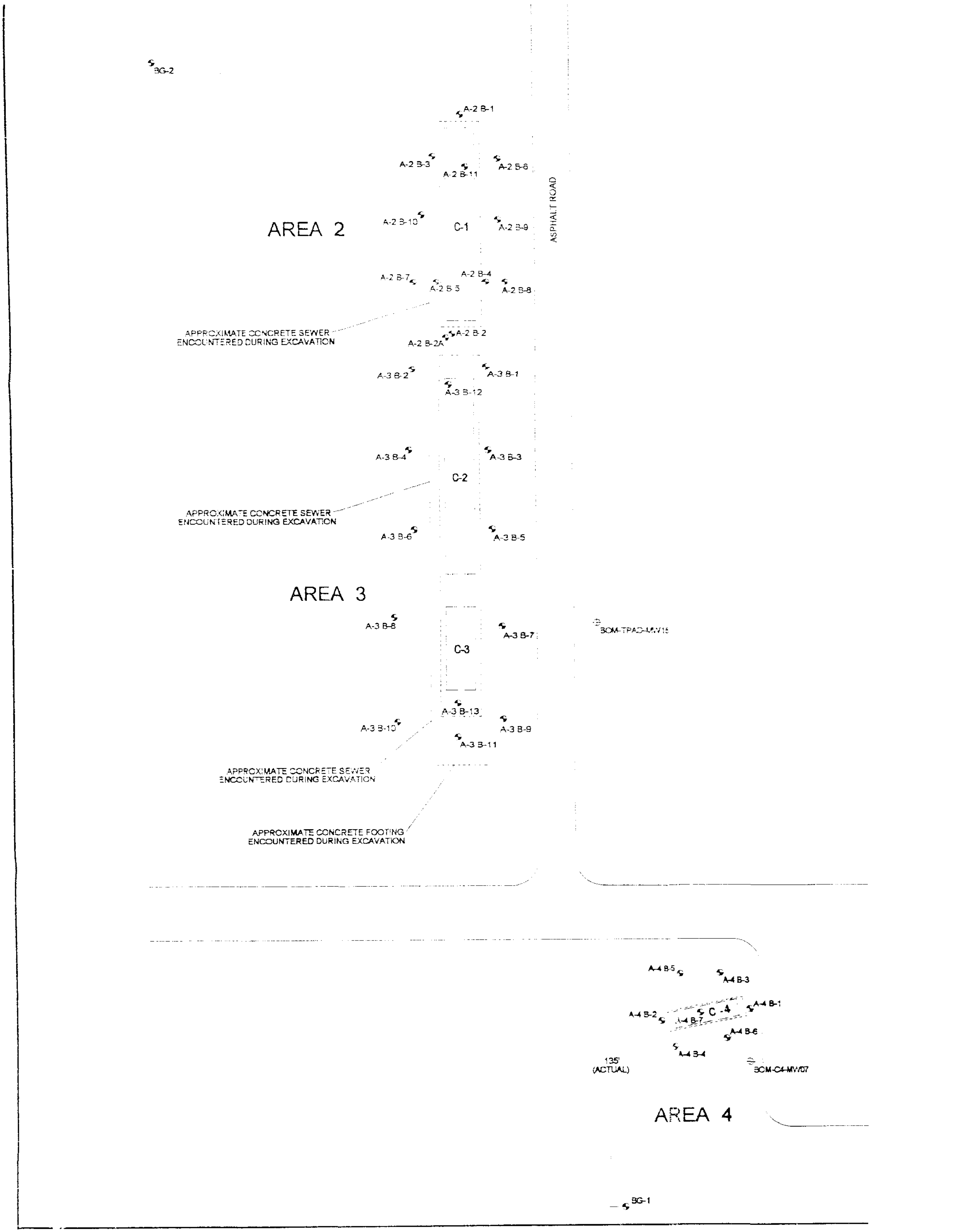
LEGEND

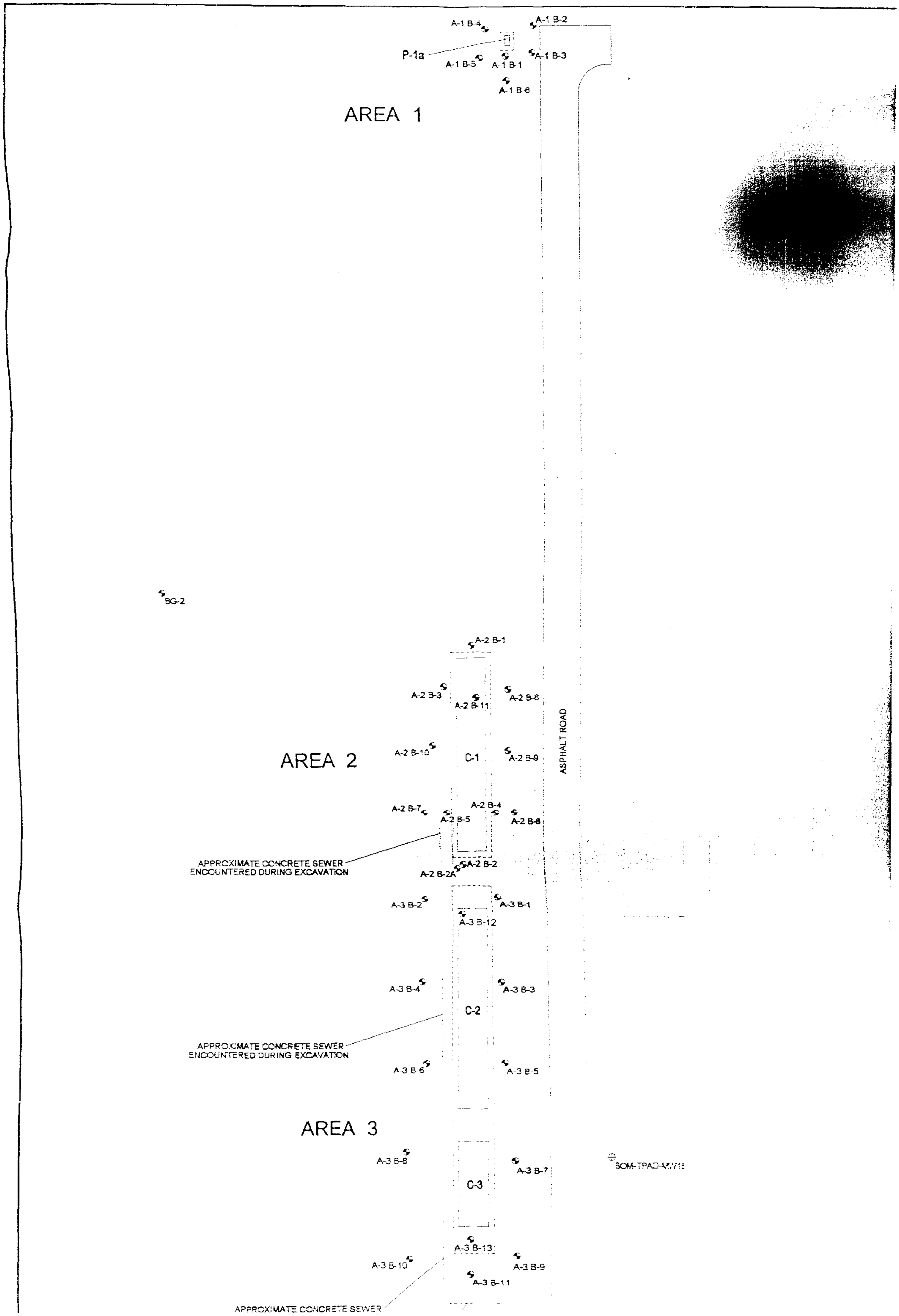
- GEOPROBE BORING LOCATION
- EXISTING MONITORING WELL LOCATION
- APPROXIMATE FORMER TANK LOCATION
- APPROXIMATE HOLD-DOWN SLAB LOCATION

FORMER RACO AIRFIELD
AND BOMARC MISSILE SITE
RACO, MICHIGAN

FIGURE 2
MISSILE BATTERY AREA

SCALE	1" = 30'
PROJECT NO.	09-5020-04
DATE	11/95
SHEET	1 OF 1


BG-2
A-2 B-1
A-2 B-3
A-2 B-11
A-2 B-6
ASPHALT ROAD
AREA 2
A-2 B-10
C-1
A-2 B-9
A-2 B-7
A-2 B-4
A-2 B-5
A-2 B-8
APPROXIMATE CONCRETE SEWER
ENCOUNTERED DURING EXCAVATION
A-2 B-2
A-2 B-2A
A-3 B-2
A-3 B-1
A-3 B-12
A-3 B-4
A-3 B-3
C-2
APPROXIMATE CONCRETE SEWER
ENCOUNTERED DURING EXCAVATION
A-3 B-6
A-3 B-5
AREA 3
A-3 B-8
A-3 B-7
C-3
A-3 B-13
A-3 B-10
A-3 B-9
A-3 B-11
APPROXIMATE CONCRETE SEWER
ENCOUNTERED DURING EXCAVATION
APPROXIMATE CONCRETE FOOTING
ENCOUNTERED DURING EXCAVATION
A-4 B-5
A-4 B-3
A-4 B-2
C-4
A-4 B-7
A-4 B-1
A-4 B-6
A-4 B-4
135'
(ACTUAL)
BCM-C4-MW07
AREA 4
BG-1



A-1 B-4
A-1 B-2
P-1a
A-1 B-5
A-1 B-1
A-1 B-3
A-1 B-6
AREA 1
BG-2
A-2 B-1
A-2 B-3
A-2 B-11
A-2 B-6
A-2 B-10
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ASPHALT ROAD
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APPROXIMATE CONCRETE SEWER
ENCOUNTERED DURING EXCAVATION
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A-3 B-3
C-2
APPROXIMATE CONCRETE SEWER
ENCOUNTERED DURING EXCAVATION
A-3 B-6
A-3 B-5
AREA 3
A-3 B-8
A-3 B-7
C-3
A-3 B-13
A-3 B-10
A-3 B-9
A-3 B-11
APPROXIMATE CONCRETE SEWER

BARR

Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601

Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO

Memorandum

To: John Greer

From: Marta Nelson

Subject: Raco/Bomarc Data Review

Date: July 24, 2002

Project: 22/17-010-JCG-200

I have completed the review of the data for the above referenced project. The following is a list of the data/reports included in this review.

- The June 1985 Environmental Research Group Data from the Buried Storage Contents Memo Report from C. Woodruff to Dr. Eastwood, September 1987
- The July 1987 EDI Engineering and Science Reports, Sampling Events June 1987
- The July 1987 Contamination Evaluation, Final Report, prepared by Envirodyne Engineers, Inc.
- Aqua Tech Environmental Consultants, Monitoring Well Report, October 1989
- The May 1987 Memo from Kirpal S. Sidhu to Andrew Hogarth containing private well water results
- Appendix B, of the IT Corporation Investigation Report, Former Air Force Airfield and BOMARC Missle Site, Raco, Michigan, August 1994
- Appendix E of the Soil Probe Investigation and Closure Report, BCM Project No 09-5020-04, Smith Environmental Technologies Corporation, May 1996
- Appendix III of the Supplemental Remedial Investigation Report, Sverdrup, October 1996

This data was reviewed according to the Barr Engineering Company SOP for routine level data validation which is derived from the U.S.EPA Functional Data Validation Guidelines.

The data from the above referenced reports appear acceptable as reported. U.S. EPA SW846, Test Method for Evaluating Solid Waste, Physical and Chemical, U.S.EPA Contract Lab Program Statement of Work (CLP-SOW) and/or Michigan DNR analytical protocols were used. None of the raw data was available for validation in any of the reports.

The June 1985 Environmental Research Group Data from the Buried Storage Contents Memo Report from C. Woodruff to Dr. Eastwood, September 1987

The June 1985 samples from the transformer pads were analyzed for PCBs and TOC. No QA/QC data were available for review (i.e., sample collection dates for holding time evaluation, blanks, accuracy and/or precision data).

July 1987 EDI Engineering and Science Reports, Sampling Events June 1987

The EDI Engineering and Science reports contained groundwater and solid/waste (oil) samples (various tank contents). The samples were analyzed for VOCs, SVOCs, metals, pesticides and PCBs, cyanide, flashpoint, total phenol and hydrocarbons (TPH). It is noted that Kemron performed the organic fraction analyses of both the groundwater and tank samples. Holding times for extraction of the groundwater and/or tank samples for SVOCs (this includes pest/PCBs) were not met. These data have been flagged accordingly.

Surrogate standard recoveries for the organic analyses were acceptable in the groundwater sample package. Surrogate standard recoveries were not provided in the tank sample package and, therefore, could not be evaluated. No laboratory or method blank data were provided in either data package from EDI. Bis(2-ethylhexyl) phthalate (a known common laboratory contaminant) was detected in groundwater samples. False positive identification based on associated blank concentrations could not be evaluated; however, due to the known ubiquitous nature of the compound, the potential false positive qualifier has been applied in our LIMS summary tables.

Samples Tank B-1 and Tank 2S have conflicting units of measure between the metals and the organic analyses. Results for metals are reported in units consistent with a liquid matrix (liters), the VOCs are in reported in units consistent with a solid matrix (kilograms), and the SVOCs (including hydrocarbon scans) were reported in percent (potentially either liquid or solid). For this reason, the metals and VOC samples have been treated individually for purposes of re-reporting through our LIMS. None of the SVOC results had positive results in percent. Positive concentrations of hydrocarbons as diesel and/or gasoline were reported, however, no Michigan Part 201 criteria exists for either diesel or gasoline hydrocarbons. Without detailed sample information (i.e., initial sample weight or volume, associated extraction fluid information) no conversion from "percent" is not possible. Because no Michigan Part 201 criteria are available and because of the lack of unit conversion information, these results have been omitted from the LIMS summary tables. Additionally, pesticide and PCB analysis sheets contained results for 1,4-DDT. This is apparently a typo, available DDTs are 4,4-DDT and 2,4-DDT. Because it could not be confirmed as 2,4-DDT (4,4-DDT was already reported), this data point has been omitted from the LIMS summary tables.

Matrix spike and matrix spike duplicate results, where available, were acceptable. Both data packages did contain duplicate sample analyses. The duplicate sample for the groundwater data package was missing the first page of the VOC analysis. Therefore the duplicate results are omitted from our LIMS summary tables. The duplicate sample from the tank data package contained only the SVOC fraction. The duplicate was ascertained by data evaluation only and was not confirmed. Results correlated well with the native sample.

July 1987 Contamination Evaluation, Final Report, prepared by Envirodyne Engineers, Inc.

Data reviewed from the Contamination Evaluation Final Report was contained in Appendix I. The soil and groundwater samples were analyzed for VOCs, SVOCs, metals, pesticides/PCBs, and hydrocarbons. Samples were analyzed by Envirodyne Engineers, Inc and Aqua Tech (for the hydrocarbon analysis). Several samples were split and analyzed by the Department of the Army, Missouri River Division laboratory. The Department of the Army data included a QA/QC review. No conflicts were discovered between the data and the documented QA summary. Split sample results were acceptable as reported.

Many of the samples analyzed by Envirodyne were analyzed one day past recommended holding time. Due to the age of the reports, this may likely be a lack of adequate computer system reporting at the time. Therefore these data are considered acceptable and have not been qualified. The remaining available QA/QC data consists of laboratory method blanks, a sampling (or field) blank, trip blank, rinsate blank and surrogate standard recoveries for the VOC analysis (from Envirodyne only). No gross contamination issues were observed in any of the associated blank samples. Low concentrations of methylene chloride were reported in the blanks from both laboratories. There were also trace levels of ethyl benzene and/or toluene in the Envirodyne laboratory blank data. Corresponding sample concentrations have been qualified accordingly as potentially false positive concentrations within the LIMS summary tables. Reported surrogate standard recoveries for the Envirodyne analyses met method acceptance criteria. No other QA/QC data were available. Tentatively identified compounds presented in the Envirodyne data have been omitted from the LIMS summary tables.

Aqua Tech Environmental Consultants, Monitoring Well Report, October 1989

Sample data contained in the Aqua Tech monitoring well report included results of VOC, PAHs metals and total petroleum hydrocarbon (TPH) analyses. Recommended EPA holding times for the analysis were met for the VOCs, metals and TPHs. Extraction dates for the PAH analysis were not available and therefore, the 7 day extraction holding time could not be confirmed. Accuracy and precision data for all analyses were met. Blank data indicated no laboratory contamination problems and no qualifiers were applied to the data set.

Appendix B, of the IT Corporation Investigation Report, Former Air Force Airfield and BOMARC Missle Site, Raco, Michigan, August 1994

Appendix B, of the IT Corp Investigation Report, Former Air Force Airfield and BOMARC Missle Site, Raco, Michigan contained analytical reports from ITAS (IT Analytical Services). The reports contained results for VOCs, SVOCs, metals, TPHs, pesticides and PCBs. Holding times were met as documented by analysis dates in a majority of the data packages. However, it should be noted that the laboratory report sheets for SVOC and TPH did not document the extraction dates. Exceedences of extraction holding time criteria for SVOCs and TPHs were documented within the report narratives. Samples meeting the extraction holding time criteria were not mentioned, therefore, in these cases, sample extraction holding times could not be confirmed. Sample extraction holding time exceedences are flagged in our LIMS summary tables.

Accuracy and precision data were acceptable. This includes the matrix spike and matrix spike duplicate results for the analyses. Field sample duplicates were provided to the laboratory and the comparability of the data sets were acceptable. CLP qualifiers for the metals analyses as applied by the laboratory were sufficient. No serious systematic QA/QC anomalies were qualified in the metals data.

Surrogate standard recoveries for the organic analyses were acceptable.

Laboratory blanks were reviewed and no gross contamination problems were observed. Common laboratory contaminants were detected in some of the blanks and are qualified accordingly in the associated sample data. Occasionally, trace levels of common laboratory contaminants were detected in the samples and not in the corresponding laboratory blanks.

The TPH analytical results contained in report number X0-09-052 were denoted as ND. The laboratory report failed to provide a final reporting limit for this analysis. Results have been reported as ND within the summary tables.

Appendix E of the Soil Probe Investigation and Closure Report, BCM Project No 09-5020-04, Smith Environmental Technologies Corporation, May 1996

Appendix E of the Soil Probe Investigation and Closure Report, BCM Project No 09-5020-04, Smith Environmental Technologies Corporation contained analytical reports from Kemron Environmental Services and Environmental Quality Laboratories, Inc (EQL). The reports contained VOCs, SVOCs, pentachlorophenol, and lead sample results. The EQL data contained very limited QA/QC information. No laboratory blanks, accuracy and precision data, or surrogate standard recovery data were available for review. Only the criteria for holding times could be confirmed. All sample holding times were met in the EQL data. One field blank sample was analyzed and no serious contamination issues were observed.

The Kemron reports contained in Appendix E also had very limited QA/QC information. The holding times for the analyses were met, surrogate recoveries for the organic analyses were also met. Results for rinsate blanks (or field blanks) results show that no gross contamination issues were associated within the analytical system during the analysis. No additional results for laboratory blanks or accuracy and precision data were documented within the report.

Appendix III of the Supplemental Remedial Investigation Report, Sverdrup, October 1996

Sample results for lead, hexavalent chromium, BTEX and PAHs were reviewed. No QA/QC data was available for review.

QA Review Conclusions

Overall, no systematic analytical problems were observed from the available QA/QC data, the reported sample results or project narratives. Much of the organic data results were "Not Detected". The majority of potential false negative indicators were not available with these data; therefore, this aspect of the validation process could not be confirmed.

RACO/BOMARC SITE

Chemical Name	Inhalation: Outdoor On-site Air Chronic H1H µg/m³	Inhalation: Outdoor On-site Air Acute H2H µg/m³	Oral/Dermal: Soil Chronic mg/kg	Oral/Dermal: Sediment Chronic mg/kg	Oral/Dermal: Fish Chronic mg/kg	Oral/Dermal: Drinking Water Chronic µg/L	Particulate Emission Factor PEF [1] m3/kg	Volatilization Factor VF [2] m3/kg	Inverse of Mean Concentration Center of Source Q/C [3] g/m2-s per kg/m3	Apparent Diffusivity Da [4] cm2/s	Exposure Interval T [5] s
Acetone	8.96E-09		7.00E-02		1.03E-03	2.63	1.32E+09	7.81E+03	42.79	9.91E-05	9.50E+08
Aluminum	8.33E-07		1.10E+03		0.00E+00	3150				0	
Antimony Trioxide	3.11E-10		4.10E-01		0.00E+00					1.28E-09	
Arsenic, Inorganic	1.12E-09		1.48E+00		0.00E+00	0				2.76E-09	
Barium	2.95E-08		3.90E+01		1.02E+01	16.08				1.3E-09	
Benz[a]anthracene	0.00E+00		0.00E+00		0.00E+00			5.86E+06		1.76E-10	
Benzene	0.00E+00		0.00E+00		2.58E-03	0.104		1.70E+03		0.002095	
Benzo[a]pyrene	8.63E-13		1.68E-02		0.00E+00			1.97E+07		1.55E-11	
Benzo[b]fluoranthene	7.33E-12		1.74E-02		0.00E+00			2.38E+06		1.07E-09	
Benzo[k]fluoranthene	0.00E+00		0.00E+00		0.00E+00			2.00E+07		1.52E-11	
Butyl Benzyl Phthlate	0.00E+00		0.00E+00		0.00E+00			2.53E+06		9.45E-10	
Carbon Disulfide	2.03E-08		1.50E-02		1.15E-01	5.92		7.40E+02		0.011025	
Chloroform	0.00E+00		0.00E+00		0.00E+00			2.35E+03		0.001095	
Chrysene	0.00E+00		0.00E+00		0.00E+00			1.46E+06		2.82E-09	
Fluoranthene	1.39E-11		1.79E-02		0.00E+00			1.29E+06		3.64E-09	
Lead And Compounds	1.44E-08		1.90E+01		3.26E-02	4.08				4.51E-11	
Magnesium	2.20E-07		2.90E+02		0.00E+00	1200				0	
Manganese (Diet)	2.33E-08		3.07E+01		0.00E+00					0	
Manganese (Water)	0.00E+00		0.00E+00		1.28E+02	320				0	
Mercury (elemental)	1.32E-09		2.00E-01		0.00E+00	17.69		1.51E+05		2.64E 07	
Methyl Ethyl Ketone	4.17E-08		1.80E-01		0.00E+00			4.32E+03		0.000324	
Methylene Chloride	0.00E+00		0.00E+00		1.93E-02	3.39		1.67E+03		0.002162	
Nickel	6.67E-09		8.80E+00		1.35E+00	4.4				1.45E-09	
Pentachlorophenol	0.00E+00		0.00E+00		0.00E+00			9.94E+05		6.11E-09	
Phenanthrene	0.00E+00		0.00E+00		0.00E+00			1.04E+06		5.64E-09	
Pyrene	9.69E-12		1.84E-02		0.00E+00			1.90E+06		1.67E-09	
Selenium	1.59E-10		2.10E-01		0.00E+00					1.52E-08	
Styrene	5.21E-09		4.70E-02		0.00E+00			9.02E+03		7.43E-05	
Tetrachloroethylene	0.00E+00		0.00E+00		0.00E+00			1.98E+03		0.001535	
Thallium (Soluble Salts)	7.58E-11		1.00E-01		0.00E+00					5.77E-10	
Toluene	0.00E+00		0.00E+00		9.24E-03	0.14		1.77E+05		1.93E-07	
Trichloroethane, 1,1,1-	0.00E+00		0.00E+00		8.74E-03	0.186		5.37E+04		2.1E-06	
Trichloroethylene	1.11E-09		2.36E-03		8.74E-03	0.21		2.12E+03		0.001342	
Vanadium, Metallic	4.17E-09		5.50E+00		0.00E+00					0	
Xylene, Mixture	0.00E+00		0.00E+00		8.55E-02	0.45		4.26E+03		0.000334	
Zinc (Metallic)	6.89E-09		9.10E+00		1.67E+01	25.5				1.42E-09	

Chemical Name	Soil Bulk Density BD [6] g/cm3	Air Filled Soil Porosity θa [7] Lair/Lsoil	Diffusivity in Air Di [8] cm2/s	Henry's Law Constant H' [9] Unitless	Water Filled Soil Porosity θw [10] Lwater/Lsoil	Diffusivity in Water Dw [11] cm2/s	Total Soil Porosity n [12] Lpore/Lsoil	Soil-Water Partition Coefficient Kd [13] cm3/g	Soil Organic Carbon Water Partiotion Coefficient Koc [14] cm3/g	Soil Oraganic Carbon Content foc [15] g/g	Fish Bioconcentration Factor BcF [16] L/kg	Soil-Water Partition Coefficient Kd L/kg	Soil Conc 0-7 feet ug/kg	Soil Conc 0-7 feet mg/kg
Acetone	1.5	0.28	1.24E-01	1.59E-03	0.15	1.14E-05	0.43	3.45E-03	5.75E-01	0.006	3.90E-01	7.13E-02	70	0.07
Aluminum			0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.00E+00		0.00E+00	1.50E+03	1100000	1100
Antimony Trioxide			7.73E-02	0.00E+00		8.96E-06		4.50E+01	0.00E+00		4.00E+01	4.50E+01	410	0.41
Arsenic, Inorganic			1.07E-01	0.00E+00		1.24E-05		2.90E+01	0.00E+00		2.00E+01	2.90E+01	1480	1.48
Barium			7.14E-02	0.00E+00		8.26E-06		4.10E+01	0.00E+00		6.33E+02	4.10E+01	39000	39
Benz[a]anthracene			5.10E-02	1.37E-04		9.00E-06		2.39E+03	3.98E+05		5.10E+03	1.95E+04	0	0
Benzene			8.80E-02	2.28E-01		9.80E-06		3.53E-01	5.89E+01		2.48E+01	4.65E+00	0	0
Benzo[a]pyrene			2.18E-02	4.63E-05		5.85E-06		5.81E+03	9.69E+05		9.95E+03	7.27E+04	16.8	0.0168
Benzo[b]fluoranthene			2.26E-02	4.55E-03		5.56E-06		5.02E+03	8.36E+05		9.95E+03	0.00E+00	17.4	0.0174
Benzo[k]fluoranthene			2.26E-02	3.40E-05		5.56E-06		4.99E+03	8.32E+05		9.95E+03	0.00E+00	0	0
Butyl Benzyl Phthlate			1.74E-02	5.17E-05		4.83E-06		8.22E+01	1.37E+04		2.35E+03	0.00E+00	0	0
Carbon Disulfide			1.04E-01	1.24E+00		1.00E-05		2.74E-01	4.57E+01		1.95E+01	0.00E+00	15	0.015
Chloroform			5.17E-02	1.50E-01		1.00E-05		2.39E-01	3.98E+01		3.59E+00	0.00E+00	0	0
Chrysene			2.48E-02	3.88E-03		6.21E-06		1.78E+03	2.97E+05		6.06E+03	0.00E+00	0	0
Fluoranthene			3.02E-02	6.60E-04		6.35E-06		2.95E+02	4.91E+04		3.10E+03	0.00E+00	17.9	0.0179
Lead And Compounds			5.43E-02	0.00E+00		6.28E-06		9.00E+02	0.00E+00		8.00E+00	9.00E+02	19000	19
Magnesium			0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.00E+00		0.00E+00	4.50E+00	290000	290
Manganese (Diet)			0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.00E+00		4.00E+02	6.50E+01	30700	30.7
Manganese (Water)			0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.00E+00		4.00E+02	6.50E+01		0
Mercury (elemental)			1.09E-02	4.67E-01		3.01E-05		1.00E+03				5.20E+01	200	0.2
Methyl Ethyl Ketone			1.35E-01	5.33E-03		1.03E-05		1.40E-02	2.34E+00		9.40E-01	0.00E+00	180	0.18
Methylene Chloride			8.69E-02	8.98E-02		1.17E-05		7.02E-02	1.17E+01		5.70E+00	0.00E+00	0	0
Nickel			1.26E-01	0.00E+00		1.46E-05		6.50E+01	0.00E+00		3.07E+02	0.00E+00	8800	8.8
Pentachlorophenol			1.56E-02	1.00E-06		8.01E-06		8.50E+00	1.42E+03		3.97E+02	0.00E+00	0	0
Phenanthrene			3.33E-02	9.55E-04		7.47E-06		3.01E+02	5.01E+04		1.80E+03	0.00E+00	0	0
Pyrene			2.72E-02	4.51E-04		7.24E-06		4.08E+02	6.80E+04		3.10E+03	0.00E+00	18.4	0.0184
Selenium			1.03E-01	0.00E+00		1.20E-05		5.00E+00	0.00E+00		1.29E+02	3.00E+02	210	0.21
Styrene			7.10E-02	1.13E-01		8.00E-06		5.47E+00	9.12E+02		9.40E+01	0.00E+00	47	0.047
Tetrachloroethylene			7.20E-02	7.54E-01		8.20E-06		1.59E+00	2.65E+02		5.06E+01	0.00E+00	0	0
Thallium (Soluble Salts)			5.48E-02	0.00E+00		6.34E-06		7.10E+01	0.00E+00		1.40E+03	1.50E+03	100	0.1
Toluene			9.32E-06	2.72E-01		9.23E-06		8.40E-01	1.40E+02		6.60E+01	0.00E+00	0	0
Trichloroethane, 1,1,1-			4.66E-02	7.05E-01		9.56E-06		8.10E+02	1.35E+05		4.70E+01	0.00E+00	0	0
Trichloroethylene			4.56E-02	4.22E-01		9.94E-06		5.64E-01	9.40E+01		4.16E+01	0.00E+00	2.36	0.00236
Vanadium, Metallic			0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.00E+00		1.00E+01	1.00E+03	5500	5.5
Xylene, Mixture			7.14E-02	2.15E-01		9.34E-06		2.24E+00	3.74E+02		1.90E+02	0.00E+00	0	0
Zinc (Metallic)			1.17E-01	0.00E+00		1.36E-05		6.20E+01	0.00E+00		6.54E+02	6.20E+01	9100	9.1

[1] Particulate Emission Factor = Default Value (EPA, 1996)
[2] Volatilization Factor = ((Q/C x (3.14 x Da x T)^0.5)/(2 x Bd x Da)) x 10^-4 (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)
[3] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996.
[4] $Da = [(\theta a^{10/3} \times Di \times H' + \theta w^{10/3} \times Dw)/n^2] / (Db + \theta w + \theta a \times H')$ (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)

θa = air filled soil porosity (Lair/Lsoil)
Di = diffusivity in air (cm^2/s)
H' = Henry's Law Constant (unitless)
θw = water filled soil porosity (Lwater/Lsoil)
Dw = diffusivity in water (cm^2/s)
n = total soil porosity (Lpore/Lsoil)
Bd = dry soil bulk density (g/cm^3)
Kd = soil-water partition coefficient (cm3/g) = Koc x foc

[5] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)
[6] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)
[7] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[8] Chemical specific (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[9] Chemical specific. H'=Hx41 (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)
[10] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[11] Chemical specific (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[12] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[13] Kd = Koc x foc
[14] Chemical specific (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[15] Default (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996).
[16] Chemical specific (EPA Soil Screening Guidance: Technical Background Document 9355.4-17A May 1996)

RACO/BOMARC SITE
Carcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Excess Lifetime Cancer Risk**
Exposure Media: **Ambient Air**
Exposure Route: **Inhalation**

Chemical	CAS No.	Cancer Class	Target Site	Unit Risk (UR)		Air Conc. (AC)	Adult			Child		
							Inhalation Exposure Conc. (IEC)	Cancer Risk	Percent of Total Risk	Inhalation Exposure Conc. (IEC)	Cancer Risk	Percent of Total Risk
				$(\mu g/m^3)^{-1}$	Source	$\mu g/m^3$	$\mu g/m^3$	unitless	%	$\mu g/m^3$	unitless	%
Acetone	67-64-1	D				8.96E-09	2.95E-09			7.37E-10		
Aluminum	7429-90-5					8.33E-07	2.74E-07			6.85E-08		
Antimony Trioxide	1309-64-4					3.11E-10	1.02E-10			2.55E-11		
Arsenic, Inorganic	7440-38-2	A	Respiratory	4.3E-03	IRIS	1.12E-09	3.69E-10	2 E-12	71.6 %	9.22E-11	4 E-13	71.6 %
Barium	7440-39-3	D				2.95E-08	9.71E-09			2.43E-09		
Benz[a]anthracene	56-55-3	B2	No Data	1.1E-04	Cal EPA		0.00E+00			0.00E+00		
Benzene	71-43-2	A	Circulatory	7.8E-06	IRIS		0.00E+00			0.00E+00		
Benzo[a]pyrene	50-32-8	B2	Respiratory	1.1E-03	Cal EPA	8.63E-13	2.84E-13	3 E-16	0.0 %	7.10E-14	8 E-17	0.0 %
Benzo[b]fluoranthene	205-99-2	B2		1.1E-04	Cal EPA	7.33E-12	2.41E-12	3 E-16	0.0 %	6.02E-13	7 E-17	0.0 %
Benzo[k]fluoranthene	207-08-9	B2		1.1E-04	Cal EPA		0.00E+00			0.00E+00		
Butyl Benzyl Phthlate	85-68-7	C	Respiratory				0.00E+00			0.00E+00		
Carbon Disulfide	75-15-0					2.03E-08	6.66E-09			1.67E-09		
Chloroform	67-66-3	B2	Liver	2.3E-05	IRIS		0.00E+00			0.00E+00		
Chrysene	218-01-9	B2		1.1E-05	Cal EPA		0.00E+00			0.00E+00		
Fluoranthene	206-44-0	D				1.39E-11	4.57E-12			1.14E-12		
Lead And Compounds	7439-92-1	B2	No Data	1.2E-05	Cal EPA	1.44E-08	4.73E-09	6 E-14	2.6 %	1.18E-09	1 E-14	2.6 %
Magnesium	7439-95-4					2.20E-07	7.22E-08			1.81E-08		
Manganese (Diet)	7439-96-5	D				2.33E-08	7.65E-09			1.91E-09		
Manganese (Water)	7439-96-5	D					0.00E+00			0.00E+00		
Mercury (elemental)	7439-97-6	D				1.32E-09	4.34E-10			1.09E-10		
Methyl Ethyl Ketone	78-93-3	D				4.17E-08	1.37E-08			3.43E-09		
Methylene Chloride	75-09-2	B2	Liver	4.7E-07	IRIS		0.00E+00			0.00E+00		
Nickel	7440-02-0	A		2.6E-04	Cal EPA	6.67E-09	2.19E-09	6 E-13	25.8 %	5.48E-10	1 E-13	25.8 %
Pentachlorophenol	87-86-5	B2		4.6E-06	Cal EPA		0.00E+00			0.00E+00		
Phenanthrene	85-01-8	D					0.00E+00			0.00E+00		
Pyrene	129-00-0	D				9.69E-12	3.19E-12			7.96E-13		
Selenium	7782-49-2	D				1.59E-10	5.23E-11			1.31E-11		
Styrene	100-42-5	NA				5.21E-09	1.71E-09			4.28E-10		
Tetrachloroethylene	127-18-4	NA		5.9E-06	Cal EPA		0.00E+00			0.00E+00		
Thallium (Soluble Salts)	7440-28-0					7.58E-11	2.49E-11			6.23E-12		
Toluene	108-88-3	D					0.00E+00			0.00E+00		
Trichloroethane, 1,1,1-	71-55-6	D					0.00E+00			0.00E+00		
Trichloroethylene	79-01-6	NA		2.0E-06	Cal EPA	1.11E-09	3.66E-10	7 E-16	0.0 %	9.14E-11	2 E-16	0.0 %
Vanadium, Metallic	7440-62-2					4.17E-09	1.37E-09			3.42E-10		
Xylene, Mixture	1330-20-7	D					0.00E+00			0.00E+00		
Zinc (Metallic)	7440-66-6	D				6.89E-09	2.27E-09			5.67E-10		
						Total Risk:	**2.E-12**			**6 E-13**		

$$IEC = \frac{(AC \times ET \times EF \times ED)}{AT}$$

Cancer Risk = UR x IEC

where:

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
ET - Exposure time:	24	hrs/day	Maximum	24	hrs/day	Maximum
EF - Exposure frequency:	350	days/yr	EPA, 1991	350	days/yr	EPA 1991
ED - Exposure duration:	24	yr	EPA 1991	6	yr	EPA 1991
AT - Averaging time:	613,200	hrs	EPA 1997	613,200	hrs	EPA 1991

RACO/BOMARC SITE

Chronic Noncarcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Noncarcinogenic Health Risk - Hazard Index**
Exposure Media: **Ambient Air**
Exposure Route: **Inhalation**

Chemical	CAS No.	Target Site	Chronic Reference Concentration (RfC)		Air Conc. (AC)	Adult			Child		
						Inhalation Exposure Conc. (IEC)	Hazard Quotient	Percent of Hazard Index	Inhalation Exposure Conc. (IEC)	Hazard Quotient	Percent of Hazard Index
			µg/m³	Source	µg/m³	µg/m³	unitless	%	µg/m³	unitless	%
Acetone	67-64-1				8.96E-09	8.60E-09			8.60E-09		
Aluminum	7429-90-5				8.33E-07	7.99E-07			7.99E-07		
Antimony Trioxide	1309-64-4	Respiratory	2.0E-01	IRIS	3.11E-10	2.98E-10	1 E-09	0.2 %	2.98E-10	1 E-09	0.2 %
Arsenic, Inorganic	7440-38-2		3.0E-02	Cal EPA	1.12E-09	1.08E-09	4 E-08	5.4 %	1.08E-09	4 E-08	5.4 %
Barium	7440-39-3	Reproduction	5.0E-01	b,c	2.95E-08	2.83E-08	6 E-08	8.5 %	2.83E-08	6 E-08	8.5 %
Benz[a]anthracene	56-55-3										
Benzene	71-43-2	Circulatory, Development, Neurotoxicity, Immune	6.0E+01	Cal EPA							
Benzo[a]pyrene	50-32-8				8.63E-13	8.28E-13			8.28E-13		
Benzo[b]fluoranthene	205-99-2				7.33E-12	7.03E-12			7.03E-12		
Benzo[k]fluoranthene	207-08-9										
Butyl Benzyl Phthlate	85-68-7										
Carbon Disulfide	75-15-0	Neurotoxicity	7.0E+02	IRIS	2.03E-08	1.94E-08	3 E-11	0.0 %	1.94E-08	3 E-11	0.0 %
Chloroform	67-66-3	Intestine, Kidney, Development	3.0E+02	Cal EPA							
Chrysene	218-01-9										
Fluoranthene	206-44-0				1.39E-11	1.33E-11			1.33E-11		
Lead And Compounds	7439-92-1				1.44E-08	1.38E-08			1.38E-08		
Magnesium	7439-95-4				2.20E-07	2.11E-07			2.11E-07		
Manganese (Diet)	7439-96-5	Neurotoxicity	5.0E-02	IRIS	2.33E-08	2.23E-08	4 E-07	66.8 %	2.23E-08	4 E-07	66.8 %
Manganese (Water)	7439-96-5		5.0E-02	IRIS							
Mercury (elemental)	7439-97-6	Neurotoxicity			1.32E-09	1.27E-09			1.27E-09		
Methyl Ethyl Ketone	78-93-3	Reproductive, Developmental, Intestine, Kidney	1.0E+03	IRIS	4.17E-08	4.00E-08	4 E-11	0.0 %	4.00E-08	4 E-11	0.0 %
Methylene Chloride	75-09-2	Liver, Circulatory, Neurotoxicity	3.0E+03	HEAST							
Nickel	7440-02-0	Respiratory, Immune	5.0E-02	Cal EPA	6.67E-09	6.39E-09	1 E-07	19.1 %	6.39E-09	1 E-07	19.1 %
Pentachlorophenol	87-86-5										
Phenanthrene	85-01-8										
Pyrene	129-00-0				9.69E-12	9.29E-12			9.29E-12		
Selenium	7782-49-2				1.59E-10	1.53E-10			1.53E-10		
Styrene	100-42-5	Neurotoxicity	1.0E+03	IRIS	5.21E-09	5.00E-09	5 E-12	0.0 %	5.00E-09	5 E-12	0.0 %
Tetrachloroethylene	127-18-4		6.0E+02	v							
Thallium (Soluble Salts)	7440-28-0				7.58E-11	7.26E-11			7.26E-11		
Toluene	108-88-3	Neurotoxicity, Respiratory, Intestine, Developmer	4.0E+02	IRIS							
Trichloroethane, 1,1,1-	71-55-6	Neurotoxicity	1.0E+03	Cal EPA							
Trichloroethylene	79-01-6	Neurotoxicity, Eye	6.0E+02	Cal EPA	1.11E-09	1.07E-09	2 E-12	0.0 %	1.07E-09	2 E-12	0.0 %
Vanadium, Metallic	7440-62-2				4.17E-09	4.00E-09			4.00E-09		
Xylene, Mixture	1330-20-7		7.0E+02	Cal EPA							
Zinc (Metallic)	7440-66-6				6.89E-09	6.61E-09			6.61E-09		
					Hazard Index:	**7.E-07**			**7.E-07**		

$$IEC = \frac{(AC \times ET \times EF \times ED)}{AT}$$

$$\text{Hazard Quotient} = \frac{IEC}{RfC}$$

where

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
ET - Exposure time	24	hrs/day	Maximum	24	hrs/day	Maximum
EF - Exposure frequency	350	days/yr	EPA 1991	350	days/yr	EPA 1991
ED - Exposure duration	24	yr	EPA 1991	6	yr	EPA 1991
AT - Averaging time	210,240	hrs	EPA 1991	52,560	hrs	EPA 1991

RACO/BOMARC SITE
Carcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Excess Lifetime Cancer Risk**
Exposure Media: **Surface Soil**
Exposure Route: **Ingestion**

Chemical	CAS No.	Cancer Class	Target Site	Slope Factor (SF)		Soil Conc. (C)	Oral Absorption Factor (OAF)	Adult			Child		
								Daily Intake (DI)	Cancer Risk	Percent of Total Risk	Daily Intake (DI)	Cancer Risk	Percent of Total Risk
				(mg/kg-day)$^{-1}$	Source	mg/kg	unitless	mg/kg-day	unitless	%	mg/kg-day	unitless	%
Acetone	67-64-1	D				7.00E-02	0.83	7.11E-09			7.11E-09		
Aluminum	7429-90-5					1.10E+03	0.1	1.35E-05			1.35E-05		
Antimony Trioxide	1309-64-4					4.10E-01	0.2	1.00E-08			1.00E-08		
Arsenic, Inorganic	7440-38-2	A	Skin	1.5E+00	IRIS	1.48E+00	0.41	7.42E-08	1 E-07	93.0 %	7.42E-08	1 E-07	93.0 %
Barium	7440-39-3	D				3.90E+01	0.07	3.34E-07			3.34E-07		
Benz[a]anthracene	56-55-3	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00		
Benzene	71-43-2	A	Circulatory	5.5E-02	IRIS		0.97	0.00E+00			0.00E+00		
Benzo[a]pyrene	50-32-8	B2	Stomach	7.3E+00	IRIS	1.68E-02	0.31	6.37E-10	5 E-09	3.9 %	6.37E-10	5 E-09	3.9 %
Benzo[b]fluoranthene	205-99-2	B2		1.2E+00	Cal EPA	1.74E-02	0.31	6.60E-10	8 E-10	0.7 %	6.60E-10	8 E-10	0.7 %
Benzo[k]fluoranthene	207-08-9	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00		
Butyl Benzyl Phthlate	85-68-7	C					0.61	0.00E+00			0.00E+00		
Carbon Disulfide	75-15-0					1.50E-02	0.63	1.16E-09			1.16E-09		
Chloroform	67-66-3	B2	Kidney	6.1E-03	IRIS		0.2	0.00E+00			0.00E+00		
Chrysene	218-01-9	B2		1.2E-01	Cal EPA		0.31	0.00E+00			0.00E+00		
Fluoranthene	206-44-0	D				1.79E-02	0.31	6.79E-10			6.79E-10		
Lead And Compounds	7439-92-1	B2	Kidney	8.5E-03	Cal EPA	1.90E+01	0.15	3.49E-07	3 E-09	2.5 %	3.49E-07	3 E-09	2.5 %
Magnesium	7439-95-4					2.90E+02	0.2	7.09E-06			7.09E-06		
Manganese (Diet)	7439-96-5	D				3.07E+01	0.04	1.50E-07			1.50E-07		
Manganese (Water)	7439-96-5	D					0.04	0.00E+00			0.00E+00		
Mercury (elemental)	7439-97-6	D				2.00E-01	0.0001	2.45E-12			2.45E-12		
Methyl Ethyl Ketone	78-93-3	D				1.60E-01	0.8	1.76E-08			1.76E-08		
Methylene Chloride	75-09-2	B2	Liver, Respiratory	7.5E-03	IRIS		0.95	0.00E+00			0.00E+00		
Nickel	7440-02-0	A			Cal EPA	8.80E+00	0	0.00E+00			0.00E+00		
Pentachlorophenol	87-86-5	B2	Liver	1.2E-01	IRIS		1	0.00E+00			0.00E+00		
Phenanthrene	85-01-8	D					0.73	0.00E+00			0.00E+00		
Pyrene	129-00-0	D				1.84E-02	0.31	6.98E-10			6.98E-10		
Selenium	7782-49-2	D				2.10E-01	0.44	1.13E-08			1.13E-08		
Styrene	100-42-5	NA				4.70E-02	0.8	4.60E-09			4.60E-09		
Tetrachloroethylene	127-18-4	NA		5.1E-02	Cal EPA		1	0.00E+00			0.00E+00		
Thallium (Soluble Salts)	7440-28-0					1.00E-01	0.15	1.83E-09			1.83E-09		
Toluene	108-88-3	D					0.8	0.00E+00			0.00E+00		
Trichloroethane, 1,1,1-	71-55-6	D					0.9	0.00E+00			0.00E+00		
Trichloroethylene	79-01-6	NA		1.5E-02	Cal EPA	2.36E-03	0.15	4.33E-11	7 E-13	0.0 %	4.33E-11	7 E-13	0.0 %
Vanadium, Metallic	7440-62-2					5.50E+00	0.01	6.73E-09			6.73E-09		
Xylene, Mixture	1330-20-7	D					0.92	0.00E+00			0.00E+00		
Zinc (Metallic)	7440-66-6	D				9.10E+00	0.2	2.23E-07			2.23E-07		
Total Risk:								**1.E-07**			**1.E-07**		

$$DI = \frac{(C \times 10^{-6}\ kg/mg \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

Cancer Risk = SF x DI

where:

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
IR - Ingestion Rate	50	mg/day	EPA, 1997	200	mg/day	EPA, 1997
FI - Fraction Soil Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	175	days/yr	Assumed	50	days/yr	Assumed
ED - Exposure duration	25	yr	EPA, 1997	5	yr	Assumed
BW - Body Weight	70	kg	EPA, 1997	16	kg	Average
AT - Averaging time	25,550	days	EPA, 1991	25,550	days	EPA, 1991

RACO/BOMARC SITE
Noncarcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Chronic Noncarcinogenic Health Risk - Hazard Index**
Exposure Media: **Surface Soil**
Exposure Route: **Ingestion**

Chemical	CAS No.	Target Site	Reference Dose (RfD)		Soil Conc. (C)	Oral Absorption Factor (OAF)	Adult Daily Intake (DI)	Adult Hazard Quotient	Adult Percent of Hazard Index	Child Daily Intake (DI)	Child Hazard Quotient	Child Percent of Hazard Index
			(mg/kg-day)	Source	mg/kg	unitless	mg/kg-day	unitless	%	mg/kg-day	unitless	%
Acetone	67-64-1	Kidney, Liver	1.0E-01	IRIS	7.00E-02	0.83	1.99E-08	2 E-07	0.0 %	9.95E-08	1 E-06	0.0 %
Aluminum	7429-90-5				1.10E+03	0.1	3.77E-05			1.88E-04		
Antimony Trioxide	1309-64-4	Circulatory	4.0E-04	HEAST	4.10E-01	0.2	2.81E-08	7 E-05	8.9 %	1.40E-07	4 E-04	8.9 %
Arsenic, Inorganic	7440-38-2	Skin	3.0E-04	IRIS	1.48E+00	0.41	2.08E-07	7 E-04	87.6 %	1.04E-06	3 E-03	87.6 %
Barium	7440-39-3	Circulatory	7.0E-02	IRIS	3.90E+01	0.07	9.35E-07	1 E-05	1.7 %	4.67E-06	7 E-05	1.7 %
Benz[a]anthracene	56-55-3					0.31	0.00E+00			0.00E+00		
Benzene	71-43-2					0.97	0.00E+00			0.00E+00		
Benzo[a]pyrene	50-32-8				1.68E-02	0.31	1.78E-09			8.92E-09		
Benzo[b]fluoranthene	205-99-2				1.74E-02	0.31	1.85E-09			9.24E-09		
Benzo[k]fluoranthene	207-08-9					0.31	0.00E+00			0.00E+00		
Butyl Benzyl Phthlate	85-68-7	Liver, Circulatory	2.0E-01	IRIS		0.61	0.00E+00			0.00E+00		
Carbon Disulfide	75-15-0	Developmental, Weight	1.0E-01	IRIS	1.50E-02	0.63	3.24E-09	3 E-08	0.0 %	1.62E-08	2 E-07	0.0 %
Chloroform	67-66-3	Liver	1.0E-02	IRIS		0.2	0.00E+00			0.00E+00		
Chrysene	218-01-9					0.31	0.00E+00			0.00E+00		
Fluoranthene	206-44-0	Liver, Circulatory	4.0E-02	IRIS	1.79E-02	0.31	1.90E-09	5 E-08	0.0 %	9.50E-09	2 E-07	0.0 %
Lead And Compounds	7439-92-1				1.90E+01	0.15	9.76E-07			4.88E-06		
Magnesium	7439-95-4				2.90E+02	0.2	1.99E-05			9.93E-05		
Manganese (Diet)	7439-96-5	Neurotoxicity	1.4E-01	a,m	3.07E+01	0.04	4.21E-07	3 E-06	0.4 %	2.10E-06	2 E-05	0.4 %
Manganese (Water)	7439-96-5		4.6E-02	m		0.04	0.00E+00			0.00E+00		
Mercury (elemental)	7439-97-6				2.00E-01	0.0001	6.85E-12			3.42E-11		
Methyl Ethyl Ketone	78-93-3	Developmental, Weight	6.0E-01	IRIS	1.80E-01	0.8	4.93E-08	8 E-08	0.0 %	2.47E-07	4 E-07	0.0 %
Methylene Chloride	75-09-2	Liver	6.0E-02	IRIS		0.95	0.00E+00			0.00E+00		
Nickel	7440-02-0				8.80E+00	0	0.00E+00			0.00E+00		
Pentachlorophenol	87-86-5	Kidney, Liver	3.0E-02	IRIS		1	0.00E+00			0.00E+00		
Phenanthrene	85-01-8					0.73	0.00E+00			0.00E+00		
Pyrene	129-00-0	Kidney	3.0E-02	IRIS	1.84E-02	0.31	1.95E-09	7 E-08	0.0 %	9.77E-09	3 E-07	0.0 %
Selenium	7782-49-2	Selenosis	5.0E-03	IRIS	2.10E-01	0.44	3.16E-08	6 E-06	0.8 %	1.58E-07	3 E-05	0.8 %
Styrene	100-42-5	Liver, Circulatory	2.0E-01	IRIS	4.70E-02	0.8	1.29E-08	6 E-08	0.0 %	6.44E-08	3 E-07	0.0 %
Tetrachloroethylene	127-18-4	Weight	1.0E-02	IRIS		1	0.00E+00			0.00E+00		
Thallium (Soluble Salts)	7440-28-0				1.00E-01	0.15	5.14E-09			2.57E-08		
Toluene	108-88-3	Kidney, Liver	2.0E-01	IRIS		0.8	0.00E+00			0.00E+00		
Trichloroethane, 1,1,1-	71-55-6					0.9	0.00E+00			0.00E+00		
Trichloroethylene	79-01-6		6.0E-03	v	2.36E-03	0.15	1.21E-10	2 E-08	0.0 %	6.06E-10	1 E-07	0.0 %
Vanadium, Metallic	7440-62-2		7.0E-03	HEAST	5.50E+00	0.01	1.88E-08	3 E-06	0.3 %	9.42E-08	1 E-05	0.3 %
Xylene, Mixture	1330-20-7	Weight, Death	2.0E+00	IRIS		0.92	0.00E+00			0.00E+00		
Zinc (Metallic)	7440-66-6	Circulatory	3.0E-01	IRIS	9.10E+00	0.2	6.23E-07	2 E-06	0.3 %	3.12E-06	1 E-05	0.3 %
						Hazard Index:		**0.001**			**0.004**	

$$DI = \frac{(C \times 10^{-6}\ kg/mg \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

$$\text{Hazard Quotient} = \frac{DI}{RfD}$$

where

	Adult Exposure Assumptions Value	Units	Source	Child Exposure Assumptions Value	Units	Source
IR - Ingestion Rate	50	mg/day	EPA, 1997	200	mg/day	EPA, 1997
FI - Fraction Soil Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	175	days/yr	Assumed	50	days/yr	Assumed
ED - Exposure duration	24	yr	EPA, 1991	5	yr	Assumed
BW - Body Weight:	70	kg	EPA, 1991	16	kg	Average
AT - Averaging time	8,760	days	EPA, 1991	1,825	days	EPA, 1991

RACO/BOMARC SITE
Carcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Excess Lifetime Cancer Risk**
Exposure Media: **Surface Soil**
Exposure Route: **Dermal Contact**

Chemical	CAS No.	Cancer Class	Target Site	Slope Factor (SF)		Soil Conc. (C)	Dermal Absorption Factor (DAF)	Adult			Child		
				(mg/kg-day)$^{-1}$	Source	mg/kg	unitless	Daily Intake (DI) mg/kg-day	Cancer Risk unitless	Percent of Total Risk %	Daily Intake (DI) mg/kg-day	Cancer Risk unitless	Percent of Total Risk %
Acetone	67-64-1	D				7 00E-02	0.01	1.66E-09			1.50E-09		
Aluminum	7429-90-5					1.10E+03	0.001	2.62E-06			2.35E-06		
Antimony Trioxide	1309-64-4					4 10E-01	0.001	9.75E-10			8.76E-10		
Arsenic, Inorganic	7440-38-2	A		3.7E+00	Derived	1 48E+00	0.001	3 52E-09	1 E-08	55.4 %	3 16E-09	1 E-08	55 4 %
Barium	7440-39-3	D				3 90E+01	0.001	9.27E-08			8 34E-08		
Benz[a]anthracene	56-55-3	B2		2.4E+00	Derived		0.01	0.00E+00			0 00E+00		
Benzene	71-43-2	A		3 0E-02	Derived		0.01	0.00E+00			0.00E+00		
Benzo[a]pyrene	50-32-8	B2		2.4E+01	Derived	1.68E-02	0.01	3.99E-10	9 E-09	40.4 %	3.59E-10	8 E-09	40.4 %
Benzo[b]fluoranthene	205-99-2	B2		2.4E+00	Derived	1 74E-02	0 01	4.14E-10	1 E-09	4.2 %	3.72E-10	9 E-10	4.2 %
Benzo[k]fluoranthene	207-08-9	B2		2 4E-01	Derived		0 01	0.00E+00			0 00E+00		
Butyl Benzyl Phthlate	85-68-7	C					0.01	0.00E+00			0 00E+00		
Carbon Disulfide	75-15-0					1.50E-02	0 25	8.92E-09			8.02E-09		
Chloroform	67-66-3	B2		3 1E-02	Derived		0.01	0.00E+00			0 00E+00		
Chrysene	218-01-9	B2		2 4E-02	Derived		0 01	0.00E+00			0 00E+00		
Fluoranthene	206-44-0	D				1 79E-02	0 01	4.26E-10			3.83E-10		
Lead And Compounds	7439-92-1	B2				1 90E+01	0.001	4.52E-08			4.06E-08		
Magnesium	7439-95-4					2.90E+02	0.001	6.90E-07			6.20E-07		
Manganese (Diet)	7439-96-5	D				3 07E+01	0.001	7.30E-08			6.56E-08		
Manganese (Water)	7439-96-5	D					0.001	0.00E+00			0.00E+00		
Mercury (elemental)	7439-97-6	D				2 00E-01	0.001	4.76E-10			4.27E-10		
Methyl Ethyl Ketone	78-93-3	D				1 80E-01	0.01	4.28E-09			3.85E-09		
Methylene Chloride	75-09-2	B2		7 9E-03	Derived		0.01	0.00E+00			0.00E+00		
Nickel	7440-02-0	A				8 80E+00	0	0.00E+00			0.00E+00		
Pentachlorophenol	87-86-5	B2		1 2E-01	Derived		0.01	0.00E+00			0.00E+00		
Phenanthrene	85-01-8	D					0.01	0.00E+00			0.00E+00		
Pyrene	129-00-0	D				1.84E-02	0 01	4.37E-10			3.93E-10		
Selenium	7782-49-2	D				2 10E-01	0.001	4.99E-10			4.49E-10		
Styrene	100-42-5	NA				4 70E-02	0 01	1.12E-09			1.00E-09		
Tetrachloroethylene	127-18-4	NA		5.2E-02	Derived		0.01	0.00E+00			0 00E+00		
Thallium (Soluble Salts)	7440-28-0					1 00E-01	0.001	2.38E-10			2 14E-10		
Toluene	108-88-3	D					0.01	0.00E+00			0 00E+00		
Trichloroethane, 1,1,1-	71-55-6	D					0.01	0.00E+00			0.00E+00		
Trichloroethylene	79-01-6	NA		7.3E-02	Derived	2.36E-03	0.01	5.61E-11	4 E-12	0.0 %	5.04E-11	4 E-12	0.0 %
Vanadium, Metallic	7440-62-2					5 50E+00	0 001	1.31E-08			1.18E-08		
Xylene, Mixture	1330-20-7	D					0 01	0.00E+00			0.00E+00		
Zinc (Metallic)	7440-66-6	D				9 10E+00	0.001	2.16E-08			1.94E-08		
							Total Risk:	**2.E-08**			**2.E-08**		

$$DI = \frac{(C \times 10^{-6}\ kg/mg \times DAF \times SA \times AF \times EF \times ED)}{BW \times AT}$$

Cancer Risk = SF x DI

where

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
SA - Surface Area Exposed	4,860	cm^2/event	EPA 1997	3,495	cm^2/event	EPA, 1997
AF - Soil/Skin Adherence Factor	0.2	mg/cm^2	EPA 1997	1	mg/cm^2	Assumed
EF - Exposure frequency	175	events/yr	Assumed	50	events/yr	Assumed
ED - Exposure duration	25	yr	EPA 1991	5	yr	Assumed
BW - Body Weight	70	kg	EPA, 1991	16	kg	EPA, 1997
AT - Averaging time	25,550	days	EPA 1991	25,550	days	EPA, 1991

RACO/BOMARC SITE
Noncarcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Chronic Noncarcinogenic Health Risk - Hazard Index**
Exposure Media: **Surface Soil**
Exposure Route: **Dermal Contact**

Chemical	CAS No.	Target Site	Reference Dose (RfD)		Soil Conc. (C)	Dermal Absorption Factor (DAF)	Adult			Child		
							Daily Intake (DI)	Hazard Quotient	Percent of Hazard Index	Daily Intake (DI)	Hazard Quotient	Percent of Hazard Index
			(mg/kg-day)	Source	mg/kg	unitless	mg/kg-day	unitless	%	mg/kg-day	unitless	%
Acetone	67-64-1		8.3E-02	Derived	7.00E-02	0.01	4.66E-09	6 E-08	0.0 %	2.09E-08	3 E-07	0.0 %
Aluminum	7429-90-5				1.10E+03	0.001	7.32E-06			3.29E-05		
Antimony Trioxide	1309-64-4		8.0E-05	Derived	4.10E-01	0.001	2.73E-09	3 E-05	4.7 %	1.23E-08	2 E-04	4.7 %
Arsenic, Inorganic	7440-38-2		1.2E-04	Derived	1.48E+00	0.001	9.85E-09	8 E-05	11.0 %	4.43E-08	4 E-04	11.0 %
Barium	7440-39-3		4.9E-03	Derived	3.90E+01	0.001	2.60E-07	5 E-05	7.3 %	1.17E-06	2 E-04	7.3 %
Benz[a]anthracene	56-55-3					0.01	0.00E+00			0.00E+00		
Benzene	71-43-2					0.01	0.00E+00			0.00E+00		
Benzo[a]pyrene	50-32-8				1.68E-02	0.01	1.12E-09			5.03E-09		
Benzo[b]fluoranthene	205-99-2				1.74E-02	0.01	1.16E-09			5.21E-09		
Benzo[k]fluoranthene	207-08-9					0.01	0.00E+00			0.00E+00		
Butyl Benzyl Phthlate	85-68-7		1.2E-01	Derived		0.01	0.00E+00			0.00E+00		
Carbon Disulfide	75-15-0		6.3E-02	Derived	1.50E-02	0.25	2.50E-08	4 E-07	0.1 %	1.12E-07	2 E-06	0.1 %
Chloroform	67-66-3		2.0E-03	Derived		0.01	0.00E+00			0.00E+00		
Chrysene	218-01-9					0.01	0.00E+00			0.00E+00		
Fluoranthene	206-44-0		1.2E-02	Derived	1.79E-02	0.01	1.19E-09	1 E-07	0.0 %	5.36E-09	4 E-07	0.0 %
Lead And Compounds	7439-92-1				1.90E+01	0.001	1.26E-07			5.69E-07		
Magnesium	7439-95-4				2.90E+02	0.001	1.93E-06			8.68E-06		
Manganese (Diet)	7439-96-5		5.6E-03	Derived	3.07E+01	0.001	2.04E-07	4 E-05	5.0 %	9.19E-07	2 E-04	5.0 %
Manganese (Water)	7439-96-5		1.8E-03	Derived		0.001	0.00E+00			0.00E+00		
Mercury (elemental)	7439-97-6				2.00E-01	0.001	1.33E-09			5.98E-09		
Methyl Ethyl Ketone	78-93-3		4.8E-01	Derived	1.80E-01	0.01	1.20E-08	2 E-08	0.0 %	5.39E-08	1 E-07	0.0 %
Methylene Chloride	75-09-2		5.7E-02	Derived		0.01	0.00E+00			0.00E+00		
Nickel	7440-02-0				8.80E+00	0	0.00E+00			0.00E+00		
Pentachlorophenol	87-86-5		3.0E-02	Derived		0.01	0.00E+00			0.00E+00		
Phenanthrene	85-01-8					0.01	0.00E+00			0.00E+00		
Pyrene	129-00-0		9.3E-03	Derived	1.84E-02	0.01	1.22E-09	1 E-07	0.0 %	5.51E-09	6 E-07	0.0 %
Selenium	7782-49-2		2.2E-03	Derived	2.10E-01	0.001	1.40E-09	6 E-07	0.1 %	6.28E-09	3 E-06	0.1 %
Styrene	100-42-5		1.6E-01	Derived	4.70E-02	0.01	3.13E-09	2 E-08	0.0 %	1.41E-08	9 E-08	0.0 %
Tetrachloroethylene	127-18-4		1.0E-02	Derived		0.01	0.00E+00			0.00E+00		
Thallium (Soluble Salts)	7440-28-0				1.00E-01	0.001	6.66E-10			2.99E-09		
Toluene	108-88-3		1.6E-01	Derived		0.01	0.00E+00			0.00E+00		
Trichloroethane, 1,1,1-	71-55-6		1.8E-01	Derived		0.01	0.00E+00			0.00E+00		
Trichloroethylene	79-01-6		9.0E-04	Derived	2.36E-03	0.01	1.57E-10	2 E-07	0.0 %	7.06E-10	8 E-07	0.0 %
Vanadium, Metallic	7440-62-2		7.0E-05	Derived	5.50E+00	0.001	3.66E-08	5 E-04	71.7 %	1.65E-07	2 E-03	71.7 %
Xylene, Mixture	1330-20-7		1.8E+00	Derived		0.01	0.00E+00			0.00E+00		
Zinc (Metallic)	7440-66-6		6.0E-02	Derived	9.10E+00	0.001	6.06E-08	1 E-06	0.1 %	2.72E-07	5 E-06	0.1 %
						Hazard Index:		**0.001**			**0.003**	

$$DI = \frac{(C \times 10^{-6}\ kg/mg \times DAF \times SA \times AF \times EF \times ED)}{BW \times AT}$$

$$\text{Hazard Quotient} = \frac{DI}{RfD}$$

where

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
SA - Surface Area Exposed	4,860	cm^2/event	EPA, 1997	3,495	cm^2/event	EPA, 1997
AF - Soil/Skin Adherence Factor	0.2	mg/cm^2	EPA, 1997	1	mg/cm^2	Assumed
EF - Exposure frequency	175	events/yr	Assumed	50	events/yr	Assumed
ED - Exposure duration	25	yr	EPA, 1997	5	yr	Assumed
BW - Body Weight	70	kg	EPA, 1991	16	kg	EPA, 1997
AT - Averaging time	9,125	days	EPA, 1991	1,825	days	EPA, 1991

RACO/BOMARC SITE
Carcinogenic Health Risks

Exposure Setting: **Readonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Excess Lifetime Cancer Risk**
Exposure Media: **Ground Water**
Exposure Route: **Ingestion**

Chemical	CAS No.	Cancer Class	Target Site	Slope Factor (SF)		Water Conc. (C)	Oral Absorption Factor (OAF)	Adult			Child			Total	
				(mg/kg-day)[-1]	Source	µg/L	unitless	Daily Intake (DI) mg/kg-day	Cancer Risk unitless	Percent of Total Risk %	Daily Intake (DI) mg/kg-day	Cancer Risk unitless	Percent of Total Risk %	Cancer Risk unitless	Percent of Total Risk %
Acetone	67-64-1	D				2.63E+00	0.83	2.05E-05			1.12E-05				
Aluminum	7429-90-5					3.15E+03	0.10	2.96E-03			1.62E-03				
Antimony Trioxide	1309-64-4						0.20	0.00E+00			0.00E+00				
Arsenic, Inorganic	7440-38-2	A	Skin	1.5E+00	IRIS		0.41	0.00E+00			0.00E+00				
Barium	7440-39-3	D				1.61E+01	0.07	1.06E-05			5.78E-06				
Benz[a]anthracene	56-55-3	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Benzene	71-43-2	A	Circulatory	5.5E-02	IRIS	1.04E-01	0.97	9.48E-07	5 E-08	15.7 %	5.18E-07	3 E-08	15.7 %	8 E-08	15.7 %
Benzo[a]pyrene	50-32-8	B2	Stomach	7.3E+00	IRIS		0.31	0.00E+00			0.00E+00				
Benzo[b]fluoranthene	205-99-2	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Benzo[k]fluoranthene	207-08-9	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Butyl Benzyl Phthlate	85-68-7	C					0.61	0.00E+00			0.00E+00				
Carbon Disulfide	75-15-0					5.92E+00	0.63	3.50E-05			1.92E-05				
Chloroform	67-66-3	B2	Kidney	6.1E-03	IRIS		0.20	0.00E+00			0.00E+00				
Chrysene	218-01-9	B2		1.2E-01	Cal EPA		0.31	0.00E+00			0.00E+00				
Fluoranthene	206-44-0	D					0.31	0.00E+00			0.00E+00				
Lead And Compounds	7439-92-1	B2	Kidney	8.5E-03	Cal EPA	4.08E+00	0.15	5.75E-06	5 E-08	14.7 %	3.14E-06	3 E-08	14.7 %	8 E-08	14.7 %
Magnesium	7439-95-4					1.20E+03	0.20	2.25E-03			1.23E-03				
Manganese (Diet)	7439-96-5	D					0.04	0.00E+00			0.00E+00				
Manganese (Water)	7439-96-5	D				3.20E+02	0.04	1.20E-04			6.58E-05				
Mercury (elemental)	7439-97-6	D				1.77E+01	0.00	1.66E-08			9.09E-09				
Methyl Ethyl Ketone	78-93-3	D					0.80	0.00E+00			0.00E+00				
Methylene Chloride	75-09-2	B2	Liver, Respiratory	7.5E-03	IRIS	3.39E+00	0.95	3.03E-05	2 E-07	68.3 %	1.65E-05	1 E-07	68.3 %	4 E-07	68.3 %
Nickel	7440-02-0	A			Cal EPA	4.40E+00	-	0.00E+00			0.00E+00				
Pentachlorophenol	87-86-5	B2	Liver	1.2E-01	IRIS		1.00	0.00E+00			0.00E+00				
Phenanthrene	85-01-8	D					0.73	0.00E+00			0.00E+00				
Pyrene	129-00-0	D					0.31	0.00E+00			0.00E+00				
Selenium	7782-49-2	D					0.44	0.00E+00			0.00E+00				
Styrene	100-42-5	NA					0.80	0.00E+00			0.00E+00				
Tetrachloroethylene	127-18-4	NA		5.1E-02	Cal EPA		1.00	0.00E+00			0.00E+00				
Thallium (Soluble Salts)	7440-28-0						0.15	0.00E+00			0.00E+00				
Toluene	108-88-3	D				1.40E-01	0.80	1.05E-06			5.75E-07				
Trichloroethane, 1,1,1-	71-55-6	D				1.86E-01	0.90	1.57E-06			8.60E-07				
Trichloroethylene	79-01-6	NA		1.5E-02	Cal EPA	2.10E-01	0.15	2.96E-07	5 E-09	1.4 %	1.62E-07	2 E-09	1.4 %	7 E-09	1.4 %
Vanadium, Metallic	7440-62-2						0.01	0.00E+00			0.00E+00				
Xylene, Mixture	1330-20-7	D				4.50E-01	0.92	3.89E-06			2.13E-06				
Zinc (Metallic)	7440-66-6	D				2.55E+01	0.20	4.79E-05			2.62E-05				
Total Risk:								**3.E-07**			**2.E-07**			**5 E-07**	

$$DI = \frac{(C \times 10^{-3}\ mg/\mu g \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

Cancer Risk = SF x DI

where:

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
IR - Ingestion Rate	2.000	L/day	EPA, 1997	1.000	L/day	EPA, 1997
FI - Fraction Water Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	350	days/yr	EPA, 1997	350	days/yr	EPA, 1997
ED - Exposure duration	24	yr	EPA, 1997	6	yr	EPA, 1997
BW - Body Weight	70	kg	EPA, 1997	16	kg	EPA, 1997
AT - Averaging time	25,550	days	EPA, 1991	25,550	days	EPA, 1991

RACO/BOMARC SITE
Noncarcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual RME)**
Risk Evaluated: **Chronic Noncarcinogenic Health Risk - Hazard Index**
Exposure Media: **Ground Water**
Exposure Route: **Ingestion**

Chemical	CAS No.	Target Site	Reference Dose (RfD) (mg/kg-day)	Reference Dose (RfD) Source	Water Conc. (C) µg/L	Oral Absorption Factor (OAF) unitless	Adult Daily Intake (DI) mg/kg-day	Adult Hazard Quotient unitless	Adult Percent of Hazard Index %	Child Daily Intake (DI) mg/kg-day	Child Hazard Quotient unitless	Child Percent of Hazard Index %	Total Hazard Quotient unitless	Total Percent of Hazard Index %
Acetone	67-64-1	Kidney, Liver	1.0E-01	IRIS	2.63E+00	0.83	5.98E-05	6 E-04	5.1 %	1.31E-04	1 E-03	5.1 %	2 E-03	5.1 %
Aluminum	7429-90-5				3.15E+03	0.10	8.63E-03			1.89E-02				
Antimony Trioxide	1309-64-4	Circulatory	4.0E-04	HEAST		0.20	0.00E+00			0.00E+00				
Arsenic, Inorganic	7440-38-2	Skin	3.0E-04	IRIS		0.41	0.00E+00			0.00E+00				
Barium	7440-39-3	Circulatory	7.0E-02	IRIS	1.61E+01	0.07	3.08E-05	4 E-04	3.7 %	6.75E-05	1 E-03	3.7 %	1 E-03	3.7 %
Benz[a]anthracene	56-55-3					0.31	0.00E+00			0.00E+00				
Benzene	71-43-2				1.04E-01	0.97	2.76E-06			6.05E-06				
Benzo[a]pyrene	50-32-8					0.31	0.00E+00			0.00E+00				
Benzo[b]fluoranthene	205-99-2					0.31	0.00E+00			0.00E+00				
Benzo[k]fluoranthene	207-08-9					0.31	0.00E+00			0.00E+00				
Butyl Benzyl Phthlate	85-68-7	Liver, Circulatory	2.0E-01	IRIS		0.61	0.00E+00			0.00E+00				
Carbon Disulfide	75-15-0	Developmental, Weight	1.0E-01	IRIS	5.92E+00	0.63	1.02E-04	1 E-03	8.7 %	2.24E-04	2 E-03	8.7 %	3 E-03	8.7 %
Chloroform	67-66-3	Liver	1.0E-02	IRIS		0.20	0.00E+00			0.00E+00				
Chrysene	218-01-9					0.31	0.00E+00			0.00E+00				
Fluoranthene	206-44-0	Liver, Circulatory	4.0E-02	IRIS		0.31	0.00E+00			0.00E+00				
Lead And Compounds	7439-92-1				4.08E+00	0.15	1.68E-05			3.67E-05				
Magnesium	7439-95-4				1.20E+03	0.20	6.58E-03			1.44E-02				
Manganese (Diet)	7439-96-5	Neurotoxicity	1.4E-01	a,m		0.04	0.00E+00			0.00E+00				
Manganese (Water)	7439-96-5		4.6E-02	m	3.20E+02	0.04	3.51E-04	8 E-03	64.7 %	7.67E-04	2 E-02	64.7 %	2 E-02	64.7 %
Mercury (elemental)	7439-97-6				1.77E+01	0.00	4.85E-08			1.06E-07				
Methyl Ethyl Ketone	78-93-3	Developmental, Weight	6.0E-01	IRIS		0.80	0.00E+00			0.00E+00				
Methylene Chloride	75-09-2	Liver	6.0E-02	IRIS	3.39E+00	0.95	8.82E-05	1 E-03	12.5 %	1.93E-04	3 E-03	12.5 %	5 E-03	12.5 %
Nickel	7440-02-0				4.40E+00	-	0.00E+00			0.00E+00				
Pentachlorophenol	87-86-5	Kidney, Liver	3.0E-02	IRIS		1.00	0.00E+00			0.00E+00				
Phenanthrene	85-01-8					0.73	0.00E+00			0.00E+00				
Pyrene	129-00-0	Kidney	3.0E-02	IRIS		0.31	0.00E+00			0.00E+00				
Selenium	7782-49-2	Selenosis	5.0E-03	IRIS		0.44	0.00E+00			0.00E+00				
Styrene	100-42-5	Liver, Circulatory	2.0E-01	IRIS		0.80	0.00E+00			0.00E+00				
Tetrachloroethylene	127-18-4	Weight	1.0E-02	IRIS		1.00	0.00E+00			0.00E+00				
Thallium (Soluble Salts)	7440-28-0					0.15	0.00E+00			0.00E+00				
Toluene	108-88-3	Kidney, Liver	2.0E-01	IRIS	1.40E-01	0.80	3.07E-06	2 E-05	0.1 %	6.71E-06	3 E-05	0.1 %	5 E-05	0.1 %
Trichloroethane, 1,1,1-	71-55-6				1.86E-01	0.90	4.59E-06			1.00E-05				
Trichloroethylene	79-01-6		6.0E-03	v	2.10E-01	0.15	8.63E-07	1 E-04	1.2 %	1.89E-06	3 E-04	1.2 %	5 E-04	1.2 %
Vanadium, Metallic	7440-62-2		7.0E-03	HEAST		0.01	0.00E+00			0.00E+00				
Xylene, Mixture	1330-20-7	Weight, Death	2.0E+00	IRIS	4.50E-01	0.92	1.13E-05	6 E-06	0.0 %	2.48E-05	1 E-05	0.0 %	2 E-05	0.0 %
Zinc (Metallic)	7440-66-6	Circulatory	3.0E-01	IRIS	2.55E+01	0.20	1.40E-04	5 E-04	4.0 %	3.06E-04	1 E-03	4.0 %	1 E-03	4.0 %

	Adult	Child	Total
Hazard Index:	0.01	0.03	0.04

$$DI = \frac{(C \times 10^{-3}\ mg/\mu g \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

$$\text{Hazard Quotient} = \frac{DI}{RfD}$$

where

	Adult Exposure Assumptions Value	Units	Source	Child Exposure Assumptions Value	Units	Source
IR - Ingestion Rate	2.000	L/day	EPA, 1997	1.000	L/day	EPA, 1997
FI - Fraction Water Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	350	days/yr	EPA, 1997	350	days/yr	EPA, 1997
ED - Exposure duration	24	yr	EPA, 1997	6	yr	EPA, 1997
BW - Body Weight	70	kg	EPA, 1997	16	kg	EPA, 1997
AT - Averaging time	8,760	days	EPA, 1991	2,190	days	EPA, 1991

RACO/BOMARC SITE
Carcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Excess Lifetime Cancer Risk**
Exposure Media: **Fish**
Exposure Route: **Ingestion**

Chemical	CAS No.	Cancer Class	Target Site	Slope Factor (SF)		Fish Conc. (C)	Oral Absorption Factor (OAF)	Adult			Child			Total	
								Daily Intake (DI)	Cancer Risk	Percent of Total Risk	Daily Intake (DI)	Cancer Risk	Percent of Total Risk	Cancer Risk	Percent of Total Risk
				(mg/kg-day)⁻¹	Source	mg/kg	unitless	mg/kg-day	unitless	%	mg/kg-day	unitless	%	unitless	%
Acetone	67-64-1	D				1.03E-03	0.83	5.00E-08			2.36E-08				
Aluminum	7429-90-5						0.10	0.00E+00			0.00E+00				
Antimony Trioxide	1309-64-4						0.20	0.00E+00			0.00E+00				
Arsenic, Inorganic	7440-38-2	A	Skin	1.5E+00	IRIS		0.41	0.00E+00			0.00E+00				
Barium	7440-39-3	D				1.02E+01	0.07	4.19E-05			1.97E-05				
Benz[a]anthracene	56-55-3	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Benzene	71-43-2	A	Circulatory	5.5E-02	IRIS	2.58E-03	0.97	1.47E-07	8 E-09	40.8 %	6.92E-08	4 E-09	40.8 %	1 E-08	40.8 %
Benzo[a]pyrene	50-32-8	B2	Stomach	7.3E+00	IRIS		0.31	0.00E+00			0.00E+00				
Benzo[b]fluoranthene	205-99-2	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Benzo[k]fluoranthene	207-08-9	B2		1.2E+00	Cal EPA		0.31	0.00E+00			0.00E+00				
Butyl Benzyl Phthlate	85-68-7	C					0.61	0.00E+00			0.00E+00				
Carbon Disulfide	75-15-0					1.15E-01	0.63	4.27E-06			2.01E-06				
Chloroform	67-66-3	B2	Kidney	6.1E-03	IRIS		0.20	0.00E+00			0.00E+00				
Chrysene	218-01-9	B2		1.2E-01	Cal EPA		0.31	0.00E+00			0.00E+00				
Fluoranthene	206-44-0	D					0.31	0.00E+00			0.00E+00				
Lead And Compounds	7439-92-1	B2	Kidney	8.5E-03	Cal EPA	3.26E-02	0.15	2.88E-07	2 E-09	12.4 %	1.36E-07	1 E-09	12.4 %	4 E-09	12.4 %
Magnesium	7439-95-4						0.20	0.00E+00			0.00E+00				
Manganese (Diet)	7439-96-5	D					0.04	0.00E+00			0.00E+00				
Manganese (Water)	7439-96-5	D				1.28E+02	0.04	3.01E-04			1.42E-04				
Mercury (elemental)	7439-97-6	D					0.00	0.00E+00			0.00E+00				
Methyl Ethyl Ketone	78-93-3	D					0.80	0.00E+00			0.00E+00				
Methylene Chloride	75-09-2	B2	Liver, Respiratory	7.5E-03	IRIS	1.93E-02	0.95	1.08E-06	8 E-09	40.9 %	5.08E-07	4 E-09	40.9 %	1 E-08	40.9 %
Nickel	7440-02-0	A			Cal EPA	1.35E+00	-	0.00E+00			0.00E+00				
Pentachlorophenol	87-86-5	B2	Liver	1.2E-01	IRIS		1.00	0.00E+00			0.00E+00				
Phenanthrene	85-01-8	D					0.73	0.00E+00			0.00E+00				
Pyrene	129-00-0	D					0.31	0.00E+00			0.00E+00				
Selenium	7782-49-2	D					0.44	0.00E+00			0.00E+00				
Styrene	100-42-5	NA					0.80	0.00E+00			0.00E+00				
Tetrachloroethylene	127-18-4	NA		5.1E-02	Cal EPA		1.00	0.00E+00			0.00E+00				
Thallium (Soluble Salts)	7440-28-0						0.15	0.00E+00			0.00E+00				
Toluene	108-88-3	D				9.24E-03	0.80	4.34E-07			2.05E-07				
Trichloroethane, 1,1,1-	71-55-6	D				8.74E-03	0.90	4.62E-07			2.18E-07				
Trichloroethylene	79-01-6	NA		1.5E-02	Cal EPA	8.74E-03	0.15	7.70E-08	1 E-09	6.0 %	3.63E-08	6 E-10	6.0 %	2 E-09	6.0 %
Vanadium, Metallic	7440-62-2						0.01	0.00E+00			0.00E+00				
Xylene, Mixture	1330-20-7	D				8.55E-02	0.92	4.62E-06			2.18E-06				
Zinc (Metallic)	7440-66-6	D					0.20	0.00E+00			0.00E+00				
							Total Risk:	2.E-08			9.E-09			3 E-08	

$$DI = \frac{(C \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

Cancer Risk = SF x DI

where

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
IR - Ingestion Rate	0.012	kg/day	EPA, 1997	0.006	kg/day	EPA, 1997
FI - Fraction Fish Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	365	days/yr	Maximum	365	days/yr	Maximum
ED - Exposure duration	24	yr	EPA, 1991	5	yr	Assumed
BW - Body Weight	70	kg	EPA, 1991	16	kg	EPA, 1991
AT - Averaging time	25,550	days	EPA, 1991	25,550	days	EPA, 1991

RACO/BOMARC SITE
Noncarcinogenic Health Risks

Exposure Setting: **Reasonable Maximum Exposed Individual (RME)**
Risk Evaluated: **Chronic Noncarcinogenic Health Risk - Hazard Index**
Exposure Media: **Fish**
Exposure Route: **Ingestion**

Chemical	CAS No.	Target Site	Reference Dose (RfD)		Fish Conc. (C)	Oral Absorption Factor (OAF)	Adult			Child			Total	
							Daily Intake (DI)	Hazard Quotient	Percent of Hazard Index	Daily Intake (DI)	Hazard Quotient	Percent of Hazard Index	Hazard Quotient	Percent of Hazard Index
			(mg/kg-day)	Source	mg/kg	unitless	mg/kg-day	unitless	%	mg/kg-day	unitless	%	unitless	%
Acetone	67-64-1	Kidney, Liver	1.0E-01	IRIS	1.03E-03	0.83	1.46E-07	1 E-06	0.0 %	3.30E-07	3 E-06	0.0 %	5 E-06	0.0 %
Aluminum	7429-90-5					0.10	0.00E+00			0.00E+00				
Antimony Trioxide	1309-64-4	Circulatory	4.0E-04	HEAST		0.20	0.00E+00			0.00E+00				
Arsenic, inorganic	7440-38-2	Skin	3.0E-04	IRIS		0.41	0.00E+00			0.00E+00				
Barium	7440-39-3	Circulatory	7.0E-02	IRIS	1.02E+01	0.07	1.22E-04	2 E-03	7.6 %	2.76E-04	4 E-03	7.6 %	6 E-03	7.6 %
Benz(a)anthracene	56-55-3					0.31	0.00E+00			0.00E+00				
Benzene	71-43-2				2.58E-03	0.97	4.29E-07			9.69E-07				
Benzo(a)pyrene	50-32-8					0.31	0.00E+00			0.00E+00				
Benzo(b)fluoranthene	205-99-2					0.31	0.00E+00			0.00E+00				
Benzo(k)fluoranthene	207-08-9					0.31	0.00E+00			0.00E+00				
Butyl Benzyl Phthlate	85-68-7	Liver, Circulatory	2.0E-01	IRIS		0.61	0.00E+00			0.00E+00				
Carbon Disulfide	75-15-0	Developmental, Weight	1.0E-01	IRIS	1.15E-01	0.63	1.25E-05	1 E-04	0.5 %	2.82E-05	3 E-04	0.5 %	4 E-04	0.5 %
Chloroform	67-66-3	Liver	1.0E-02	IRIS		0.20	0.00E+00			0.00E+00				
Chrysene	218-01-9					0.31	0.00E+00			0.00E+00				
Fluoranthene	206-44-0	Liver, Circulatory	4.0E-02	IRIS		0.31	0.00E+00			0.00E+00				
Lead And Compounds	7439-92-1				3.26E-02	0.15	8.39E-07			1.90E-06				
Magnesium	7439-95-4					0.20	0.00E+00			0.00E+00				
Manganese (Diet)	7439-96-5	Neurotoxicity	1.4E-01	a,m		0.04	0.00E+00			0.00E+00				
Manganese (Water)	7439-96-5		4.6E-02	m	1.28E+02	0.04	8.78E-04	2 E-02	83.1 %	1.98E-03	4 E-02	83.1 %	6 E-02	83.1 %
Mercury (elemental)	7439-97-6					0.00	0.00E+00			0.00E+00				
Methyl Ethyl Ketone	78-93-3	Developmental, Weight	6.0E-01	IRIS		0.80	0.00E+00			0.00E+00				
Methylene Chloride	75-09-2	Liver	6.0E-02	IRIS	1.93E-02	0.95	3.15E-06	5 E-05	0.2 %	7.11E-06	1 E-04	0.2 %	2 E-04	0.2 %
Nickel	7440-02-0				1.35E+00	-	0.00E+00			0.00E+00				
Pentachlorophenol	87-86-5	Kidney, Liver	3.0E-02	IRIS		1.00	0.00E+00			0.00E+00				
Phenanthrene	85-01-8					0.73	0.00E+00			0.00E+00				
Pyrene	129-00-0	Kidney	3.0E-02	IRIS		0.31	0.00E+00			0.00E+00				
Selenium	7782-49-2	Selenosis	5.0E-03	IRIS		0.44	0.00E+00			0.00E+00				
Styrene	100-42-5	Liver, Circulatory	2.0E-01	IRIS		0.80	0.00E+00			0.00E+00				
Tetrachloroethylene	127-18-4	Weight	1.0E-02	IRIS		1.00	0.00E+00			0.00E+00				
Thallium (Soluble Salts)	7440-28-0					0.15	0.00E+00			0.00E+00				
Toluene	108-88-3	Kidney, Liver	2.0E-01	IRIS	9.24E-03	0.80	1.27E-06	6 E-06	0.0 %	2.86E-06	1 E-05	0.0 %	2 E-05	0.0 %
Trichloroethane, 1,1,1-	71-55-6				8.74E-03	0.90	1.35E-06			3.05E-06				
Trichloroethylene	79-01-6		6.0E-03	v	8.74E-03	0.15	2.25E-07	4 E-05	0.2 %	5.08E-07	8 E-05	0.2 %	1 E-04	0.2 %
Vanadium, Metallic	7440-62-2		7.0E-03	HEAST		0.01	0.00E+00			0.00E+00				
Xylene, Mixture	1330-20-7	Weight, Death	2.0E+00	IRIS	8.55E-02	0.92	1.35E-05	7 E-06	0.0 %	3.05E-05	2 E-05	0.0 %	2 E-05	0.0 %
Zinc (Metallic)	7440-66-6	Circulatory	3.0E-01	IRIS	1.67E+01	0.20	5.72E-04	2 E-03	8.3 %	1.29E-03	4 E-03	8.3 %	6 E-03	8.3 %
						Hazard Index:	**0.02**			**0.05**			**0.07**	

$$DI = \frac{(C \times OAF \times IR \times FI \times EF \times ED)}{BW \times AT}$$

$$\text{Hazard Quotient} = \frac{DI}{RfD}$$

where

	Adult Exposure Assumptions			Child Exposure Assumptions		
	Value	Units	Source	Value	Units	Source
IR - Ingestion Rate	0.012	kg/day	EPA, 1997	0.01	kg/day	EPA, 1997
FI - Fraction Fish Contaminated	1	unitless	Maximum	1	unitless	Maximum
EF - Exposure frequency	365	days/yr	Maximum	365	days/yr	Maximum
ED - Exposure duration	24	yr	EPA, 1991	5	yr	Assumed
BW - Body Weight	70	kg	EPA, 1991	16	kg	EPA, 1997
AT - Averaging time	8,760	days	EPA, 1991	1,825	days	EPA, 1991

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE: 20 AUG 84

SUBJECT OF [redacted]

RACO [redacted]

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION

PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
ROBERT WARNER	NCEED-D	226-7555

PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
EARL OLSEN, G.W. DISTRICT SUPERVISOR	MARQUETTE MDNR OFFICE	(906) 228-6561

SUMMARY OF CONVERSATION:

RW CALLED TO CHECK ON AVAILABLE LICENSED LANDFILLS NEAR THE RACO SITE FOR DISPOSAL OF DEMOLITION DEBRIS. EO STATED THAT THE REID LANDFILL WAS THE ONLY LIKELY CANDIDATE, AS IT IS THE ~~...~~ ONLY ONE WITH A CURRENT $\boxed{641}$ LICENSE. EO STATED THAT THEY WILL TAKE ASBESTOS (WITH PRIOR ARRANGEMENTS, AND MDNR/EPA GUIDELINES FOR DISPOSAL), AS THEY HAVE IN THE PAST. THIS IS THE ONLY LOCATION THAT CAN TAKE INERT MATERIAL AS WELL. EO SUGGESTED THAT:

1.) ON SITE DISPOSAL OF INERT DEBRIS BE CONSIDERED

2.) AS A PART OF BID REQUIREMENTS, BIDDERS SHOULD BE MADE TO DISCLOSE THE SITE OF THEIR PROPOSED DISPOSAL OF ASBESTOS AND OTHER WASTES.

EO ALSO STATED THAT REID ALSO RUNS CONSTRUCTION/TRUCKING COMPANIES AND WOULD LIKELY BE A BIDDER FOR THIS FUTURE CONTRACT.

EO INDICATED ENVIRONMENTAL CONCERNS HE HAD WITH OIL & GREASE SAND PITS WHICH MIGHT EXIST AT THE SITE, WHICH WERE FOUND AT KI SAWYER IN THE PAST.

RW

DA FORM 1 APR 66 751

REPLACES EDITION OF 1 FEB 58 WHICH WILL BE USED.

☆ U.S. G.P.O. 1983-381-646/8225

EXHIBIT 1

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO

Design Branch
Engineering Division

21 MAR 1985

Mr. Earl Olsen, Groundwater District Supervisor
Michigan Department of Natural Resources
1990 U.S. 41 South
Marquette, Michigan 49855

Dear Mr. Olsen:

As per your 8 March 1985 telephone conversation with Mr. Robert Warner, Project Manager for the demolition project at the former Air Force and Missile Site at Raco, Michigan, the following disposal guidelines are submitted for your review. The contract plans and specifications for this project will incorporate these guidelines:

a. With the exception of masonry block and concrete which is free of reinforcing and paint, all demolition debris will be disposed of in a licensed Type II or Type III landfill. The successful demolition contractor will disclose to the Michigan Department of Natural Resources (MDNR) the site to be used for disposal prior to the start of demolition activities.

b. Masonry block and concrete which is free of paint and reinforcing steel may be disposed of on site, provided that the material is covered with at least two feet of earth fill, and the disposal area is graded and revegetated.

c. Asbestos-bearing demolition debris will be disposed of in accordance with EPA regulations in a licensed Type II landfill. Written permission from the landfill owner will be secured by the demolition contractor prior to the start of demolition activities. A copy will be forwarded to the MDNR.

d. Existing debris in the concrete missile vaults will not have to be removed; partially filled vaults will be filled with inert concrete or masonry waste, or earth fill, prior to the area being covered with a minimum of two feet of earth fill, which subsequently will be graded and revegetated.

EXHIBIT 2

As was discussed in the phone conversation, contract plans and specifications for this demolition project are currently being prepared by our Detroit District Office, with an anticipated advertising date of 1 July 1985. In light of this contracted time frame, your timely review of the above stated guidelines would be appreciated. At your earliest convenience, please forward to our office your concurrence with these proposed guidelines, or any revisions or additions which may be needed.

Thank you for your time and cooperation in this matter.

Sincerely,

Mark S. Grazioli, P.E.
Chief, Engineering Division

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

RONALD O. SKOOG, Director

Regional Headquarters
1990 US-41 South
Marquette, Michigan 49855

April 2, 1985

Mr. Mark S. Grazioli, P.E., Chief
Design Branch
Engineering Division
Department of the Army
Detroit District Corps of Engineers
Box 1027
Detroit, MI 48231-1027

Dear Mr. Grazioli:

Re: Disposal of Demolition Material from the former Air Force Site at Raco, Michigan

This is in reference to your March 21, 1985 letter to the Department concerning the disposal of materials from the demolition project at the former Air Force and missile site at Raco, Michigan. Staff has reviewed your proposed disposal guidelines, and we have the following comments:

Staff is in agreement with your guidelines concerning the disposal of all demolition material which is not at a licensed Type II or Type III landfill. All inert material may be disposed of on site with final cover being applied and graded such that surface drainage will not be a problem, as outlined in your letter. We would also request that a set of plans and specifications be submitted to our office for our review and comment.

We look forward to receipt of the above information and working with you. If you have any questions, please contact our office.

Sincerely,

Earle H. Olsen, District Supervisor
Groundwater Quality Division

Robert Schmoling

By: Robert Schmoling, II., P.E.
Environmental Engineer

EHO/RS/kr

cc: Tom Work, Chief, Compliance #1

Y-80

B-3
EXHIBIT 3

TELEPHONE OR VERBAL CONVERSATION RECORD For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.	DATE 16 MAY 85

SUBJECT OF CONVERSATION: DISPOSAL OF REINFORCED CONCRETE AT RALO SITE

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	**OFFICE**	**PHONE NUMBER AND EXTENSION**

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
R. WARNER	NCEED	226-7555
PERSON CALLED	**ADDRESS**	**PHONE NUMBER AND EXTENSION**
EARLE OLSEN	MDNR MARQUETTE GROUNDWATER QUALITY SUPER.	906-228-6561

SUMMARY OF CONVERSATION:

RW CALLED TO CHECK ON COES ORIGINAL PROPOSAL TO REMOVED REINFORCED CONCRETE FROM THE SITE. RW STATED THAT OUR ENVIRONMENTAL STAFF QUESTIONED THE NEED TO REMOVE THE MATERIAL FROM THE SITE. EO STATED THAT AS THE SITE WAS "HIGH & DRY" (GROUND-WATER ± 45' BELOW GRADE, AND A LARGE AMOUNT OF REINFORCED CONCRETE AND OTHER MATERIAL HAD ALREADY BEEN DUMPED THERE, HE "COULDN'T GET EXCITED" ABOUT OUR LEAVING R/I CONCRETE FROM THE BUILDINGS ON SITE. RW ASKED IF WE SHOULD FOLLOW UP WITH A LETTER; EO STATED THAT WOULDN'T BE NECESSARY, RW STATED THAT THE CHANGE WOULD BE INCORPORATED IN THE SPECS, AND A REVIEW SET WOULD BE SENT TO MDNR WHEN AVAILABLE

R.W.

DA FORM 1 APR 66 751

REPLACES EDITION OF 1 FEB 58 WHICH WILL BE USED.

EXHIBIT 4

☆ U.S. G.P.O. 1983-381-646/8225

NCEED-D

50% CONSTRUCTABILITY CONFERENCE NOTES
DEMOLITION OF STRUCTURES - FORMER AIR FORCE & MISSILE SITE, RACO, MICHIGAN

TO: Distribution R. Warner 27 May 1985

1. The subject conference was held on-site at 9:00 am, 1 May 1985. The following persons were in attendance:

J. Bray, Soo Area Engineer
H. Grant, District Safety Officer
C. Luff, Environmental Analysis Branch
R. Warner, Design Branch

2. IFB for the subject project is presently scheduled for 1 July 1985, followed by bid opening on or about 30 July 1985.

3. The following narrative incorporates the significant points discussed at the conference:

The conference began at the site entrance. An electrical substation was observed on the north side of M-28 across from the site entrance. It was decided that the optimal placement of the contractor's field office (and accomodations for COE inspectors) would be adjacent to the missile conplex, rather than in view of M-28. This would reduce the number of unauthorized entering the site. The accomodations for COE inspectors will be as stated typically in our standard paragraph in the specifications, except that a security light and a secure storage cabinet will also be required.

Additional measure to restrict entry of unauthorized visitors, the contractor will be required to erect physical barriers at all access roads into the missile complex (Note: the other work areas are less hazardous, and probably do not require barriers).

Regarding public notification of the upcoming project, it was reported that a Public Notice would not be required in this case; however, a press release was suggested to inform the public of the purpose of the project, and eliminate rumors and public reaction based on misinformation. The current public controversy involving the Reid Brothers landfill and the MDNR should serve as an indication of how volatile public reaction can be in this area.

Regarding the disposal site to be used for the general demolition debris and asbestos, it was decided that the COE would not select the disposal site, but instead leave the selection to the contractor. The contractor would be allowed to use any site that meets COE, EPA and Michigan Department of Natural Resources criteria. This way, it would not appear that the Government was forcing these wastes on any particular

EXHIBIT 5

community.

Debris currently inside the buildings to be removed shall be treated as being asbestos-contaminated and shall be cleaned and/or disposed in the appropriate manner.

Initial contact with the Michigan Department of Natural Resources indicated that on-site disposal of demolition material would be limited to unpainted and non-reinforced masonry and concrete. In light of the volume of reinforced concrete and other construction wastes dumped at the site since its control passed to the Forest Service, it was decided that it would be worthwhile to approach the MDNR again to see if approval for on-site disposal of reinforced concrete could be secured (Note: this approval was obtained verbally from Earle Olsen, Marquete District Groundwater Supervisor in a phone conversation subsequent to the 50% Conference).

PCB-contaminated soil is suspected adjacent to the transformer pad on the south side of the Composite Building. If the contamination is confirmed, the soil will be removed to an approved disposal site by a licensed hazardous waste hauling firm (Note: the specification for PCB removal will be very similar to that which was used for Empire).

Seven underground fuel storage tanks are suspected at the site. This will be removed in accordance with API guidelines for underground tank removal and disposal. (Note: several more underground tanks were located dudring the site investigation following the 50% Conference. Thirteen tanks have been positively located, and two more are suspected)

Regarding the bituminous paving materials found in the missile complex, Mr. Bray indicated that this material should be placed into the missile pits before any other wastes, so that its impact on the environment will be minized by being contained by the missile pit, as they have no drains.

A soil storage pile positioned to the east of the missile launch complex was inspected by the conference attencees. It appeared to be the result of the construction of the installation. This will be the first source of cover material to be used in the course of the demolition project. (Note: the pile has subsequently been measured for volume by the SAO; the measured volume was 16,600 cu. yds.)

The need for a general site clean up clause for the specifications was emphasized, as small piles of rubish and wood wastes were observed around the missile complex.

4. The following is presented in response to comments were submitted by Construction Branch in lieu of their attending the conference (comments pertain to the site survey report prepared for this site):

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

September 10, 1985

IN REPLY REFER TO

Planning Division-EA

FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969 (NEPA) and Army Regulations 200-2 ("Environmental Effects of Army Actions"), the Detroit District, Corps of Engineers has assessed the environmental impacts of the demolition, disposal, and general clean-up and restoration activities at the former U.S. Air Force and missile site in Chippewa County near Raco, Michigan. The site is currently a part of the Hiawatha National Forest and adminstered by the U.S. Forest Service.

The proposed project entails the demolition and removal of buildings/structures and miscellaneous debris and yard structures; removal of fuel and fuel storage tanks; asbestos insulated pipe and insulation removal; the removal of oil saturated soil; the filling and grading of such hazards as open missile encasements, manholes, utility vaults, and the demolition sites; the general clean-up of other appurtenances; and the seeding of the work sites. Fill material would be clean and obtained from an approved and non-sensitive upland site. Disposal of materials/substances/fluids/debris would occur at Michigan Department of Natural Resources licensed landfills, disposal facility(s) licensed by the U.S. Environmental Protection Agency, or other appropriate facility. Some disposal of select demolition debris, as approved by the state, would occur on site.

An Environmental Assessment of the proposed project has been completed. The evaluation indicates that the proposed activities would cause only temporary and minimal disruption of local wildlife; a minor and short-term decrease in aesthetic quality; and minor temporary increases in ambient noise and air pollution levels. In addition, secondary project impacts would be beneficial and the value of the area's recreational, aesthetic, and wildlife resources would be enhanced.

A review of the proposed project indicates that the associated environmental consequences do not constitute substantial changes that would result in a major federal action significantly affecting the quality of the environment. Therefore, an Environmental Impact Statement will not be prepared.

Philip P. Johnson, Jr.
Lieutenant Colonel, Corps of Engineers
Acting District Engineer

EXHIBIT 6

PREBID CONFERENCE NOTES

Solicitation No. DACA35-87-B-0001
Demolition of Existing Structures
Former Air Force and Missile Site
Raco, Michigan
21 July 1987

Government Participants: John Adams, Buffalo District
Ronald Barkley, Soo Area Office
William Coyle, CENCE-OC
Wanda Carter Davis, CENCE-CT
Harold Lawson, Soo Area Engineer
Don Mikel, USDA Forestry Services
Ronald Pearce, Soo Area Office
Carl Woodruff, CENCE-ED-D
Bobby Wright, CENCE-CT

Opening statement, presented by Wanda Carter Davis:

Thank you for attending this PreBid Conference for IFB DACA35-87-B-0001 with admendment No. 0001, project titled Demolition of Existing Structures, Former Air Force and Missile Site, Raco, Michigan. The primary purpose of this conference is to provide you a clear understanding of the government's requirements and to clarify any misunderstandings and or ambiguities that may or may not exist in solicitation as issued. During the conference you have the opportunity to address your concerns with government representaives. In addition, to myself, I have with me today: Ms. Bobby Wright of the Contracting Division. The Contracting Division is responsible for the solicitation as issued, any amendments that have been issued, the receipt and safeguarding of all bids, the evaluation and the award of the subsequent contract. Next, I have Mr. Carl Woodruff, who is project engineer from the Structual Design section of the Engineering Division, he is responsible for the technical aspects of the solicitation. Next to him, I have Mr. Harold Lawson, who will serve as the onsite Contracting Officer's Representative. Mr. Ronald Barkley, who provides any safety requirements and safety inspections and Mr. Ronald Pearce, who will do the onsit inspections. Mr. John Adams, from the Buffalo District, who will provide the quality assurance as specified in Section 1G of the solicitation. Mr. William Coyle, the attorney advisor from the District Office. During the course of this meeting you will have the opportunity to address questions to the government representatives, it is requested that all questions be reduced to writing and all questions be held until the question and answer portion of this program. During the tour of the project site it is requested that questions not be asked, government representatives have been directed not to answer you. We once again want to emphasis that all questions will be answered during the open forum session.

EXHIBIT 7

Mr. Woodruff will provide you a brief synopsis of the project requirements.

Mr. Woodruff: Basically it is the demolition of four buildings, this building, the Assembly/Maintenace Building, Composite Building in back of us and two smaller storage sheds and the pump house in back of the composite building you saw those as you came in on your right. Removal of asbestos materials from the composite and Assembly/Maintenance building, debris that has been contaminated with asbestos from the buildings, the emptying of 14 underground storage tanks containing oils, water and mixtures of oils and water. The removal of those tanks, the disposal of the contents of the tanks, the filling of manholes, pits, vaults around the site. The wastewater treatment plant out back with some tanks that have to be filled in. The leveling of the rubble that is in the missile silo area, the filling of the voids in those silos, and capping with concrete. The removal from two of those silos of some drums and water that has been contaminated with petroleum hydrocarbons as noted in the specifications, Section 1G and 2B. The covering over of the silos, these two slabs in the assembly/maintenance building and the composite building with fill, 21" of fill, the top 6" to be mixed with the sawdust that's in the pile in back of us there, then a 3" layer of topsoil will be put over that. The topsoil will be obtained by stripping off 12" of material from the missile silo area, the borrow areas also, whatever topsoil might be available in those. We expect that there will be sufficient material on the site to provide sufficient topsoil material. The areas are then to be seeded, mulched, fertilized as specified. There are some slabs on the hill, over to my right, there are some slabs off of the runways as you came in and on one of the runways that we will see later. Those slabs are either to be removed, as I'll cover when we get there, or covered over. There's a cistern, that we'll see later, a 37' cistern, that has to be filled in. There's eight fuel tanks, in the fuel depot, that are part of the 14, I mentioned earlier that we'll see that are not on this site, there are six in this general area. I believe that is generally the scope of the work. If there are any questions regarding that we'll cover them in the question and answer session.
Mrs. Davis thanked Mr. Woodruff and stated that we were now ready to proceed with the site tour. Each contractor was requested to wear safety shoes and/or hard hats, for those of you who have not done so, I would like to advise you that the government accepts no responsibility and/or assumes no liabilities for any damages that may incur.

Mr. Woodruff outlined the tour: starting with the composite building in back and then proceed up to the hill, then come around through the assembly/maintenance building out through the back to the waste treatment area, the borrow areas, the silo areas, tanks (we'll mention the tanks as we go by), storage building, pumphouse, there's a water tower area that has to be covered over, the bulk demolished, slabs at the edge of the runways, we will need our cars to get to these later areas, the slabs are just SW of the runways, the fuel depot, the borrow area too. We'll start with the large building in back of us.

COMPOSITE BLDG: Sheet 1, I would call your attention to particularly, to some of the notes on there and there is also reproductions of some pictures we took on Sheets 30 and 31. I would call particular attention to specifications of Section 1D, on the burning portion. Section 2A, which covers the asbestos removal. Section 2B, Demolition and Disposal. Particularly Sections 2B, Paragraph 6 covering burning. Also Paragraph 8.1.1 Foundations of Floor Slabs for the Composite Assembly Buildings, and Sections 2B, Paragraph 9, on Disposition of Materials. 2C, Section 2C Covering Excavation, Backfill and Fill, in particular Paragraph 5, 5.2 and also most of Section 2D Turf covers the whole site. You're at liberty to just wander around the building and look in on the site, see the debris laying on the ground. We talked about that's what we consider to be the debris. There's some asbestos covered piping above. I think we get a better view of the rooms along the side if we walked along the outside here. This is the former Heat and Power room, two boilers are still sitting there. Again debris on the floor, some piping covered with asbestos, not all of it. This area is the area where the transformer area that we note on the drawings where we have oil soaked soils present to be removed, one of the fuel tanks you can see on the other side of that pavement. The fuel storage tank in the median strip between the fence and the pavement, three of them. "Pump house????," that is the receiver tank down below.

Sheet 2 of the specifications is worthy thanks for calling it out. Any body who wants to inspect the roof, there is access to the roof here. We have the ceiling tile in this room several of the rooms still have some ceiling tile remaining. The rooms as noted on the drawing contains vinyl asbestos floor tile. It has to be removed, as part of the asbestos requirements. We have debris on the floor some asbestos, vinyl asbestos tile, floor tile, piping above. There is an air conditioning room, and some mechanical equipment in that room just above there and through those gray doors. Fire wall shown on the drawing is from the top of the block up to the roof. That runs the whole width of the building, the length of the building. The transformers are dry type, that you can see on the wall. You can get a better view from down here, the general conditions in this area.

General debris, again when you say the debris is considered to be asbestos contaminated, you handle according to the asbestos requirements. We can get back in there if we walk around the side.

This is the old telephone communications area. Later, Later I'd like to get this door open, that gives us access to the communications electrical rooms where they had some of the electronic equipment setup. I believe it was electronics equipment. On the way back we can catch that.

HILL ON THE NORTH END SITE:

I would like to now go up the hill. This is one of the slabs that has some asbestos or vinyl asbestos tile on it that has to be handled in accordance with asbestos specifications. I would call. When we're dealing with the vinyl asbestos tile on the slabs outside I would call particular attention to specification Section 12.1.3 in Section 2A the asbestos section.

On this slab we have the vinyl asbestos tile that has to be removed and the slab, page BI, page 2B, the last page of Section 2B, has two pages to Section 2B. Give details on all the tanks we have on site in terms of capacity, details of whats in them, and approximate volumes of material that was found in them. This slab, we call your attention to, again 2a on the asbestos, in the particular 12.1.3, in Section 2B, Paragraph 8.1, 8.4 and of course Paragraph 9, Disposition of the Materials, as I mentioned Table 1 page 2B 10 and 11. In the Backfill and Fill section, Excavation section of 2C Paragraphs 3.3, 9.1, 10.1 and in the Turf section area also. This area is one of the areas I would call particular attention to note 5 on drawing 1 is also covered on drawing 2.

ASSEMBLY & MAINTENANCE BLDG.: So far we've covered the Composite Building, Section 1 areas. C-1, C-2, C-3, C-4, there is an air receiver tank in the vault where that blue goose neck is coming out. That shown on the, I forget which drawing, but one of the as built drawings. We've been up on the slab on the hill where there's tank B-1 somebody thought I said PCB. Caution we have done extensive testing and have had no evidence of PCB, as stated in the specs. We are now at the Assembly Maintenance Building. The building comes down, the slab stays. The slab here, and the slab on the Composite Building are to be cracked at twenty foot centered grid pattern, to provide drainage after being covered with fill. Asbestos is found in the small buildings small rooms to the side and on top of the ceiling area over there. There was reference, make sure the picture was taken out of here. On the drawing we reproduced some photographs. We have a picture that shows some barrels sitting against this wall, those barrels have been removed. They are not apart of the contract.

Out through the back door, is a former waste water treatment plant area. Before we go there I would call particular attention here to drawing 1, particularly the notes on drawing 1. Drawings 2 and 3 and 21 through 28, which are the as built drawings for the Maintenance Building the Assembly Maintenance Building and the photos on sheet 29. Specifications, particularly to Section 2A Asbestos, Section 2B Paragraphs 8.1, 8.1.1, Paragraph 9 Disposition, Section 2C and 2D. If you wish to take a few minutes and look around in the side rooms here feel free.

WASTEWATER PLANT: The former, waste water treatment plant. Show details of that, there's schematic details of that on drawing 2 we also in the specifications Section IIB Paragraph 8.3, Section 9 Disposition of Material, 2C and 2D Excavation and Turf. In general, walls, pits, manholes and areas other than in the silo area. I'll explain why later. Next you have the walls demolished two feet below grade that material can go inside the vault etc., and the rest to be filled up to the surface level and seeded, graded, etc. The concrete covers again to be broken and dumped into the pit. Everything from all these buildings becomes contractor property and is explained in the specifications. Motors, gratings, etc. Their was a. This is the lagoon area here. There's two concrete head walls down their that we want removed.

MISSILE SILO AREA: From here I would like to walk through the missile silo area. In interest of time, unless their are some objections, we could just go through with one pass, they are basically all the same. I would like to point out the ones that are silos two and ten are. Particular attention as those are the one's that would require some additional testing by the contractor. I should advise you there is fencing, some bobbed wire laying around so please be careful where you walk so you won't snag your clothes.

On site disposal area. Take care as to strip off topsoil. Then debris from broken concrete, slabs, building materials that are considered to be uncontaminated. That is as defined in the specs clean, not painted, free of grease and oils, to be disposed of in this area. Also, you see there is some old concrete rubble, concrete pipe. We want that leveled off inside the silos or as necessary to be disposed of outside in the onsite disposal area. Can everybody hear me?? Once there are leveled off below the top of the silo boxes, then the voids are to be filled with granular materials and sluched with concrete on top as I mentioned earlier. Then twenty one inches, to be filled up to twenty one inches above the top of those walls and three inches of topsoil material to be put back in. The limits are from the edge of the roadway there to the edge of the roadway on the other side, and from the edge of the roadway here to the edge of the roadway down there. Borrow areas over in the corner we have one borrow area and there is a little pathway that goes back 800 ft. or so that goes back in there is another sand pit gravel and sand pit barrel area that is also available. Back to the manhole now since this is in the onsite borrow disposal area. Will receive two feet of cover over the tops of these walls. We do not need to break these down two feet below grade, just fill them in and continue on up with the main fill. Silo two and the second down there to the left, silo ten, which is the third one down, right here, are the two silos that require special handling under the specifications. Drawings 1, 2, and 3 are pertinent to the silos. Specifications in particular are Section 2B paragraph 8.8 - Missile Silos, and paragraph 9 - Disposal Materials, and 2C. We specifically call attention to paragraphs 4.3 and 5.3 and in the Spec Section 2D, Paragraph 4.2. The water in this silo contains petroleumhydrocarbon contamination. The water is to be pumped out disposed of to a licensed disposal facility, handled in accordance with proper regulations in Michigan, Local, Federal EPA. Right now it is approximately half full. Earlier I mentioned that this was from roadway repair work that was done, the concrete. The silo 10 is the one with two barrels. We have in here the water again contains petroleumhydrocarbon contamination two barrels labeled "cureing compound". The water is to be, the water in both silos in Section 1G is to be tested by contractor and disposed of in accordance with proper regulations. The barrels are to be checked out also before disposal. Again as in all these silos it is rubble from roadway repairs that were done. The only other silo that is mentioned is silo, the silo over in the corner there has several fifty pounds, empty fifty pound buckets that are labeled those buckets should also to be removed. And the various silos have, aside from concrete debris, have lumber, some have bed springs there is one that has several bed springs and mattresses. That's all discussed in the specifications, how that should be handled. I think there are some things at the other end we ought to take a look at. You might want to wander your way down through there and we'll gather together at the other end in a few minutes. These two vaults there and this is to be broken up so they can be filled in. This is to be broken up so that they are filled in. This is to be broken down below to the two foot final grade level. The perimeter of the site, you can't see much of it here, but the perimeter of the site was completely enclosed at one time with fences. On sheet two there are some details given of what's remaining of the fencing. Basically there were some poles at various locations at the other end all around there was a 12 inch 16 inch I have to check the drawings to be sure there was some galvanized corrugated metal rat wall around the perimeter that is to be removed. Fence posts is to be removed, the remaining barbed wire used for fencing material is to be removed from the site also. The light poles, you can see one has been hauled out of the ground. These light posts were around the perimeter also. They have a casting, I believe it is a cast iron, some kind of metal casting top cap on them, bases are concrete. As I mentioned earlier, the dimension area of the borrow site where the bare sand is, the roadway goes off through the trees about 800 feet there is an open pit borrow area and straight back here where you see the ground rises up, there is another borrow area I. Borrow areas, I call attention to drawings, one and two specifically, Section 2C of the Specifications, Paragraphs 1 and 2 and the turf spec, Section 2D Paragraphs 4.2. Look back that way and I'll have a couple more things to say about those tanks. Will we look at the buildings too? Yes the buildings too. As I mentioned C-1, C-2, C-3, C-4 drawings two and three show those specifically. Sections 1G deals with the testing requirements, handling requirements of the materials in the tanks and the tanks, Section 2B, Demolition and Disposal, Paragraph 8.4, 8.5, 8.6, Paragraph 9, 9.1 Disposition, as I mentioned earlier Table 1, Section 2B, pages 10 and 11 and as far as Section 2C Excavation and Backfill, Paragraph 3, Subparagraphs 3.3.4.1, 9.1, 10.1 and 10.4. Before, from here I would like to have us all go back to the Assembly Building there is an announcement we would like to have made from the Forester and then we'll go on out past these two buildings to the water wells and the water storage area and then from there we need to get in our cars or vehicles and go over to the fuel depot and check the fuel tanks that we'll be removing.

ASSEMBLY BUILDING: Before that Mr. Lawson brought up the fact that the Forest Service has been in negotiation with the Air Force. WCD "Excuse me this is Mr. Don Mikel from the U.S. Forest Department". Don Mikel, " The runway out here is not part of the contract. The entire runway is under a special use permit to a tire testing facility, we also use if for emergency fire fighting flights. So we would like to have the runway clear as far as equipment and this type of thing while the contract is going on. We just don't want a bunch of debris stacked out there, or waiting to haul stuff and this type of thing. And that's the main thing I've got, the other thing, if you do get the job please be careful with fire out here we got fifty thousand acres of Jack Pine around you it burns extremely fast, if any of you are familiar with Mack Lake fire that just burned fifty thousand acres in a day. And the forest service has a policy if you start it you pay for it. So just from that it would probably be a good idea not to get anything going. Mack Lake fire probably cost in the vicinity of five million to put out and another four to five million in claims from property loss. So that would kind of even out be careful with the fire and leave the runway in tact. That's the main thing I wanted to talk about." I believe there is another aspect. WCD, okay yes, the Department of Defense, also reserves the right to conduct any military exercise at any given time. There is a possibility that DOD will be conducting some exercises. No Bombs!!!!" We don't have any clear details of what the exercise will consist of but they will be using the runways so they will have to be kept clear from equipment. It is anticipated from late fall, October, November.

PUMPHOUSE, STORAGE BLDGS: Okay anything else. No just go over here and then they can meet you. From here then we'll catch the two small buildings the water storage, the wells, and then we'll take our vehicles. We need our vehicles to go over to the slabs off the one runway and then the fuel depot.

In the well building areas: We don't need to put the two foot layer just the top soil and grade back over it. There's asbestos to be addressed, Section 2A applies, Section 2B, Subparagraph 8.1, Paragraph 9, Section 2C Excavation Backfill, Paragraph 3.2. That's basically all there is on this building.

Before we go any farther, right over here, we see a water, what's left of the water tower used to be here. There's four bases around the perimeter the vault in the middle, manhole cover on top. That needs to be broken in filled in. Then on drawing two, and drawing three, drawing three we show a section on how the fill is to be handled over there. Particular attention to Section 2B, Paragraphs 8.2, 8.3, Section 2C and Section 2B, also you can't see it with all the grass, but there's a well, a water well that's reusable. If the Contractor or the successful Contractor wants to use the well it's up to him to put in working order. The specifications call for a reusable security cap to be placed on the well.

The water pump house. This is the former pump house to the water. Drawings 2, Specifications Section 1G, the handling of tanks that's located on this end of the building. Small four foot long twenty some inch diameter tank called P-1a.

2A Asbestos, there is some asbestos in there on the piping. Paragraphs 8.1, 8.4, 8.6, 8.7 Demolition and Disposal. Paragraphs 9, 9.1, there may, we understand with the information we have available, there may there may also be a well in here. You take it apart you may find a well in here. The building is to be taken down and the slabs taken out, the well, if there is one, is to be preserved at the end of the job for reusable security. All right, in the reusable, salvagable is to be used for the job.

SLABS AT SOUTH END OF RUNWAYS: Okay from here let's go to the vehicles to get to the slabs at the edge of the runways. As we go out we will see one. We can talk about that. Drawing one. We'll wait till a few more people get up here. One of these things we, this program is a Defense Program called the Defense Environmental Restoration Program. Basically, it's a way for the Department of Defense, go back to some of the old installations that were built many years ago, which they no longer have any control over, they since have been transferred to other agencies, sold to other people, for which they still believe that there are some responsibilities for environmental cleanups. And under that program the Department of Defense can come with the permission of the current owner of course and conduct the environmental cleanup. In this particular case, one of the parts of the environment that we are trying to restore, the environment in this forest area pretty much to what it was to before the base was built and as close to it as possible, practically possible. Consequently we are removing these slabs, they are roughly six inch slabs, former building slabs, some of them have asbestos, vinyl asbestos tile, present. Broken up, chipped up, some of them have a little bit, some of them have more than a little bit, roughly there's four hundred fifty squares yards of concrete here. Slabs are just to be covered over, you don't have to, if I said, mis-spoke they are not to be removed just to be covered over. The tiles are to be removed first however. Further back there is a cistern. As part of the runway system you'll see what we call hardstand, they are not a part of the contract. Once again I said these slabs are not to be removed just covered over. Four foot diameter concrete pipe cistern, approximately 37 feet deep, concrete top broken up disposed of inside the cistern. The metal cover is disposed or removed whatever, by the contractor then the rest of it to be filled up to the grade level. The top of the wall is broken down two feet below grade and then just graded over seeded etc..... That's basically all that is to be done in this area.

We're going to the fuel depot, and if you'll follow, follow me I'll try to get us there as shortly as possible. Okay, this is the South End of the fuel depot. The old fuel depot. There are two tanks here, tank 1S, 2S. Would refer you to Table 1 for additional data on volume, sizes. As you note on all of these tanks and back at the main complex, we have plugged the pipes with short concrete plugs. Once the contract is awarded the contractor will be expected when he does his sampling, to replace the security on those tanks to prevent any unauthorized entry and it becomes his responsibility at that point also as stated in the contract. Particularly, attention is called to Drawings 1, 2, and 3. Section 1G again, Paragraph 8.4, 8.6 of Section 2B, Paragraph 9.1 of Section 2B, Paragraph 9. As I mentioned Table one of Page 10 and 11 of Section 2B Excavation and Backfill Section 2C Paragraph 3, 3.1, 3.2, 9.1 and 10.1. In addition to these two tanks which remain. A circular concrete slab up under that tree with some piping coming up thorough it. Then those trees just the other side of the roadway, there's one of the monitoring wells which remain in place and near that there's a vault which is to be broken.

Further down the road there's six more of these tanks. We'll take a quick look at. Further up there's six more buried tanks we'll take a look at also along with vaults, slabs, etc.....You'll find a few little pipes stick up above the ground a few inches. They apparently were a part of the sensing system of some sort, whatever, we don't know, but we're just asking that they be cut off two feet below grade, plugged and that's it. Tanks along through here, there are six of them. "How big are those tanks????", someone asked. Sheet, Table 1 gives the dimensions of that. Diameters and volumes. "That slab should be covered or removed????", someone else asked. Two feet, two feet demolished two feet below grade, the slab removed. That's basically it for this area. This road goes out to the main highway we can turn right at the main highway where the sign is and turn right and meet back at the runway.

At the Raco Airport Entrance: The slabs to the entrance to the build site must be removed and the area filled in.

QUESTIO. .ND ANSWER SESSION

PRE-BID CONFERENCE

Q: Where called for two (2) foot removal of manholes and structures, is it two (2) foot below existing grade or final grade?

A: Two (2) foot below existing grade. In the on-site disposal area we do not require that because the existing grade will be two (2) foot below final grade, so we are not concerned about it. Only in the area where we are not placing two (2) foot fill are we asking that the walls be broken down to two (2) foot below existing grade, then the remainder of the structure will be filled up to existing grade, levelled-off, mulched, fertilized and so forth

Q: Please clarify: Does that refer to that mound up there? Where the tanks are?
A: YES.

Q: Are the two borrow areas totally cleared of trees or does the Contractor have to clear the area in the woods?

A: That's covered under clearing and grubbing in the specifications. If that's not clear, we will research it some more and make sure it is clear.

NOTE: A tour was conducted at Borrow Site II. Borrow Site I was visible from the Missile Silo Area and was pointed out to those present.

Q: There is no item for Clearing and Grubbing in the specification

A: We will check.

Q: It is the intent of the contract specifications that all fill and topsoil is from the site?

A: Yes. Topsoil is considered as materials to be removed from the silo on-site disposal area and from the borrow area, the top twelve inches of materials, which contain vegetation and mineral/organic matter. It's not good, rich, black topsoil like you buy at your neighborhood nursery granted, but for purposes of this contract, that is what we are calling topsoil.

Q: Where indicated that is has to be be mixed with sawdust, is it anticipated that there is enough sawdust here to accomplish that?

A: Yes.

Q: Paragraphs 2 and 9.1 of Section 2B of the Contract held be Krygoski Const. Company for the demolition of the Raco Site vested title of the site materials to the Contractor upon Notice to Proceed. Krygoski, who expected to salvage some site materials, including the two (2) large buildings, expects the Government to pay him the salvage value of the materials. What is the Corps' intent in this regard? Specifically, will Krygoski be paid for the materials prior to the award of a new Contract?

A: In this light, this question applies to the previous contract and will not be answered at this time.

Q: For two silos, the Contractor must remove contaminated materials including water. What is the contractor to do with silt or dirt remaining in the silos after the removal of water? If there is contaminated concrete, what is the Contractor to do with the contaminated concrete?

A: That is covered in the specifications. Essentially, the materials that's contaminated by the water in the silos is to be removed and disposed of as contaminated materials. Materials that have not been contaminated by the water in those two (2) silos, Silo #2 and #10 does not have to be handled as contaminated materials and can be replaced into the silos.

Q: On Page 2A-2 of the Solicitation, Para 2.1.1, it states that asbestos materials will be found on, or in, the walls, suspended ceiling remnants, pipes, ductwork, equipment, floors and roof flashings of the buildings and structures to be demolished, to the extent shown on the drawings. Page 2A-2 of the Solicitation states that the contractor has responsibility to assess the actual amount of asbestos present. Page 2A-2, Para 2.1.2 states that all debris located in the buildings is to be treated as containing or having been contaminated with asbestos. Considering the extent of asbestos - bearing materials and asbestos contamination, should not the walls, ceiling, beams, etc., of the buildings be tested by the Corps for asbestos contamination. Is this not particularly important in light of laboratory analyses performed on behalf of the Corps in May 1985 and July 1986 that show that there is low to high friability of the asbestos in the buildings?

A: Section 2A of the Specifications cover asbestos removal portions of the job. We will review Section 2A in light of this question and if clarification is required, we will provide its

NOTE: Presence of such asbestos contamination is covered by the following portions o of Division 2 - Sitework, Section 2A Asbestos Removal and Disposal:

a. Paragraph 2. General Requirements, subparagraph 2.1 Work required, 2.1.1 Locations, 2.1.1 Debris and 2.1.3, Building Surfaces.

b. Paragraph 5, Contractor Qualifications and Certifications, subparagraph 5.4 Asbestos Inventory.

Q: There may be asbestos contamination inside the block walls if the openings in the tops of the hollow blocks have not been filled. Will the Corps check for such contamination?

A: Under the plans and specifications of this project, I think at this point, if necessary, we will provide additional clarification. Also, it is up to the Contractor to assess, based upon the materials presented in the drawings as to how the structures are put together

NOTE: Presence of such asbestos contamination is covered by the following portions of Division 2A Asbestos Removal and Disposal:

a. Paragraph 2. General Requirements, subparagraph 2.1, Work Required, 2.1.1 Locations, 2.1.1 Debris and 2.1.3 Building Surfaces.

b. Paragraph 5. Contractor Qualifications and Certifications, Subparagraph 5.4, Asbestos Inventory.

Q: Laboratory tests conducted by a laboratory employed by Krygoski Const. Company found asbestos in the boiler in the large Composite Building. Will the Corps conduct its own tests to verify the results.?

A: We have on the drawings indicated all the asbestos that we have found present in the buildings. If by your question we need to provide additional clarification on the drawings and specifications, we will.

NOTE: Asbestos has been identified on the boiler breeching and stack components as indicated in the Drawings. Presence of additional asbestos contamination is covered by the following portions of Division 2 - Sitework, Section 2A Asbestos Removal and Disposal:

a. Paragraph 2, General Requirements, Subparagraph 2.1, Work required, 2.1.2 Locations.

b. Paragraph 5, Contractor Qualifications and Certifications, Subparagraph 5.4, Asbestos Inventory.

Q: If the Corps will not conduct its own tests regarding the matters noted in the above questions and the Contractor awarded the contract finds asbestos-bearing materials or asbestos contamination through laboratory testing after award of the contract, will the Corps provide and equitable adjustment for the increased cost costs of asbestos removal?

A: It is believed that removal and disposal of all asbestos containing materials has been addressed in the Specifications and on the Drawings. Should the Contractor identify any asbestos containing materials not so addressed resolution of any inequities which may result will be available under the appropriate Contract Clause.

Q: The Corps has conducted three tests on asbestos at the Raco Site. Two were by private laboratories (May 1985 and July 1986) and one was through OSHA (April 1987). Will the contractor's asbestos abatement program be based on the May 1985, July 1986 or April 1987 test results?

A: Contractor is to address asbestos as noted on the drawings and as covered in the specifications.

NOTE: Contractors Asbestos Removal Plan required under Division 2, Site Work, Section 2A, Asbestos Removal and Disposal, Paragraph 5, Contractor Qualifications and Certifications, Subparagraph 5.5 Asbestos Removal Plan shall be based on the requirements and information contained in the Contract Documents (Plans and Specifications.

Q: There are drains in the large buildings through which asbestos contaminated water may have drained. Will the Corps check for asbestos contamination in the drains and ground water: If there is such contamination, how will the contract requirements be changed?

A: Questions not answered. Needs further information.

NOTE: Investigation of the ground water is not within the Scope of this Contract. Groundwater investigations will be conducted by Others, as addressed in Division I, General Requirements, Section 1G, Site Specific Quality Management Plan (SSQMP) For Construction, Paragraph 3. Project Description, Subparagraph 3.3, Detailed

Site Description and Cl ical Found on Site.

NOTE: Cleaning of the drains is addressed by Notes added to Sheets 19 and 26 of the Drawings by this Amendment.

Q: The Solicitation requires the cleaning of floors surfaces in the two large buildings. Does this include removal of oil, glue and paint from the floor surfaces? Does this requirement include removal of spilled oil that soaked into or even through the concrete? Does this requirement include the removal of residual hydraulic fluid in the lift and related underground piping in the large Composite Building?

A: Specifications will be reviewed for additional clarification.

NOTE: These concerns are addressed by Division 2, Site Work, Section 2B, Demolition Removal and Disposal, Paragraph 8. Existing Facilities, Subparagraph 8.1.1., Foundations and Floor Slabs - Composite and Assembly Buildings as amended by this Amendment and new Subparagraph 8.1.2 Hydraulic Automotive Hoist added by this Amendment.

Q: Paragraph 3.2.2 in Section G of the Solicitation states that there will be a maximum two-day turn-around from the time a sample is delivered to the Contractor's laboratory until results are available. Does turnaround time include mailing time from the laboratory to the Contractor?

A: Yes. Results may be obtained telephonically.

Q: Does the Corps recommend or anticipate that a Contractor will have to establish a laboratory on-site due to the extensive testing required by the Solicitation? In this regard, Krygoski Const. Company has been advised by an environmental quality control engineer that a laboratory on-site is necessary in order to meet the time requirements for the laboratory testing?

A: Turn-around is a benefit to the Contractor to process as fast as possible. An on-site laboratory is perfectly capable of performing all of the analysis that will be required that have anything to do with the timing on the construction. The only contaminates that have been found on-site that require the short turn around time are the petroleum hydrocarbons, oils, greases, gasolines, fuels, etc. No substances have been found on-site that require a detailed laboratory analysis using sophisticated instruments.

Q: Page SP-3, Paragraph 9(c) of the Solicitation states that the Government may accept any item or combination of items, unless doing so is precluded by a restrictive limitation in the Solicitation or bid. Does this mean that the Corps may award different items to different contractors? If so, does the Corps intend to do so?

A: Reference Page S-4, Note 1, which states in part..... Award will be made as a Whole to one (1) bidder.

Q: Where there are pipes in manholes that have asbestos, does it have to be abated:

A: All piping in manholes is not to be removed. As far as asbestos, we will check.

NOTE: This concern is addressed by Notes added to Drawing File No. 12/1092 by this Amendment.

Q: Can the Contractor dig trenches and bury all concrete?

A: All concrete to be disposed of on-site will be disposed of in the manholes, pits or both or in the on-site disposal areas within the silos, if there is room, or outside on the ground area. We do not call for any additional trenches to be dug. Concrete block, if it can be disposed of on-site, it shall be disposed of in the same manner.

NOTE: All concrete that is disposed of on-site must be disposed of in accordance with Division 2, Site Work, Section 2B, Demolition, Removal And Disposal, Paragraph 9. Disposition of Materials.

Q: The soil that has to be removed at the Fuel Tank Depot(s) considered Class I or Class II?

A: Soils in the Fuel Tank Depot(s) area are not considered to be contaminated with Petroleum hydrocarbons.

Soils in the other tank areas (C-1,C-2,C-3) are transformer areas are to be sampled and tested by the Contractor to determine character prior to disposal in accordance with Division 1, General Requirements, Section 1G Site Specific Quality Management Plan (SSQMP) For Construction, particularly, Paragraph 9, Analytical Procedures, Subparagraphs 9.3.1, Sample Compatibility Tests.

Q: Do painted blocks have to be hauled to landfill?

A: Yes. Additional information to be provided.

NOTE: At the meeting this question was answered yes, however, all materials not salvaged by the Contractor shall be disposed of in accordance with Division 2, Sitework, Section 2B, Demolition, Removal and Disposal, Paragraph 9. Disposition Of Materials. Attention is called to Subparagraph 9.2, Materials for Contractor Salvage, as amended by this Amendment.

"List of Contractors who attended Pre-Bid Conference, 21 July 1987, for Solicitation No. DACW35-87-B-0001."

Superior Abatement Services, Inc.
P.O. Box 7101
Marquette, Michigan 49855

Specialty Contracting Services, Inc.
ATTN: Douglas F. Mehki
1947 Kirby
Detroit, Michigan 48211

Northern Safety Consultants, Inc.
1406 Lincoln Avenue
Marquette, Michigan 49855
ATTN: Christopher Baker

Superior Abatement Services
113 E. Baraga
Marquette, Michigan 49855
ATTN: Karen A. Baker

Action Services
9296 10 Mile Road
Rockford, Michigan
ATTN: Arthur Lillibridge

Environmental Evaluation and
Laboratory Services
225 Parsons Street
P.O. Box 1665
Kalamazoo, MI 49005
ATTN: A. Clark Kahn III

Adamo Contracting Corporation
300 E. 7 Mile Road
Detroit, Michigan 48203
ATTN: Michael Murphy

John Sarazen
J&D Enterprises
5095 Lauaque Road
Duluth, MN 55803

Burdco
ATTN: Mark Wilkes
4225 Cedar Run Road
Traverse City, MI 49684

Northern Industrial Services
1206 Columbus Avenue
Bay City, Michigan 48708

TUSDA Forest Service
4000 I-75 Business Spur
Sault Ste. Marie, MI 49783

H&M Contracting Company
15251 W. 8 Mile Road
Detroit, Michigan 48035

A&B Industrial
5100 W. Michigan Ave.
Kalamazoo, MI 49007

Krygoski Construction Co.
P.O. Box 116
Menominee, MI

Spriggs, Bade & Hollingsworth
Washington, D.C. - Krygoski

Consulting Associates
Boise, Idaho - Krygoski

Gerald Farney
Clerk
Menominee, MI

Bierlein Industries
ATTN: Russ Clark

Green Management Company
P.O. Box 8042
Kentwood, MI 49518

Julio Construction Company
Hancock, MI 49930
ATTN: Lawrence Julio

Reid Demolition and Salvage
P.O. Box 51
Dafter, Michigan 49724

City Environmental Contracting, Inc.
3400 E. Lafayette
Detroit, MI 48207

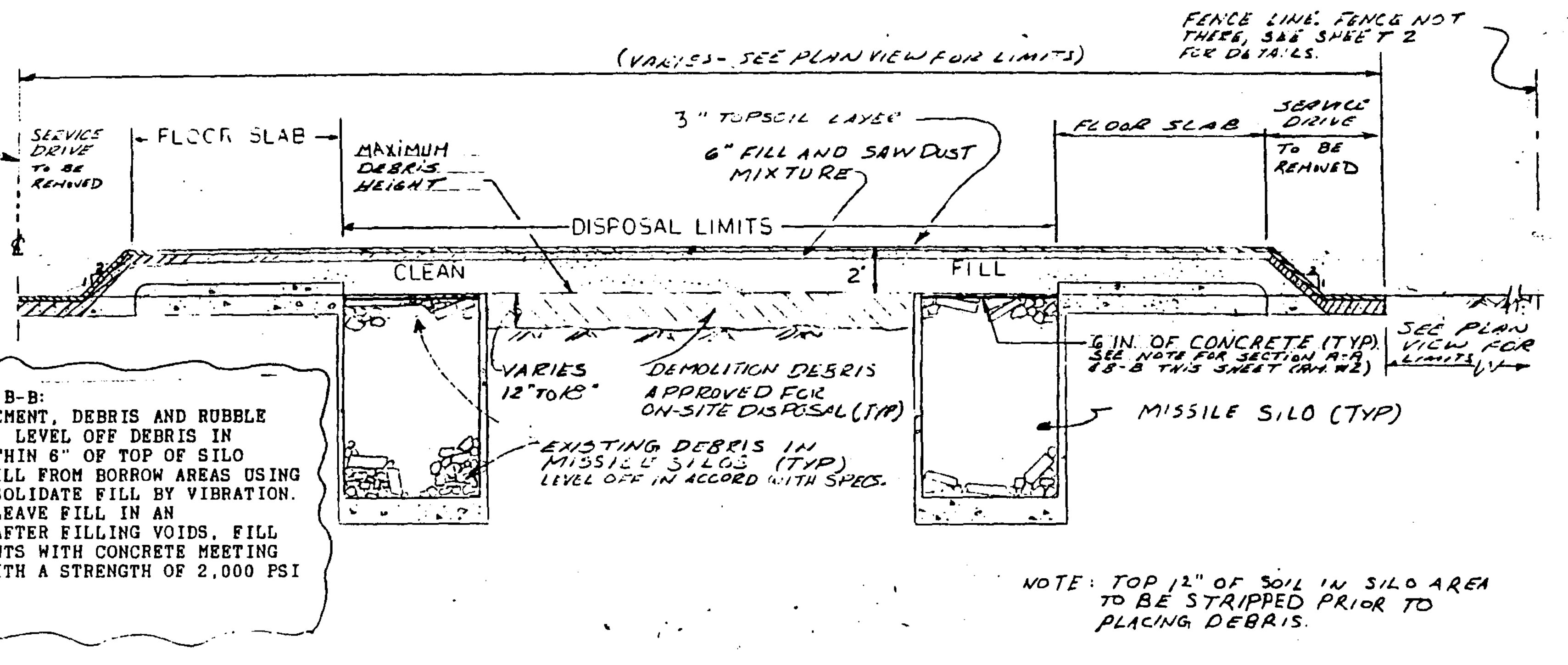
Specialty Contracting
M&M Demo
3400 E. Lafayette
Detroit, MI 48207

Anderson Excavating & Wrecking
1824 So. 20th Street
Omaha, NE

Pitsch Wrecking
675 Richmond
Grand Rapids, MI 49504

Zebrowski and Associates, Inc.
555 Brush Street, Suite 1511
Detroit, Michigan 48226
ATTN: Tim Sullivan

ED Tiller and Company
ATTN: Daniel K. Baker
453 N. Emerson
Indianapolis, IN 46219



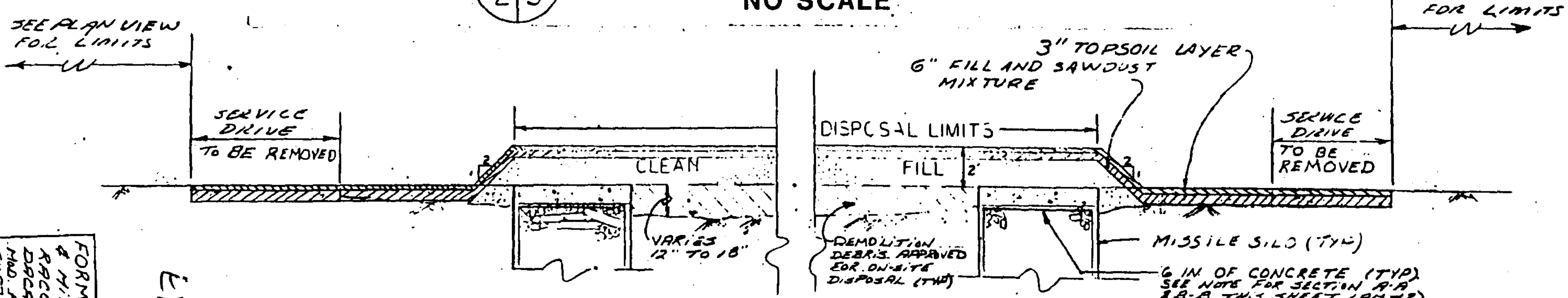
NOTE FOR SECTION A-A AND B-B:
SILOS CONTAIN BROKEN PAVEMENT, DEBRIS AND RUBBLE (SEE PHOTOS ON SHT. 32). LEVEL OFF DEBRIS IN SILOS. FILL VOIDS TO WITHIN 6" OF TOP OF SILO CONTENTS WITH GRANULAR FILL FROM BORROW AREAS USING DRY OR WET METHODS. CONSOLIDATE FILL BY VIBRATION. IF WET METHODS ARE USED LEAVE FILL IN AN UNSATURATED CONDITION. AFTER FILLING VOIDS, FILL TOP 6" OF THE SILO CONTENTS WITH CONCRETE MEETING ASTM C94 REQUIREMENTS, WITH A STRENGTH OF 2,000 PSI AND 5 " SLUMP. (AM. #2)

NOTE: TOP 12" OF SOIL IN SILO AREA TO BE STRIPPED PRIOR TO PLACING DEBRIS.

1 / 2 | 3

SECTION A-A DETAIL

NO SCALE



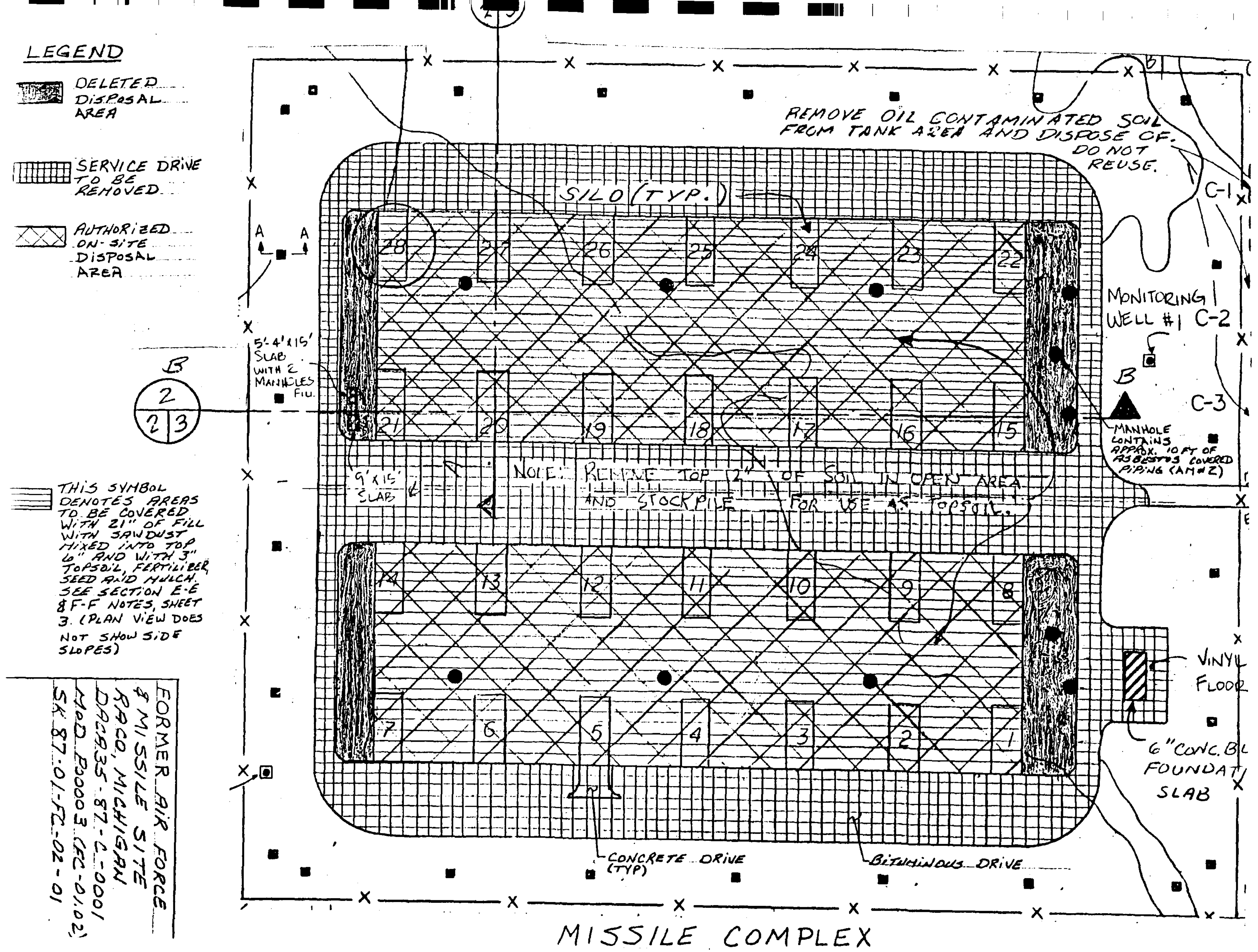
2 / 2 | 3

SECTION B-B DETAIL

NO SCALE

FORMER AIR FORCE
MISSILE SITE
RACO, MICHIGAN
DACA35-87-C-0001
MOD. P00003 (FC-0102)
SK 87-01-FC-02-02

EXHIBIT 8


LEGEND
DELETED DISPOSAL AREA
SERVICE DRIVE TO BE REMOVED
AUTHORIZED ON-SITE DISPOSAL AREA
THIS SYMBOL DENOTES AREAS TO BE COVERED WITH 21" OF FILL WITH SAWDUST MIXED INTO TOP 6" AND WITH 3" TOPSOIL, FERTILIZER, SEED AND MULCH. SEE SECTION E-E & F-F NOTES, SHEET 3. (PLAN VIEW DOES NOT SHOW SIDE SLOPES)
FORMER AIR FORCE
& MISSILE SITE
RACO, MICHIGAN
DACA35-87-C-0001
MOD. P0003 (FC-01,02)
SK 87-01-FC-02-01
REMOVE OIL CONTAMINATED SOIL FROM TANK AREA AND DISPOSE OF. DO NOT REUSE.
SILO (TYP.)
A
A
B
2
2
3
5'-4'x15' SLAB WITH 2 MANHOLES FILL
9'x15' SLAB
NOTE: REMOVE TOP 12" OF SOIL IN OPEN AREA AND STOCKPILE FOR USE AS TOPSOIL.
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
C-1
MONITORING WELL #1
C-2
B
C-3
MANHOLE CONTAINS APPROX. 10 FT OF ASBESTOS COVERED PIPING (AM#2)
VINYL FLOOR
6" CONC. BL FOUNDAT SLAB
CONCRETE DRIVE (TYP)
BITUMINOUS DRIVE
MISSILE COMPLEX

CENCE-CO-C
ROSSOW/66819
18 MAY 88

Demolition of Existing Structures
Former Air Force and Missile Site
Raco, Michigan DACA35-87-C-0001

Status as of 18 May 1988
(Per Ron Pearce)

1. The asbestos abatement portion of the contract was completed on 6 May 1988. As of that date all asbestos had been removed from the project and properly disposed of at a State of Michigan licensed landfill.

2. Twenty six of twenty eight missile silos have been filled and the required concrete caps placed. The two remaining silos (2 & 10) require testing and removal of the contaminated water prior to being filled and capped. Currently waiting for test results.

3. The concrete block has been stripped from the small Assembly Building. The roofing material has also been removed, however, the structural portion remains.

4. The concrete block, with the exception of the boiler room walls, has been stripped from the large Composite Building. Rest of building is intact.

5. Underground Tanks

a. Tank P-1a : Tank contents, appears to be mineral spirits, have been pumped into a barrel for disposal. The physical tank, a 20" diameter by 48" long buried drum, has been removed.

b. Tank B-1 : Excavation was started for tank removal. Unexpected contaminated soil was found and is currently being removed. Tank is full of water and is being tested with respect to local requirements.

c. Tanks C-1, C-2 and C-3 : Currently stripping contaminated soil from top in one foot layers and will continute until all contaminated soil is removed

d. Tanks C-2 and C-4 : Contractor has taken sample of contents for QC/QA testing (for duplicate and split samples). Testing for PCB. Need results prior to pulling tanks.

6. Concrete Pad : Have removed three feet of contaminated soil per contract requirements. Status of remaining soil has not been determined. The contaminated soil has been stockpiled on site and will be disposed of in a type 2 landfill.

WR

Substance		Disposal Site
Asbestos, All Block Contaminated Soil Silo Debris Roofing	Majority 75%	Reeds Dafter Sanitary Landfill Route 1 Old US 2 Dafter, MI 49742 3 Miles South of Dafter 1/4 Mile West of old US 2 State of Mich Class 2 Licensed Landfill
Some, except asbestos, went	Minority	Rudyard Superior Landfill may eventually be utilized in lieu of Dafter
Tank Contents a. Water, contaminated w/ petroleum products		St Ste Marie local sewerage plant
b. Mineral spirits * pertroleum hydrocarbons		Lake Nebagamon, WI to Johnson Oil
c. PCB		CN does not provide for.

* licensed carriers, don't need to track.

7. Anticipate $\underline{\Pi}$ will reach substantial completion (except for fill, topsoil and seeding) by the end of June 1988. Currently $\underline{\Pi}$ is way ahead of schedule. Only weak point in the June date is the required testing of soil following tank removal and prior to backfill.

SUPERIOR ABATEMENT SERVICES
(ASBESTOS)

Quality Control Reports
Sub-Contractor
RACO II

DACA35-87-C-0001

EXHIBIT 10

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 7-S

DATE 4-5-88

CONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AF & MISSILE SITE LOCATION KACO MI

WEATHER: TYPE WET TEMP. MAX 45° MIN 30° RAINFALL — GAGE READING 09

EMPLOYEES: SUPV. 2 SKILLED ______ LABORERS 5 LENGTH OF SHIFT 830-530 HR 8½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPERVISOR F. JEFF KING WORKER

b. DAN LOHMAN ~~FOREMAN~~ LABORER G. JIM MALVASIC WORKER

c. TOM BEAUDRY WORKER

d. BRAD PATERICK WORKER

e. MIKE ANDERSON WORKER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. SET UP DECON TRAILER A&B
2. HOOK UP WATER HEATER & WATER PUMP A&B
3. OPEN UP WALL & Chase Pipe IN 5 places IN ASSEMBLY BLDG C,D,E,F,G

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-8-88 REPORT NO. 10-S

CONTRACTOR Superior Abatement Services Inc CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo AFR Missile Site LOCATION Raco MI

WEATHER: TYPE ______ TEMP. MAX 53° MIN 35° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED ______ LABORERS 5 LENGTH OF SHIFT 8-2 HR 6

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Mike Baker Supv F. Mike Anderson Laborer
b. Dan Lohman ~~Foreman~~ Laborer G. Jeff King Laborer
c. Bill Waite Air Monitoring H. Jim Malvasio Laborer
d. Tom Beaudry Laborer
e. Brad Paterick Laborer

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1 Cleanup last 1/4 of Floor B, C, D, E, F, G, H
2 Roof Flashing Removed E, A, H
3 Materials Delivered to Dafter Landfill G, H

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-14-88 REPORT NO. 145

CONTRACTOR Superior Abatement Services Inc CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AF4 MISSILE SITE LOCATION RACO MI

WEATHER: TYPE CLDY TEMP. MAX 39° MIN 28° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED LABORERS 6 LENGTH OF SHIFT 9-530 HR 8

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. BRAD PATERICK LABORER

b. DAN LOHMAN ~~[illegible]~~ LABORER G. TOM BEAUDRY LABORER

c. JEFF KING LABORER H. Jim Malvasio Laborer

d. JOHN KING LABORER

e. MIKE ANDERSON LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1) ACM MATERIALS Delivered to DAFTER LANDFILL A, C

2) SET UP Composite BLDG B D E F G H

3) SET UP SLAB ON TOP OF All and Removed Tiles A,B,C,D,E,F,G,H

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-15-88 REPORT NO. 155

CONTRACTOR Superior Abatement Services Inc CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo AF Missile Site LOCATION Kalo MI

WEATHER: TYPE Clay TEMP. MAX 28° MIN 15° RAINFALL Snow GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED LABORERS 6 LENGTH OF SHIFT 9-1230 HR 3½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Mike Baker Supv F. Tom Beaudry Laborer

b. Jeff King Laborer G. Mike Anderson Laborer

c. John King Laborer

d. Jim Maluasio Laborer

e. Brad Paterick Laborer

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1) Load truck, Slab on Hill - ACM Materials A, B, E, F, G

2) Deliver materials (ACM) to Dafter Landfill C, D

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-19-88 REPORT NO. 175

CONTRACTOR SUPERIOR ABATEMENT SERV. CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AIR FORCE 9 MISSILE SITE LOCATION RALL MI

WEATHER: TYPE P CLDY TEMP. MAX 34 MIN 20 RAINFALL Snow GAGE READING —

EMPLOYEES: SUPV. 2 SKILLED ____ LABORERS 7 LENGTH OF SHIFT 9-6 HR 8½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. CHRIS BAKER SUPV F TOM BEAUDRY LABORER

b. MIKE BAKER SUPV G MIKE ANDERSON LABORER

c. DAN LOHMAN LABORER H. JIM McLUCSIC LABORER

d. JOHN KING LABORER I JEFF KING LABORER

e. BRAD PATERICK LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. SET UP IN Composite BLDG B, C, D, E, F, G, H, I
2. CLEAN UP Floors C, D, E, F, G, H, I
3. LOAD Dumpster to go to DAFTER LANDFILL B

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-20-88 REPORT NO. 185

CONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AF 9 MISSILE SITE LOCATION RACO MI

WEATHER: TYPE Cloudy TEMP. MAX 36° MIN 20° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED ___ LABORERS 7 LENGTH OF SHIFT 9-530 HR 8

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. JIM MALUSSIO LABORER

b. DAN LEHMAN LABORER G. MIKE ANDERSON LABORER

c. JOHN KING LABORER H. BRAD PATERICK LABORER

d. JEFF KING LABORER

e. TOM BEAUDRY LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Floor-Cleanup & power & heat Area #26
2. Floor-Cleanup OFFICE & MENS TOILET Rm #6
3 Dumpster to Dafter 2 times

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-21-88 REPORT NO. 195

CONTRACTOR Superior Abatement Services Inc CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Kacc MI

WEATHER: TYPE PCLDY TEMP. MAX 40° MIN 35 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED LABORERS 7 LENGTH OF SHIFT 9-530 HR 8

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. TOM BEAUPRY LABORER

b. DAN LOHMAN LABORER G. BRAD PATERICK LABORER

c. JIM Malvasio LABORER H. MIKE ANDERSON LABORER

d. JOHN KING LABORER

e. JEFF KING LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. CLEANUP Floor Composite Bldg
2. LOAD Dompster to Dafter 2 times ~~[illegible]~~
3. poly over new dompster & loadup

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 205

DATE 4-22-88

CONTRACTOR Superior Abatement Services Inc CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Dow Air Force & Missile Site LOCATION Bango ME

WEATHER: TYPE Cloudy TEMP. MAX 45° MIN 32° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED ______ LABORERS 7 LENGTH OF SHIFT 9-5 HR 7½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Mike Baker SUPV F. Jim Malvasio Laborer

b. Dan Lohman LABORER G. Mike Anderson LABORER

c. Tom Beaudry LABORER H. Brad Paterick LABORER

d. John King LABORER

e. Jeff King LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite Building Floor Cleanup B,C,D,E,F,G,H

Load Dumpster to go to Dafter 2 times C,B

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-25-88 REPORT NO. 215

CONTRACTOR Superior Abatement Services CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AIRFORCE & MISSILE SITE LOCATION KACO MI

WEATHER: TYPE P.CLDY TEMP. MAX 43° MIN 28 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED ___ LABORERS 7 LENGTH OF SHIFT 10-530 HR 7

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. BRAD PATERICK LABORER

b. JEFF KING LABORER G. MIKE ANDERSON LABORER

c. JOHN KING LABORER H. JIM MALVASIO LABORER

d. TOM BEAUDRY LABORER

e. DAN LOAMAN LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. CHECK POLY ON DOORS & ROOF G, H, A
2. Composite BLDG. Floor CLEANUP B, C, D, E, F, G, H
3. Boiler room & teko #1 CLEANUP B, C, D, E
4. SETUP FOR ACM REMOVAL #28 VEH. STORAGE F, G, H
5. LOADED 2 Dumpsters to DARTER D, E

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-27-88 REPORT NO. 235

CONTRACTOR Superior Abatement Service CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo. Air Force & Missile Site LOCATION Raco MI

WEATHER: TYPE CLDY TEMP. MAX 42° MIN 33° RAINFALL TRACE GAGE READING —

EMPLOYEES: SUPV. 1 SKILLED LABORERS 7 LENGTH OF SHIFT 9-830 HR 11

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. JIM MALVASIO LABORER

b. MIKE ANDERSON LABORER G. BRAD PATERICK LABORER

c. JEFF KING LABORER H. TOM BEADRY LABORER

d. JOHN KING LABORER I W.T. WAITE NSC

e. DAN LOHMAN LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. CLEAN UP IN POWER ROOM B,C,D
2. Remove Ceiling tile & pipe Lagging in Maint. #28 E,F,G
3. CLEAN VEHICLES & INVENTORY SUPPLIES H
4. LOAD Dumpster to DAFTER A,H 1 TIME
5. REMOVE ACM IN VEHICLE STORAGE #28 BCD
6. REMOVE CEILING TILE IN MAIN OFFICE & TELCO AREA A,E,F,G

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 4-28-88 REPORT NO. 245

CONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA35-87-C-0001

PROJECT NAME DEMO AIR FORCE & MISSILE SITE LOCATION RACO MI

WEATHER: TYPE CLEAR TEMP. MAX 47° MIN 34° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 1 LABORERS 7 LENGTH OF SHIFT 9-630 HR 9

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. BRAD PATERICK LABORER
b. D.T. WAITE NSC G. MIKE ANDERSON LABORER
c. DAN LOHMAN LABORER H. JIM MALVASIO LABORER
d. JEFF KING LABORER I TOM BEAUDRY LABORER
e. JOHN KING LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite Building
1. Complete Removal in Heat & Power Room #26 start washdown A, C, D, E
2. START REMOVAL IN WSCE SHOPAREA #24 D E F G H
3. WALL+FLOOR WASH IN VEHICLE STORAGE # 28 E, F, G
4. SET UP WAREHOUSE AREA #32 FOR ACM REMOVAL A, C, D
5. Poly & Fill Dumpster I 6. Dumpster to Dafter 1 time

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

ATE 5-2-88 REPORT NO. 265

ONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AIR FORCE & MISSILE SITE LOCATION RACO MI

WEATHER: TYPE CLEAR TEMP. MAX 75° MIN 45° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 1 LABORERS 7 LENGTH OF SHIFT 8-4:30 HR 8½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. JOHN KING LABORER

b. DAN LOHMAN LABORER G. JEFF KING LABORER

c. TOM BEAUDRY LABORER H. BRAD PATERICK LABORER

d. MIKE ANDERSON LABORER I BILL WAITE NSC

e. JIM MALVASIO LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite BLDG

1. SET UP WATER/POWER, Repoly WINDOWS & DOORS B C D

2. START ACM REMOVAL WHSE #32 E F G H

3. SET UP AFD's & Poly off Doors IN OFFICE, TELCO AREA BCD

4. REMOVE WALL TILE & LAGGING BCDE

5. REMOVE CEILING TILE FROM WSCE AREA & CLEANUP F G H

6. LOAD UP TRUCK 126 BAGS - 1 BARREL A BC

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 5/3/88 REPORT NO. 27 A

CONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME DEMO AIR FORCE & MISSILE SITE LOCATION RACO MI

WEATHER: TYPE CLEAR TEMP. MAX 73° MIN 45 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 1 LABORERS 7 LENGTH OF SHIFT 900-700 HR 9½

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. BRAD PATERICK LABORER

b. DAN COHMAN LABORER G. JEFF KING LABORER

c. TOM BEAUDRY LABORER H. JOHN KING LABORER

d. MIKE ANDERSON LABORER I. BILL WAITE NSC

e. JIM MALVASIO LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite BLDG

1. TRUCK LOAD TO DAFTER A,C
2. START CLEANUP WHSE #5 B D E F
3. BAG OUT & LOAD TRUCK C,G,H
4. WALL & FLOOR WASH IN WHSE #32 AREA B,D,E,F,G,H

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 5-4-88 REPORT NO. 285

CONTRACTOR SUPERIOR ABATEMENT SERVICES CONTRACT NO. DACA 35-87-C-C001

PROJECT NAME DEMO AIRFORCE & MISSILE SITE LOCATION RACO MI

WEATHER: TYPE CLDY TEMP. MAX ____ MIN ____ RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED ____ LABORERS 7 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV F. TOM BEAUDRY LABORER

b. DAN LOHMAN LABORER G. JEFF KING LABORER

c. JIM MALVASIO LABORER H. JOHN KING LABORER

d. MIKE ANDERSON LABORER I BILL WAITE NSC

e. BRAD PATERICK LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite BLDG

1. Clean & Wash Down Wall & Floors IN OFFICE/TELCO AREA BCD

2. Clean & Wash Down Heat & Power #26 WSCE Shop AREA EFGH

3. 1 30 yd Dumpster to Dafter A

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

TE 5/6/88 REPORT NO. 305

NTRACTOR Superior Abatement Services CONTRACT NO. DACA35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Kaco MT

WEATHER: TYPE Clear TEMP. MAX 65° MIN 40° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED ______ LABORERS 7 LENGTH OF SHIFT 9- HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. MIKE BAKER SUPV

b. DAN LOHMAN Laborer

c. TOM BEAUDRY LABORER

d. JEFF KING LABORER

e. JOHN KING LABORER

F. MIKE ANDERSON Laborer

G. JIM MALVASIO LABORER

H. BRAD PATERICK LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. TRUCK LOAD TO DAFTER A,G,G
2. Composite BLDG Remove Flashing from Roof B[illegible]DEFH

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

RESULTS OF SURVEILLANCE CONTINUED:

* Composite Bldg
10 TESTS - CLEARANCE
5-6-88

1. MIDDLE OF WSCE SHELTER # 24
2. MIDDLE OF WSCE SHELTER # 25
3. NEAR FORMER DOORWAY CLASSROOM # 12
4. ROOF OF COMPOSITE BLDG
5. POWER ROOM
6. MAINTENANCE AREA # 28 A
7. VEHICLE STORAGE # 28
8. WAREHOUSE AREA # 32
9. WAREHOUSE AREA # 32
10. BOILER ROOM

SLABS 2 Clearance tests
1. WESTERN MOST SLAB END OF RUNWAY
2. Slab in Middle of Runway

TEST PERFORMED: TYPE, LOCATION, RESULTS including failures & Remedial Action, (Attach copy of test report or notation when it will be furnished.)

WORK ITEMS BEHIND SCHEDULE: Reason, Effect on Progress Schedule and Actions Taken.

JOB SAFETY: (Report conditions, Deficiencies, corrective Action & Results)

EMARKS: List attachments and other Management Actions Taken to Assure Quality Construction

F INSPECTIONS & RESULTS ARE NOT LISTED THEN IT IS ASSUMED THAT QUALITY CONTROL IS NOT EING IMPLEMENTED.

e above report is complete and correct and all materials & supplies incorporated in the rk are in compliance with the terms of the contract except as noted:

[signature]

CONTRACTOR'S APPROVED REPRESENTATIVE SIGNATURE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 5-9-88 REPORT NO. 315

CONTRACTOR Superior Abatement Serv CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Raco MI

WEATHER: TYPE CLDY TEMP. MAX 65 MIN 45 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED LABORERS 3 LENGTH OF SHIFT 1200-300 HR 4

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Mike Baker Supv

b. John King Laborer

c. Jim Malvasio Laborer

d. Tom Beaudry Laborer

e.

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Composite Building

1. Take Down Poly on Doors/windows A B
2. Load Truck to Dafter C D

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

Superior
Abatement
Services, Inc.

113 E. Baraga
P.O. Box 7101
Marquette, Michigan 49855
(906) 228-9083

May 13, 1988

U.S. Corp of Engineers
St. Marys Fall Canal
Sault Ste. Marie, MI 49783
Attn: Mr. Ron Pearce

Dear Mr. Pearce:

The enclosed documents are the original receipts from asbestos abatement at the former air force and missile site in Raco, Michigan (Solicitation NO. DACA35-87-B-0001).

Copies of the disposal receipts have been submitted to Anderson Excavating, Omaha, Nebraska.

Sincerely,

Karen A. Baker

Karen A. Baker
President

cc:file

KAB/leb

EXHIBIT 11

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

Date: 4-8-88 No. of Bags: 120

No. of Barrels:

Other: # 3997

Received By Eugene [illegible] JA

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.

Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855

Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit

Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231

Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site

Location Address: M-28, 1 mile East of
(or description of location) Raco, MI

Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'

Facility Age: 40 years

Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988

Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:

VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation:

8) Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:

Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:

Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill

Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to: ______
Received Date: ______
Postmarked Date: ______
Contractor Inspect this FY ______
Facility Inspect this FY ______
Notification Reviewed ______
Def Letter Sent On ______
Entered Def. Letter Log: ______
Entered on Receiving Log: ______

Date: 4-14-88 No. of Bags: 39

No. of Barrels: 1

Other: # 4007

Received By: Eugene ... Jr

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

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Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

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Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:
VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation: ______

8) Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:
______
______
Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

Date: 4-14-88 No. of Bags:

No. of Barrels: 8

Other:

Received By: Eugene W Jaworski

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.

Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855

Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation

[X] Demolition (requiring 10 day notice)

[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit

Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231

Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site

Location Address: M-28, 1 mile East of
(or description of location) Raco, MI

Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'

Facility Age: 40 years

Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988

Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:

VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear ft.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation:

8) Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill

Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: (   )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

Date: 4-15-88 No. of Bags: 34

No. of Barrels: 5

Other: # 4017

Received By: Eugene ... Jr

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.

Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855

Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit

Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231

Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site

Location Address: M-28, 1 mile East of
(or description of location) Raco, MI

Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'

Facility Age: 40 years

Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988

Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:

VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear ft.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

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Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:

Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:

Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill

Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

S11P 4122

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

e: ______ No. of Bags: ______

No. of Barrels: 9

Other: ______

Received By: Eugene W LaPonsie Jr

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.

Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855

Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit

Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231

Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site

Location Address: M-28, 1 mile East of
(or description of location) Raco, MI

Phone: (906) 632-3311

) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'

Facility Age: 40 years

acility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988

Completion Date: June 4, 1988

) Estimate of Total Amount of Friable Asbestos:

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Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

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Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

) Emission Control Procedures During Removal:

Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:

Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

) Disposal Site: Dafter Landfill

Location Address: Rte. #1, Old US 2
(description location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4 mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

Date: 4-19-88 No. of Bags:

No. of Barrels:

Other: 30 Cubic yard dumpster

Received By: Elaine Reid - in Contained Bags of Debris

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)
DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

Estimate of Total Amount of Friable Asbestos:
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Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to: ______
Received Date: ______
Postmarked Date: ______
Contractor Inspect this FY ______
Facility Inspect this FY ______
Notification Reviewed ______
Def Letter Sent On ______
Entered Def. Letter Log: ______
Entered on Receiving Log: ______

Date: 4-20-88 No. of Bags: ______

No. of Barrels: ______

Other: 1-30 yard dumpster - Deliver

Received By: Calaine Reid

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

Dumpster was lined With double 6 mill Plastic

1) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)
DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:
VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation: ______

8) Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:
______
______
Phone: ( )

.ICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
ursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY
Xerox/Telefax to: ______
Received Date: ______
Postmarked Date: ______
Contractor Inspect this FY ______
Facility Inspect this FY ______
Notification Reviewed ______
Def Letter Sent On ______
Entered Def. Letter Log: ______
Entered on Receiving Log: ______

: 4-21-88 No. of Bags: ______

No. of Barrels: ______

Other: 1-30 Yard dumpster containing Debris

eceived By: Elaine Reid

From: Superior Abatement Services, Inc.

Raco Job
REVISED NOTIFICATION
4-21-88

Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)
DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

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Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation: ______

Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:
______
______
Phone: ( )

.CHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

otification of Intent to Remove Asbestos
rsuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

4-21-88 No. of Bags:

No. of Barrels:

Other: 1-30 yard dumpster with Debris Box lined with double 6 mill plastic

ceived By: Elaine Reid

om: Superior Abatement Services, Inc.

REVISED NOTIFICATION

Raco Job
our invoice #12408S

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

acility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
acility Age: 40 years
acility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

stimate of Total Amount of Friable Asbestos:
VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
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7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation:

ture (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

thod(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

ission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

sposal Site: Dafter Landfill
cation Address: Rte. #1, Old US 2
r cription f ation) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to: ____
Received Date: ____
Postmarked Date: ____
Contractor Inspect this FY ____
Facility Inspect this FY ____
Notification Reviewed ____
Def Letter Sent On ____
Entered Def. Letter Log: ____
Entered on Receiving Log: ____

Date: 4-22-88 No. of Bags: ____

No. of Barrels: ____

Other: 1-30 yard dumpster with Debrie

Received By: Elaine Reid Box lined with double

From: Superior Abatement Services, Inc. 6 mill plastic

REVISED NOTIFICATION Raco Job
our invoice #2408.

1) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)
DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

4) Facility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

6) Estimate of Total Amount of Friable Asbestos:
VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear ft.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation: ____

8) Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

9) Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

9) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

11) Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:
____
Phone: ( )

ᴌHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

tification of Intent to Remove Asbestos
rsuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY
Xerox/Telefax to: ______
Received Date: ______
Postmarked Date: ______
Contractor Inspect this FY ______
Facility Inspect this FY ______
Notification Reviewed ______
Def Letter Sent On ______
Entered Def. Letter Log: ______
Entered on Receiving Log: ______

4-25-88 No. of Bags: ______

No. of Barrels: ______

Other: 1-30 yard dumpster with Debrie Box lined with double 6 mill plastic

ceived By: Elaine Reid

m: Superior Abatement Services, Inc.

REVISED NOTIFICATION

Raco Job
our invoice #24085

Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

ame of Owner: U.S. Army Engineer District, Detroit
ailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

acility Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
cility Age: 40 years
cility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

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Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

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ission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

sposal Site: Dafter Landfill
cation Address: Rte. #1, Old US 2
r cription
f ation) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:
______
______
Phone: ( )

DEPARTMENT OF NATURAL RESOURCES
Air Quality Division
…tion of Intent to Remove Asbestos
…to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY
Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

…-26-88

No. of Bags:

No. of Barrels:

Other: 1-30 yard dumpster with Debris Box lined with double 6 mill plastic

By: Elaine Reid

Superior Abatement Services, Inc.

REVISED NOTIFICATION

Raco Job
our invoice #4089
4097

…tor: Superior Abatement Services, Inc.
…ng Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

…of Owner: U.S. Army Engineer District, Detroit
Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

…ty Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
…ge: 40 years
…ty Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

…of Total Amount of Friable Asbestos:
…utside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
…ng - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
…lls and ceiling and wallboard - 8940 sq. ft.

7) If Demolition involving less than 260 linear feet or 160 square feet, explain techniques of estimation:

(where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials …red contaminated.

… of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA …ended wet removal methods.

…on Control Procedures During Removal:
…emoval Techniques
…A equipment and
…sulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

… Site: Dafter Landfill
… Address: Rte. #1, Old US 2
…tion …on) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

A DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

ation of Intent to Remove Asbestos
t to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

4-27-88

No. of Bags:

No. of Barrels:

Other: 1-30 yard dumpster with Debrie Box lined with double 6 mill Plastic

By: Elaine Reid

Superior Abatement Services, Inc.

REVISED NOTIFICATION

Raco Job
our invoice # ~~4085~~ 4097

CHECK ONE:

[ ] Renovation

[X] Demolition (requiring 10 day notice)

[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

actor: Superior Abatement Services, Inc.
ng Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

of Owner: U.S. Army Engineer District, Detroit
g Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

ty Size: Assembly Bld-84'X69'/Composite Bld-163'X162'
je: 40 years
ty Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

te of Total Amount of Friable Asbestos:
utside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
ng - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
alls and ceiling and wallboard - 8940 sq. ft.

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n Control Procedures During Removal:
Removal Techniques
A equipment and
apsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

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on Address: Rte. #1, Old US 2
s ion ation) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY
Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

): 3-3-88 No. of Bags: 30

No. of Barrels: /

Other: S/f # 4046

Received By: [illegible]

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

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Location Address: M-28, 1 mile East of
(or description of location) Raco, MI
Phone: (906) 632-3311

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Facility Age: 40 years
Facility Use: Former Air Force Base and Missile Site

5) Start Date: April 4, 1988
Completion Date: June 4, 1988

Estimate of Total Amount of Friable Asbestos:
VAT-outside slabs-1500 sq. ft./Roof Flashing-250 Linear fT.
Lagging - 1675 linear ft. / Floor Tile - 19,525 sq. ft.
Firewalls and ceiling and wallboard - 8940 sq. ft.

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Nature (where asbestos will be removed from): Floor slabs, pipes, boilers, building material and other materials considered contaminated.

Method(s) of Removal: Enclosure with directional air: Glovebag, Cut and Lower, Tile scrape. All using EPA recommended wet removal methods.

) Emission Control Procedures During Removal:
Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:
Double bagged in 6 mil poly disposal bags with proper labeling. May be bagged and barrelled with proper labeling.

Disposal Site: Dafter Landfill
Location Address: Rte. #1, Old US 2
(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

-A DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

-ation of Intent to Remove Asbestos
-t to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
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Received Date:
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Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

3-4-88 No. of Bags:

No. of Barrels:

Other: 1-30 yard dumpster with Debrie Box lined with double 6 mill plastic

By: Elaine Reid

Superior Abatement Services, Inc.

REVISED NOTIFICATION

Raco Job
our invoice #12085

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

-actor: Superior Abatement Services, Inc.
-ng Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

-f Owner: U.S. Army Engineer District, Detroit
-g Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
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Phone: (906) 632-3311

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-: 40 years
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-ended wet removal methods.

-Control Procedures During Removal:
-Removal Techniques
-equipment and
-osulation.

10) Emission Control Procedures During Handling:
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-Site: Dafter Landfill
Address: Rte. #1, Old US 2
-ion Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

5118 1009

ICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
ursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to: ______
Received Date: ______
Postmarked Date: ______
Contractor Inspect this FY ______
Facility Inspect this FY ______
Notification Reviewed ______
Def Letter Sent On ______
Entered Def. Letter Log: ______
Entered on Receiving Log: ______

5-5-88

No. of Bags: 27

No. of Barrels: 2

Other: ______

ceived By: Art Reid Dafter Landfill

rom: Superior Abatement Services, Inc.

REVISED NOTIFICATION

Contractor: Superior Abatement Services, Inc.

Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855

Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

) Name of Owner: U.S. Army Engineer District, Detroit

Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231

Phone: (313) 226-6413

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Location Address: M-28, 1 mile East of
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acility Age: 40 years

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Completion Date: June 4, 1988

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Firewalls and ceiling and wallboard - 8940 sq. ft.

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Emission Control Procedures During Removal:

Wet Removal Techniques
HEPA equipment and
encapsulation.

10) Emission Control Procedures During Handling:

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) Disposal Site: Dafter Landfill

Location Address: Rte. #1, Old US 2
Dafter, MI 49742
(or description of location) 3 Miles S. of Dafter, 1/4 mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

______

______

Phone: ( )

H ...

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
2. Dept. of Public Health
3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY
Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

...: ø 5-6-88 No. of Bags: 10
No. of Barrels: 9
Other: Eugene W Zalonziegs
Received By:
From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

1) Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:
[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)
DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
Phone: (313) 226-6413

3) Facility Name: Former Air Force Base and Missile Site
Location Address: M-28, 1 mile East of
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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Air Quality Division

Notification of Intent to Remove Asbestos
Pursuant to 40 CFR, Part 61, Subpart M

1. Dept. of Natural Resources
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3. EPA Air Compliance Branch
4. Client
5. SASI

DNR USE ONLY

Xerox/Telefax to:
Received Date:
Postmarked Date:
Contractor Inspect this FY
Facility Inspect this FY
Notification Reviewed
Def Letter Sent On
Entered Def. Letter Log:
Entered on Receiving Log:

: 5-9-88 No. of Bags: 2

No. of Barrels:

Other: SIP 4128

Received By: Eugene W Jaksic

From: Superior Abatement Services, Inc.

REVISED NOTIFICATION

Contractor: Superior Abatement Services, Inc.
Mailing Address: 113 E. Baraga
P.O. Box 7101
Marquette, MI 49855
Phone: (906) 228-9083

CHECK ONE:

[ ] Renovation
[X] Demolition (requiring 10 day notice)
[ ] Demolition (requiring 20 day notice)

DATE OF NOTICE: March 2, 1988

2) Name of Owner: U.S. Army Engineer District, Detroit
Mailing Address: Corp of Engineers
P.O. Box 1027
Detroit, MI 48231
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(or description of location) Dafter, MI 49742
3 Miles S. of Dafter, 1/4
mile W. off Old US 2.

12) If ordered demolition, name and authority of state or local government representative who ordered it:

Phone: ( )

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 5-5-88 REPORT NO. 29

CONTRACTOR Anderson Excavating & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Raco MI

WEATHER: TYPE Clear TEMP. MAX 76° MIN 40° RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 2 LABORERS 2 LENGTH OF SHIFT 8-630 HR 10

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. FRED PAINE SUPV F. GARY HARWOOD OPERATOR

b. KIRK BOLTS QC

c. DELFORD LABORER/OPERATOR

d. DAVE ANDROSKY LABORER

e. Emmett McNall OPERATOR

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Demolition of Storage Bldg w/CRANE F
2. STRIPPED TOPSOIL w/LOADER IN S.O AREA E
3. Moved stripped topsoil w/END LOADER F
4. Went w/truck to get water for Subcontractor B, D
5. Leveled material in silo's w/backhoe C
6. Met w/ Ron Pearce ~~[illegible]~~ from Corps A, B (PREPATORY PHASE)
7. MAINTENANCE ON CRANE Frontend LOADER D
8. Fueled & Kept generator running B
9. Finished cleaning debris out of silo's & put in Dumpster E

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

9. Demolished Pits near Hole's Ends with crane

a. PREPARATORY PHASE:

MEETING W/ RON PEARCE (CORPS) Discussed Progress Payment, Toured Site,

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

Repaint Letters on Sign

(Corps) Ron Barkley, Inspected Equipment, Put Seat Belts in mack Truck

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

EXHIBIT 12

Groundwater Analytical Data
PCBs
Raco / Bomarc

(concentrations in ug/L)

Location	Date	Dup	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Polychlorinated, Biphenyls
MW01	06/04/1987		<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	--
MW02	06/04/1987		<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	--
MW03	06/04/1987		<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	--
MW03	06/04/1987	DUP	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	--
MW03	11/13/1990		<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	--
MW03	11/13/1990	DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	--
MW04	06/04/1987		<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	<50 h	--
MW15	07/11/1991	DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	--
MW15	07/11/1991		<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	--
RB-1	12/03/1986		--	--	--	--	--	--	--	<0.22
RB-2	12/03/1986		--	--	--	--	--	--	--	<0.22
RB-3	12/03/1986		--	--	--	--	--	--	--	<0.22
RB-4	12/03/1986		--	--	--	--	--	--	--	<0.22
RB-5	12/03/1986		--	--	--	--	--	--	--	<0.22
RB-6	12/03/1986		--	--	--	--	--	--	--	<0.22
RG-1	01/13/1987	DUP	--	--	--	--	--	--	--	<0.22
RG-1	01/13/1987		--	--	--	--	--	--	--	<0.22
RG-1	01/13/1987		--	--	--	--	--	--	--	<0.5
RG-2	01/15/1987		--	--	--	--	--	--	--	<0.22
RG-3	01/15/1987		--	--	--	--	--	--	--	<0.22
RG-4	01/13/1987		--	--	--	--	--	--	--	<0.22
Tank 1S	05/27/1987		<5.0	<10.0	<10.0	<5.0	<5.0	<5.0	<5.0	--
Tank 2S	05/27/1987		<5.0	<20.0	<7.0	<5.0	<5.0	<5.0	<5.0	--
Tank 3N	05/27/1987		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--
Tank 4N	05/27/1987		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--
Tank 5N	05/27/1987		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--
Tank 6N	05/27/1987		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--
Tank 7N	05/27/1987		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--
Tank B-1	05/27/1987		<5.0	<10.0	<10.0	<5.0	<5.0	<5.0	<5.0	--
Tank C-4	05/27/1987		<50	<200	<70	<50	<50	<5.0	<5.0	--
WELL INSTALL	12/03/1986		--	--	--	--	--	--	--	<0.22

-- Not analyzed.

h EPA sample extraction or analysis holding time was exceeded.

EXHIBIT 13

Soil Analytical Data
PCBs
Raco / Bomarc

(concentrations in ug/kg)

Location	Date	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	PCB-1262	PCB-1268	Polybromin-ated, Biphenyls	Polychlorin-ated, Biphenyls
RS-1	**01/14/1987**	--	--	--	--	--	--	--	--	--	--	<22
RS-1	**01/14/1987**	--	--	--	--	--	--	--	--	--	--	<100
RS-2	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-3	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-4	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-5	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-6	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-7	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
RS-8	**01/14/1987**	--	--	--	--	--	--	--	--	--	--	<22
RS-9	**12/02/1986**	--	--	--	--	--	--	--	--	--	--	<22
SB16-101	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-102	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-103	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-104	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-105	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-106	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-107	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-108	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
SB16-109	**07/02/1991**	<160	<160	<160	<160	<160	<320	<320	--	--	--	--
Tank 2S (S)	**05/27/1987**	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<20000	--
Tank 7N (S)	**05/27/1987**	<11000	<21000	<21000	<11000	<13000	<21000	<32000	--	--	--	--
Tank B-1 (S)	**05/27/1987**	<4000	<4000	<5000	<4000	<4000	<4000	<4000	<4000	<4000	<200000	--
Tank C-1	**05/27/1987**	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<20000	--
Tank C-2	**05/27/1987**	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<4000	<20000	--

-- Not analyzed.

Data Qualifiers/Footnotes

--	Not analyzed/not available.
DLND	Not detected, detection limit not determined.
ND	Not detected.
a	Estimated value, calculated using some or all values that are estimates.
B	The reported value is less that the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
b	Potential false positive value based on blank data validation procedures.
c	Coeluting compound.
e	Estimated value, exceeded the instrument calibration range.
h	EPA sample extraction or analysis holding time was exceeded.
I	Indeterminate value based on failure of blind duplicate data to meet quality assurance criteria.
J	Associated value is an estimate.
j	Reported value is less than the sated laboratory quantititation limit and is considered an estimated value.
p	Small peak in chromatogram below method detection limit.
r	The presence of the compound is suspect based on the ID criteria of the retention time and relative retention time obtained from the examination of the chromatograms.
s	Potential false positive value based on statistical analysis of blank sample data.
U	Not detected.
*	Esimated value, QA/QC criteria not met.
**	Unusable value, QA/QC criteria not met.

5/24/88 called F Paine - told him I would be bringing Capt Lydman (Reserve training) to his job Thursday for 2 weeks primarily to monitor safety. Fred said he would like Pay Est 6/1 - they got check on 5/21 for last pay est

5/31/88 @ site - (K) excavating @ Tank C-3 found more contaminated soil stopped digging - Found 2 pipes between tanks C-2 & C-3 not on plan. Paine signed Mod 00003 (paving in disposal area). Fred says there is more liquid in tanks than specified, told him we would investigate. PM Paine called to say they had accidently ruptured pipe between tanks w/ backhoe. Asked (K) to update his QC plan.

6/1/88 @ site - Examined pipe that was holed by backhoe - pipe is spiral welded w/ two insulated pipes inside, approx 4'+ below grade. Appears to be steam heating supply to silo area from composite bldg. There are two of the large spiral weld pipes. Took sample of insulation from inside. Told (K) to close rupture with a concrete patch. Fred Paine signed Pay Est No 2.

6/2/88 Discussed buried pipe w/ Rossow & Woodruff - it was decided to leave in place will be buried after tanks are removed. Capt Lydman & (K) measured levels of fluids in all underground tanks.

6/3/88 Talked to Frank Hyde (trucker from Pickford 647-9874) - he is satisfied that he will be paid.

6/6/88 1200 F Paine - Told him he had to his fire truck back on-site; I would be out this week to investigate tank sizes - end of week OK by him

6/8/88 Took Bud O'Leary to site - He and I probed w/ 1/4" rods to get physical size of underground tanks. Changes from specs result in increased liquid quantities. Told F Paine we will have to negotiate a Mod.

6/10/88 Asked Bill LaFleur how he arrived @ $64,120 for Item 36 Removal & Disposal of tank Contents? He said he used 4,580/tank x 14 tanks! Size & contents vary drastically - some estimate! No help in pricing our Mod.

6/13/88 Bill Rossow says we need test results of tank contents before we can issue Request for Proposal to (K)

6/14/88 Fred Paine says waiting for analysis of samples could delay tank disposal. He has control of his lab as far as turnaround time

6/15/88 Referred Ken Fuce of Environmental Waste Control, Inc to F Paine as Fred is looking for more than one company to take tank contents.

6/21/88 to site - dismantling structual steel Composite Bldg & filling @ Silo area

6/23/88 Told F Paine we need ltr from his Home Office authorizing him to sign Mods, Pay Est, etc. per Sharon Lawrence in District

EXHIBIT 14

1420

11/18/88 F Paine – Told him: to have Project Sign removed; close-out package is going to Dist; he said contaminated soil went to Rudyard (Superior) landfill as per advice of MDNR. He had heard of 11/9 meeting in Lansing from Dave Mills wife.

11/21/88 Close-out package to District.
Rec'd copy of Sen Symms (Idaho) Congressional from Lou Park. Congressional was a result of Helen Chenowith (Krygowski) – similar allegations that D. Pape presented to County Commission.

11/22/88 0910 Discussed response to Sen Symms w/ Carl Woodruff
0945 Roger Jewel, USFS, they have Congressional also – sounds like same as ours. He asked about State approval for burying re-steel. Told him status of contaminated soil @ sites of underground tanks & sewage lagoon – that it is outside scope of work and lagoon was relatively low priority. Four monitoring wells are still in place. He said the alleged dead owl & coyote would only verify hazards existed prior to clean-up. Roger said he thought additional blacktop was to be removed (area adjacent to old bldg. site on hilltop & area @ easterly extension of entrance road). Told him that was not included in our contract (verified from design notes on drwgs. initialled by him). He asked if any funds were available – referred him to Carl Woodruff.
1040 Mark Petrie, MDNR Marquette called – they also have Congressional. Briefed him on asbestos & underground tank & contents removal, told him status of soil sample results. Mentioned we had videotape of job – he would like copy, told him that would be up to District.
1320 Fred Paine – He said no loose steel or metal was buried – he salvaged steel and allowed his employees to salvage copper & brass. He said he removed hydraulic hoist for salvage but it was inadvertently cut-up for scrap. Bldgs were cleaned during asbestos abatement opers – no oil or grease remained.

11/28/88 1030 Reviewed District's response to Congressional by phone w/ B. Rossow.

12/15/88 1540 F Paine called – His Omaha office has letter of 8 Dec w/ final Pay Est & signoff, but have not received check for $9,900 (Pay Est #5) yet. Told him I will find out reason for delay. They will not be signing Est #6 (Final) til they receive the $9,900 – I agreed w/ him.

12/16/88 Bill Rossow says Check for $9900 will be cut on 12/28 – 30 days after notification of work done. Nuts!
1505 Called & left message for F Paine that check will be cut 12/28 per District.

12/16/88 1555 Rossow called to say check is in the mail!
1520 Called F Paine told him their company should have check next week.

EXHIBIT 15

[illegible]8/88 site visit - Fertilizing one month after seeding had been done. Grass is evident in both silo areas but hard to find on other areas.

10/11/88 Two ladies from TRICOP met w/ HJL & RJP - they asked disposition of materials from job - told them: petroleum products went west; contaminated H_2O went to Soo sewage system; asbestos went to Dafter; steel was scraped & struct steel is in Superior WI; bldg debris including roofing, painted block & contaminated soils went to Dafter & Rudyard type II landfills; and tanks went to Norris Contr. Also, that all was in conformance w/ specs & regs. They asked for written verification - told them that would require written request to District

10/12/88 Pete Olilla, MDNR Lansing called - wanted status & briefing, told him job was substantially complete 8/23; determination of soils @ tanks to be made by Dist; only 3rd month fertilizing remains.

10/13/88 Read article in Evening News of Oct 12th to Rossow & telecopied to him. Article reported on County Commission meeting of 10/10. Apparently TRICOP had been on agenda to discuss Reid (Dafter) Landfill and Dennis Pape (Krygowski) got in w/ them and stirred up RACO demolition to the Commission.
Went to site - grass is about the same as on 9/28 but snow has covered most of it. Stopped @ Dave Mills sod farm - grass he planted after Raco is up and has a good stand - he can grow grass if allowed to control it.

10/28/88 Tried to call F Paine - he will call next week

10/31/88 Telecopied Eve News article of 10/28 to District. Article was of TRICOP meeting of 10/27 (Cindy Ojala says article was incorrect - most of it must have been from Pape meeting w/ reporter after the meeting)
AM Talked to Roger Jewel USFS - He says to go ahead and apply the 3rd month fertilizing even if it is on snow. "Dont be concerned w/ the grass", they are condident that they will end up w/ what they want even if it is by natural seeding from adjacent vegetation next spring.
1130 F Paine - He will call his lab (TMA) for status of 10 samples shipped 9/11/88, also, find out which sample was split and sent to ORD. Told him to plan on applying 3rd month fertilizing in Nov even if there is snow on the ground

11/1/88 AM Rossow called to verify information as there is a meeting @ 2 PM w/ Col Glass to brief him on Raco & discuss Eve News articles. (LTC Johnson is retiring 11/18 & Col Glass will be successor CO)
1100 F Paine - He talked to TMA lab - they have internal problems, they said the girl handling Raco samples quit ∴ it "fell thru the cracks" and Fred wasn't notified that Samples C-2, N-5, & S-2 arrived "broken in shipment". Phone results are: (3 ft deep samples) C-1 = 647 mg/Kg; S-1 = 256; N-1 = 334; N-2 = 174; N-3 = 411; N-4 = 383; & N-6 = 588 mg/Kg

EXHIBIT 16

CONVERSATION RECORD

TIME: 2:45PM
DATE: 24 Jun 88

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☒ OUTGOING

ROUTING

NAME/SYMBOL	INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: R. Pearce

ORGANIZATION (Office, dept., bureau, etc.): SAO

TELEPHONE NO.: 906 632-7311

SUBJECT: RACO – Fuel Tanks Actual/Field Quantities

SUMMARY

Called Ron Pearce to inquire on latest info re buried tank contents at RACO. Ron indicated that Contract Doc's indicated 128,655 gallons of liq to be handled. Actually found 147,125 gal after tanks uncovered. Distribution is as follows:

	Contaminated Water	Other than Contam. H2O	Total
Per Contract Docs	125,090 gal	3,565 gal	128,655 gal
Actually Found	103,130 gal	43,995 gal	147,125 gal
Change (+/-)	-21,960 gal	+40,430 gal	+18,470 gal

Preliminary Cost info indicates will be \$0.40/gal to dispose + Trucking + load charges of ≈\$500/trip + Removal Cost. Can Run 4000-5500 gal/load. $0.40 \times 40{,}430 + \frac{40{,}430}{4000} \times 500 \approx \$22{,}000$ + Removal Costs which are not determined as yet. Contractor is still negotiating w/Sub's.

- Ron is sending a copy of his summary sheet on tank sizes + contents as det'd in field.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE: Carl L. Woodruff

DATE: 24 Jun 88

ACTION TAKEN

SIGNATURE | TITLE | DATE

EXHIBIT 17

AMENDMENT OF SOLICITA ON/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAG 3

2. ~~AMENDMENT~~/MODIFICATION NO.: P00004

3. EFFECTIVE DATE:

4. REQUISITION/PURCHASE REQ. NO.:

5. PROJECT NO. (If applicable): Demolition - Raco,

6. ISSUED BY CODE

. S. Army Corps of Engineers, Detroit
P. O. Box 1027
Detroit, Michigan 48231

7. ADMINISTERED BY (If other than Item 6) CODE

Same as issuing office

ORIGINAL

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

Anderson Excavating & Wrecking Company
1824 South 20th Street
Omaha, Nebraska 68108

(√) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

X 10A. MODIFICATION OF CONTRACT/ORDER NO.: DACA35-87-C-0001

10B. DATED (SEE ITEM 13): 11 September 1987

CODE | FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _______ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

2172020 08-7607 P788008.2200 3200 S11114 (OE 70752600 82004) $97,805.00 INCREASE

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)	
X	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. Contract Clause 59 "CHANGES"
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 2 copies to the issuing office.

14. DESCRIPTION OF ~~AMENDMENT~~/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

It has been determined that in view of the necessity to provide for removing and disposing of an increased quantity of petroleum products, a decreased quantity of contaminated water, and for increased tank cleaning, it is in the best interest of the Government to modify the contract as follows:

(continued on next page)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

Fred L. Paine
General Superintendent

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

Philip P. Johnson, Jr.
LTC, Corps of Engineers
Contracting Officer

15B. CONTRACTOR/OFFEROR

(Signature of person authorized to sign)

15C. DATE SIGNED: 2 Aug 88

16B. UNITED STATES OF AMERICA

BY

(Signature of Contracting Officer)

16C. DATE SIGNED: 88 Aug 5

EXHIBIT 18

Contract No. DACA35-87-C-0001
Modification No. P00004 (FC-01.03)

Block 14 (continued)

Changes to the Bid Schedule:
The following Bid Items are REVISED as follows:

Item No.	Description	Qty	Unit	EXISTING Estimated Amount	REVISED Estimated Amount
3.	14 Underground Tanks				
b.	Removal and Disposal of Tank Contents	1	Job	$6,000.00	$103,805.00

Changes to the Specifications:

Section 2B, Table I, "Underground Fuel Tank Data" is REVISED as follows:

	EXISTING			REVISED		
Tank ID	Dia. Ft.	Volume Gal.	Comments	Dia. Ft.	Volume Gal.	Comments
Missile Complex						
P-1a			See Note 5 below.	1.67	65	Contains approx. 65 gal of apparent mineral spirits.
C-1	10.5	47,250	Contains approx. 1750 gal fuel oil sludge.	10.5	47,250	Contains approx. 15,200 gal fuel oil sludge.
C-2	10.5	47,250	Contains approx. 1750 gal fuel oil sludge.	10.5	47,250	Contains approx. 16,250 gal fuel oil sludge.
C-3	10.5	20,000	Contains approx. 90 gal two phase fuel water mixture. Upper phase flash point is 160 degrees F. TOC = 750 mg/l.	10.5	20,000	Contains approx. 130 gal two phase fuel water mixture. Upper phase flash is 160 degrees F. TOC = 750 mg/l.
C-4	8	12,000	Not sampled. Contains approx. 1000 gal fuel-contaminated water.	6	5,000	Contains approx. 630 gal fuel-contaminated water.
B-1	5.3	2,000	Full. Two phases visible when sampled. TOC = 260 mg/l.	5.3	1,000	Full. Two phases visible when sampled. TOC = 260 mg/l.

Fuel Depot

1S	10.5	20,000	Full. TOC = 30 mg/l	10.5	25,000	Full. TOC = 30 mg/l
2S	10.5	20,000	Full. TOC = 9 mg/l	10.5	25,000	Full. Top 7" (approx. 530 gal) is petroleum product. TOC = 9 mg/l
1N	10.5	20,000	Insufficient quantity for sample.	10.5	25,000	Contains approx. 11,950 gal of gasoline products.
2N	10.5	20,000	Insufficient quantity for sample.	10.5	25,000	Insufficient quantity for sample.
3N	12	25,000	Full. TOC = 8 mg/l	12	15,000	Contains approx. 10,300 gal TOC = 8 mg/l
4N	12	25,000	Full. TOC = 6 mg/l	12	15,000	Full. TOC = 6 mg/l
5N	8	12,000	Full. TOC = 4 mg/l	8	10,000	Contains approx. 9,600 gal TOC = 4 mg/l
6N	10.5	20,000	Full. TOC = 8 mg/l	10	17,000	Full. TOC = 8 mg/l

It is understood and agreed that, pursuant to the above, the time for completion of all work remains UNCHANGED and the estimated total contract amount is INCREASED $97,805.00 from $443,200.00, as established by the basic contract, to $541,005.00.

It is further understood and agreed that this modification constitutes compensation in full on behalf of the contractor and its subcontractors and suppliers for all costs and markups directly or indirectly attributable to the changes ordered herein, for all delays related thereto, and for performance of the changes within the time stated.

CONVERSATION RECORD

TIME: 10 AM

DATE: 15 NOV. 1988

TYPE: ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
MR. RON PIERCE	SOO AREA OFFICE	(906) 632-3311

SUBJECT: WHERE DID THE CONTAMINATED WASTE GO FROM, RACO SITE?

SUMMARY

MR. PIERCE SHARED THE FOLLOWING INFORMATION WITH ME:

1. THE MAJORITY OF RACO'S CONTAMINATION WENT TO DAFTER SANITARY LANDFILL, BOX 51 ROUTE 1, DAFTER, MI, located in Chippawa County 10 miles S. of Soo Ste Marie.
   a) Dafter recieved:
   Asbestos, painted concrete blocks and 599 cy yds of contaminated soil.

2. THE remaining matterial (amount not known as of yet) went to Rudyard landfill, 15 miles South of Dafter, because Dafter was raising there prices.

page 1

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE

ACTION TAKEN

SIGNATURE	TITLE	DATE

EXHIBIT 19

2/3

CONVERSATION RECORD

TIME	DATE

TYPE ☐ VISIT ☐ CONFERENCE ☐ TELEPHONE ☐ INCOMING ☐ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:

SUBJECT RACO site continued.

SUMMARY

3. The City of Soo Ste Marie, sewage plant recieved all of the contaminated water (1,000 gallons) on RACO's site

4. ALL of the petroleum contaminated products were trucked by; Maki Trucking from Hancock, MI. and Deans Trucking from a suburb of Superior WI. to Lake Nebagamon Wis. Where Johnson Oil Company disposed of the waste.

a) The waste consisted of: 31,500 gallons of tar like residue for steam plant fuel called No. 6 or bunker C. Also 11,000 gallons of contaminated gasoline, and the fuel found within 14 of the underground fuel storage tanks.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE

ACTION TAKEN

SIGNATURE	TITLE	DATE

50271-101 ✩U.S. G.P.O. 1983-424-378 CONVERSATION RECORD OPTIONAL FORM 271 (12-76) DEPARTMENT OF DEFENSE

3/3

CONVERSATION RECORD

TIME | DATE

TYPE
☐ VISIT ☐ CONFERENCE ☐ TELEPHONE
☐ INCOMING
☐ OUTGOING

Location of Visit/Conference:

ROUTING	
NAME/SYMBOL	INT

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU | ORGANIZATION (Office, dept., bureau, etc.) | TELEPHONE NO.

SUBJECT

SUMMARY

5. Mr. Pierse said that 147,000 gallons of contaminated liquids were removed from RACO. This is including the contaminated water.

6. Mr Pierse also said that he was aware that there was a Congressional request about RACO's cleanup with the EPA and the U.S. fish and wildlife.

7. Modification 4 from contract DACA35-C-87-000 has the tabulated results of the contaminated material removed. Attached to this sheet

page 3

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION: MR. RICH SALLAUS
SIGNATURE: Richard Sallaus
DATE: 15 NOV, 1988

ACTION TAKEN

SIGNATURE | TITLE | DATE

MAKI OIL COMPANY

54599

P.O. Box 115
Hancock, MI 49930
482-2810

P.O. Box 165
L'Anse, MI 49946
524-6494

Date 8-11 1988

Sold to Fred Payne; To Johnson Oil Co.
Address FOR Anderson Construction

Gasoline not sold for illuminating purposes. TERMS:

PRICES AND EXTENSIONS SUB. TO CORRECTION	QUANTITY	PRICE	EXTENSION
~~REGULAR GASOLINE~~ Load from RACO Missle			
~~PREMIUM GASOLINE~~		Site	
KEROSENE			
DIESEL FUEL			
NO. 1 FUEL OIL			
NO. 2 FUEL OIL			
NO 6 Fuel	1 Truck Load		
	Aprox 5800 GAL		
[redacted]			
Under U.S. Army Corp of Engineers			
Truck Detention Time			200.00

REC'D ON ACCT $

The undersigned hereby certifies that the property covered by this invoice is purchased for consumption or use in Agriculture production or Industrial Processing.

Fed. Tax	Gals. @ .04	
Mich. Sales Tax	4%	
Mich. Gas Tax	Gals. .11	
	TOTAL	

Signed

Purchaser Fred Payne

By

Delivered by Greg Johnson

MAKI OIL COMPANY

65518

P.O. Box 115
Hancock, MI 49930
482-2810

P.O. Box 165
L'Anse, MI 49946
524-6494

Date 8/12/88

Sold to Fred Payne
Address Anderson Excavating

Gasoline not sold for illuminating purposes. TERMS:

PRICES AND EXTENSIONS SUB. TO CORRECTION	QUANTITY	PRICE	EXTENSION
REGULAR GASOLINE			
PREMIUM GASOLINE			
KEROSENE			
DIESEL FUEL			
NO. 1 FUEL OIL			
NO. 2 FUEL OIL			
8/11/88	8500		
8/12/88	4200		
Delivered to Johnson Oil Co.			
Lake Nebagamon, Wis.			

REC'D ON ACCT $

The undersigned hereby certifies that the property covered by this invoice is purchased for consumption or use in Agriculture production or Industrial Processing

Fed. Tax Gas Gals.	@ .09	
Fed. Tax Diesel Gals.	@ .15	
Mich. Sales Tax	4%	
Mich. Gas Tax Gals.	@ .15	
	TOTAL	

Signed

Purchaser

By

Delivered by [illegible signature]

5800
8500
4200
6000
7000
31500 gal

Est Oil 31450 gal. Hvy Residual Fuel

To MAP Date 8/12/88 Time 11:03

WHILE YOU WERE OUT

M RON PEARCE of CORPS OF ENGINEER

- [x] Phoned you
- [x] Asks that you phone

Tel. No. 632-3311 ext 1279

- [ ] Will call back
- [ ] Returned your call
- [ ] Wants to see you
- [ ] Called on you
- [ ] Wants an appointment

on

Message RE: RACO Missile Site. Starting to remove tanks (w/petroleum) next week. The transporter will be Wayne Transport Disposal. If questions, call him.

O-1170 REV 3-7

Signed

EXHIBIT 21

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE Aug 3 88 REPORT NO. 83

CONTRACTOR Anderson Exav. CONTRACT NO. DACA 35-87-6-0001

PROJECT NAME Rec missile site LOCATION Raco Mich

WEATHER: TYPE clear TEMP. MAX 95 MIN 68 RAINFALL No GAGE READING

EMPLOYEES: SUPV. 1 SKILLED 1 LABORERS 3 LENGTH OF SHIFT HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine

b. Emett McNall

c. Tom Mervyotan

d. Nauman [illegible]

e. Mark [illegible]

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

cut steel E

Exav Tanks Fuel Depo. B

Trucked saw dust C & D

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

EXHIBIT 22

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 84

DATE 7-4-88

CONTRACTOR Anderson Bros

CONTRACT NO. DACA 75-87-C-0001

PROJECT NAME Nova missle site

LOCATION Race ...

WEATHER: TYPE clear TEMP. MAX 80 MIN 65 RAINFALL ______ GAGE READING ______

EMPLOYEES: SUPV. / SKILLED / LABORERS 3 LENGTH OF SHIFT 10 HRS

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. First Point

b. Emett Mitchell

c. Tom Morningstar

d. Norm Scullano

e. Mark Trombley

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

Removed N6,-N5-N4-N3 A-B-E

Tested soil above A+D

Hauled Fill From Borrow N2 To Fuel Pipe d.E

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 8-5-85 REPORT NO. 85

CONTRACTOR Anderson [illegible] CONTRACT NO. DACA 35 [illegible]

PROJECT NAME [illegible] LOCATION [illegible]

WEATHER: TYPE [illegible] TEMP. MAX 85 MIN 60 RAINFALL .5 GAGE READING ____

EMPLOYEES: SUPV. 1 SKILLED 1 LABORERS 3 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine
b. Emitt McNall
c. Tom Morningstar
d. Norm Sullivan
e. Mark Trembley

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

Hauled Top soil to maitenance Building B-C-D
cut Tank B1-e
Back Filled C-3 -C-4 B-1 N-6, N-5 N-4 N-3 -B

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 6-20 REPORT NO. 58

CONTRACTOR Anderson Excavating & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Rec Mich.

WEATHER: TYPE Clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 3 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine F. Bill Hartshorn H Rick Demove

b. Kirk Betts G. Mike Dinkel

c. Emmett McNall + ~~Tom Morningstar~~

d. Dave Ondrosky h Jim Traynor

e. Norm Soulliere I Mark Trombley

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantle Beams, Trusses Comp. Building, - d, F. G. A, I, H
2. Truck fill from Borrow pit to silo area, - c, e
3. haul fill from borrow pit to silo area, H

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

EXHIBIT 23

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

21-88 REPORT NO. 59

CTOR Anderson Ex + Wrecking Co CONTRACT NO. DACA 35-87-C-001

ECT NAME Dem Air Force & Missile Site LOCATION Raco Mich

ATHER: TYPE clear TEMP. MAX 80s MIN 50s RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 3 LABORERS 5 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine 7 Mike Dinkel

b. Kirk Bolts 6 Norm Saulsora Rick Demoure - K

c. Dave Andrzosky H. Tom Moringstar

d. Bill Hartshorn $ Jim Traynor

e. Emmett McNall I Mark Tremblay

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantle, Beams Trusses Comp Bldg - c, d, 7 I

2. Loaded Trucks w/fill from borrow pit = e

3 Trucked fill " " = H - 6 - K

4 hauled " " = F.

Rick Demoure Seemed Home, Hand Injury In Pain.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 60

...2-88

...TOR Anderson Ex + Wrecking Co CONTRACT NO. DACA-35-87-C-0001

...CT NAME Dow Air Force + Missile Site LOCATION Waco Mich

...ATHER: TYPE Clear TEMP. MAX 80s MIN 50s RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 7 LABORERS 5 LENGTH OF SHIFT ______ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Vains f. Tom Mckingstar

b. Dave Androsky g. Jim Traynor

c. Bill Hartshorn h. Mark Tremblay

d. Emmett McNall

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantled Beams + Trusses = B, C, h.
2. Loaded Trucks from borrow pit to silo area = d
3 Trucked fill " " = f, e
4 hauled " " = g

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

6-23-88 REPORT NO. 61

TRACTOR Anderson Ex & Wrecking Co CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Dow Air Force & Missile Site LOCATION Bangor Maine

WEATHER: TYPE Clear TEMP. MAX 60 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Tom Morningstar

b. Dave Condrocky g Jim Traynor

c. Bill Hartshorn h Mark Tremblay

d. Emmett McFall

e. Norm Soulbaire

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. Dismantled Beams & trusses Comp Bldg. = b, c, h, e
2. loaded truck from borrow pit./silo area, = d.
3 Trucked fill " " = f.
4 hauled fill " " = g.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 62

...88

...Anderson Ex + Wrecking CONTRACTOR NO. DACA-35-87-C-0001

...NAME Demo Air force & Missile Site LOCATION Raco Mich

...ER: TYPE clean TEMP. MAX 80s MIN 50 RAINFALL 0 GAGE READING 0

...PLOYEES: SUPV. 1 SKILLED 3 LABORERS 4 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Prins — 7 Tom Moringster

b. Dave Androsky — 6 Jim Traynor

c. Bill Hartshorn — h Mark Tremblay

d. Emmett McNall

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1 dismantle Beam + Trusses Comp. Building = b, c, h, e,

2 loaded Truck from borrow pit. to Silo area, = d

3 ~~Hauled~~ loaded fill " " = 7

4 hauled fill " " = 9

5 hauled saw dust to Silo Area - e

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 63

Anderson Ex + Wrecking Co. CONTRACT NO. DACA 55-87-C-0001

NAME Pem Air Force + Missile Site LOCATION Raco Mich

R: TYPE clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

LOYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Tom Morningstar

b. Dave Andrusky g Jim Traynor

c. Bill Hartshorn h Mark Tremblay

d. Emmett McNull

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beams from Camp Building · b, c, h,
2. loaded Truck from borrow pit To silo area, d
3. Trucked fill " " a + f
4. hauled fill " " g

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 64

DATE 6-29-88

CONTRACTOR Anderson Ex. & Wrecking Co CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Remo Air Force Missile Site LOCATION Raco Mich.

WEATHER: TYPE clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine — Tom Moringstar
b. Dave Andrecky — Jim Traynor
c. Bill Hartshon — Mark Tremblay
d. Emmett McNall
e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beam from Com Building = b.c,h
2. loaded Trucks from borrow pit to silo area = d
3 Trucked fill " " = e f,
4 hauled fill " " = g
cracked composit Building Floor - A

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

6-30-88 REPORT NO. 65-

[CON]TRACTOR Anderson Ex. & Wrecking CONTRACT NO. DACA 35-87-C-0001

[P]ROJECT NAME Wurtsmith Air Force 4 Missile Site LOCATION Rais Mich

WEATHER: TYPE clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 2 LABORERS 4 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Tom Mokingstuk

b. Dave Andersky g Jim Traynor

c. Bill Hartsock h Mark Fleminley

d. Emmott Mulkill

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. dismantled Beams from Comp. Building, b, c, e, h,
2. loaded Trucks from borrow pit to site area - d
3. Trucked fill " f, g, 7
4. hauled fill " f, g, 9
5. demolished slabs & Vault & cistern - Pulled Pipes
5. mixed saw dust & dirt
6. spread Fertilizer site area.
7. compacted cistern with wrecking ball.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

7-5-88 REPORT NO. 66

...NTRACTOR Anderson Ex & Wrecking Co. CONTRACT NO. DACA 85-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Raco Mich.

WEATHER: TYPE Clear TEMP. MAX 88 MIN 62 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 4 LABORERS 1 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f. Jim Traynor ✓

b. [redacted] g. Mark Tremblay

c. Emmett McNalt h. Dennis Krivinchuk.

d. NORM Southoer

e. Tom Moringstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1 dismantled Beams from Comp Building. = g

2, WORK on Loader c, d.

3, loaded Trucks from borrow pit to site area, = e

4. Trucked fill " " = d

5. hauled fill " " = f

paperwork = H.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

-6-88

REPORT NO. 67

ACTOR Anderson Ex + Wrecking Co CONTRACT NO. DACA-35-82-C-0001

ECT NAME Demo Air Force & Missile Site LOCATION Raco Mich

ATHER: TYPE Clear TEMP. MAX 90 MIN 60 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 4 LABORERS 3 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f. Jim Traynor

b. Dennis Kruwmchuk g. Mark Tremblay

c. Dave Androsky h. Tom Moringstar

d. Emmett McNall I. Gary Rott.

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beams from comp building, = I. g, C.
2. Loaded Beam on truck, = c & g,
3. Loaded Trucks from borrow pit to silo area, = d
4. Truck fill " " = e & I
5. Paper work & parts, = b

C. Fertilized

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE: Fred Paine & Ron Pearce met and discusses removal of oil contents & removal of tanks,

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

7-7-88 REPORT NO. 68

NTRACTOR Anderson Ex + Wrecking Co. CONTRACT NO. DACA35-87-C-0001

PROJECT NAME Demo Air Force & missile Site LOCATION Roco Mich

WEATHER: TYPE Clear TEMP. MAX 95 MIN 65 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. ______ SKILLED ______ LABORERS ______ LENGTH OF SHIFT ______ HR ______

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine   7 Jim Truyman

b. Dennis Krivinchuk   g Mark Tremblay

c. Dave Androsky   h Gray Kott

d. Norm Soulliere

e. Tom Morningstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beams from Comp. = c, g, h.
2. loaded Trucks from borrow pit to silo area, e,
3. Truck fill " " " , d
4 leveled dirt in silo area, = 7 "
5 paper work & parts - b

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 7-14-88 REPORT NO. 71

CONTRACTOR Anderson EX + Wrecking Co CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force + Missile Site LOCATION Raco MI

WEATHER: TYPE Clear TEMP. MAX 80 MIN 59 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 2 LABORERS 4 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Dave Andrasky
b. Dennis Krivinchuk g Norm Soulliere
c. Emmett McNull h Mark Tremblay
d. Jim Traynor
e. Tom Morningstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. dismantled beams from comp building, 5, leveled dirt around silo + maint building = C
2, loaded Trucks from borrow pit to silo area = HL & maintenance building area, = d
3, Trucked fill from borrow pit to silo + maint, Building area = c
4 a load of tin went out -
5. took sample of soil under Tank C-4 = b

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

RESULTS OF SURVEILLANCE CONTINUED:

TEST PERFORMED: TYPE, LOCATION, RESULTS including failures & Remedial Action, (Attach copy of test report or notation when it will be furnished.)

WORK ITEMS BEHIND SCHEDULE: Reason, Effect on Progress Schedule and Actions Taken.

JOB SAFETY: (Report conditions, Deficiencies, corrective Action & Results)

Safety meeting about 10mins.
safety on backing up & looking for men working in the area, hand signals

REMARKS: List attachments and other Management Actions Taken to Assure Quality Construction

IF INSPECTIONS & RESULTS ARE NOT LISTED THEN IT IS ASSUMED THAT QUALITY CONTROL IS NOT BEING IMPLEMENTED.

The above report is complete and correct and all materials & supplies incorporated in the work are in compliance with the terms of the contract except as noted:

Dennis Kriwinchuk

CONTRACTOR'S APPROVED REPRESENTATIVE SIGNATURE

CENCE-CO-C
ROSSOW/66819
18 MAY 88

Demolition of Existing Structures
Former Air Force and Missile Site
Raco, Michigan DACA35-87-C-0001

Status as of 18 May 1988
(Per Ron Pearce)

1. The asbestos abatement portion of the contract was completed on 6 May 1988. As of that date all asbestos had been removed from the project and properly disposed of at a State of Michigan licensed landfill.

2. Twenty six of twenty eight missile silos have been filled and the required concrete caps placed. The two remaining silos (2 ; 10) require testing and removal of the contaminated water prior to being filled and capped. Currently waiting for test results.

3. The concrete block has been stripped from the small Assembly Building. The roofing material has also been removed, however, the structural portion remains.

4. The concrete block, with the exception of the boiler room walls, has been stripped from the large Composite Building. Rest of building is intact.

EXHIBIT 24

5. Underground Tanks

a. Tank P-1a : Tank contents, appears to be mineral spirits, have been pumped into a barrel for disposal. The physical tank, a 20" diameter by 48" long buried drum, has been removed.

b. Tank B-1 : Excavation was started for tank removal. Unexpected contaminated soil was found and is currently being removed. Tank is full of water and is being tested with respect to local requirements.

c. Tanks C-1, C-2 and C-3 : Currently stripping contaminated soil from top in one foot layers and will continue until all contaminated soil is removed

d. Tanks C-2 and C-4 : Contractor has taken sample of contents for QC/QA testing (for duplicate and split samples). Testing for PCB. Need results prior to pulling tanks.

6. Concrete Pad : Have removed three feet of contaminated soil per contract requirements. Status of remaining soil has not been determined. The contaminated soil has been stockpiled on site and will be disposed of in a type 2 landfill.

11? [illegible]

Substance		Disposal Site
Asbestos, All Block Contaminated Soil Silo Debris Roofing	Majority 775%	Reeds Dafter Sanitary Landfill Route 1 Old US 2 Dafter, MI 49742 3 Miles South of Dafter 1/4 Mile West of old US 2 State of Mich Class 2 Licensed Landfill
Some, except asbestos, went	Minority	Rudyard Superior Landfill may eventually be utilized in lieu of Dafter
Tank Contents a. Water, contaminated w/ petroleum products		St Ste Marie local sewerage plant
b. Mineral spirits *portroleum hydrocarbons		Lake Nebagamon, WI to Johnson Oil
c. PCB		CN does not provide for.

* licensed carriers, don't need to track.

7. Anticipate $\underline{I}$ will reach substantial completion (except for fill, topsoil and seeding) by the end of June 1988. Currently $\underline{I}$ is way ahead of schedule. Only weak point in the June date is the required testing of soil following tank removal and prior to backfill.

/88 Bill Rossow called me @ home - said only $30K is available now, he will call NCD @ 0900 tomorrow.

8/5/88 AM F Paine called to find out status of Mod 4 - he said he is out of efficient work until NTP on Mod 4. He has trucker lined up to take fuel & tanks away but doesn't want to mobilize twice. He removed four tanks @ depot yesterday and double sampled (one below tank & one 3 ft deeper) Tanks N-3, N-4, N-5 & N-6 - No evidence of contamination, mailed upper samples to his lab.

1130 B. Rossow says $105,000 has been made available, it should be in the District this PM.

1135 F Paine - he is going to Superior WI., plans to bring tank truck back for transferring fuel. Told him to call me @ home re status of Mod.

1305 Bill Rossow - District has $105,000; Mod 4 may be signed this PM - he will call me @ home when signed (I'll be on A/L)

1515 Rossow called me @ home "Mod will be signed in 10 minutes"

Fred Paine called me @ home - Told him Mod should be signed today, he is going to stay @ Superior WI Monday, back to job Tuesday.

8/8/88 0845 Called F Paine in Superior WI - Told him I had telecopy of Mod signed by C.O. which is equivalent to NTP - official copy being sent to (K) Omaha office for signature. He said "good - we'll get a lot of work done this week". He plans on hauling contaminated H_2O & maybe petroleum products.

8/9/88 Bill Rossow says CO signed front page of Mod 4 that had been signed by (K) therefore copy not going to Omaha for signature.

Fred Paine called me @ home - conflict in specs on #seed/acre

8/10/88 Discussion w/ B. Rossow - we will use seed proportion in ¶4.1 and rate in ¶6.2.1 of 2D.

Met w/ F. Paine & Dave Mills (landscaper) - clarified conflict in specs on proportioning seed.

Tried to contact Mark Petrie, MDNR Marquette - not in

(K) has 4 tanks left to remove after hauling contaminated H_2O & Petroleum products this week & next

8/15/88 0820 F Paine - Will complete hauling all tank contents today, he worked on residual type fuels all weekend w/ steam & air. Haulers of liquids were Wayne Transport of Ingergrove Hts, MN & Maki Oil Co of L'Anse, MI. Norris Contracting of Soo may take out largest tanks. Fertilizing & stockpiling mulch.

8/16/88 Told F Paine to place stakes marking former locations of tanks, also, I need copies of certificates, tanker load tickets, sample analysis, etc

EXHIBIT 25

the tanks. Disposal of the tank contents shall be as specified under Paragraph 2B-9, "DISPOSITION OF MATERIALS," Subparagraph 2B-9.3, "Unsalvageable Materials."

8.4.6 Removal of Tanks. The underground tanks and connecting piping shall be excavated and removed, rinsed and cleaned, as required for acceptance at the selected licensed disposal location. The Contractor shall be responsible for immediately notifying the Government of any contaminated soils and/or groundwater which may be encountered in the removal and disposal of the underground storage tanks. Preliminary tests conducted by the Government indicate that the soils surrounding the storage tanks have not been contaminated except as indicated on the drawings. It is the Contractor's responsibility to confirm these findings and insure that no contamination has taken place as a result of the Contractor's demolition, removal and transportation activities. Excavation, backfilling and filling operations required for removal of tanks shall be in accordance with SECTION 2C, "EXCAVATION, BACKFILLING, FILLING AND GRADING."

8.4.6.1 Sampling and Testing Soil. Prior to backfilling and filling excavations the bottom of the tank excavations shall be sampled. The Contractor shall obtain one (1) set per tank of split samples of the soils in the presence of the Contracting Officer. Sampling and analysis of soils shall be done in accordance with the requirements and procedures contained in the SSQMP and CQCP as discussed in SECTION 1G, "SITE SPECIFIC QUALITY MANAGEMENT PLAN (SSQMP)." Contractor shall immediately notify the Contracting Officer if the tests show that leakage of the tanks has occurred. Contractor shall be responsible for the security of the open excavations. The excavations may not be backfilled and filled until approved by the Contracting Officer.

8.4.7 Removal of Contaminated Soil.

8.4.7.1 Contractor's Responsibility. Soils that are contaminated by the Contractor's operations, as determined by the Contracting Officer, shall be removed, disposed of and new soil provided and placed by the Contractor, at his expense. Disposal of the contaminated soil shall be under Paragraph 9, "DISPOSITION OF MATERIALS." Placement of new soil shall be in accordance with applicable provisions of SECTION 2C, "EXCAVATION, BACKFILLING, FILLING AND GRADING."

8.4.7.2 Government's Responsibility. As specified hereinbefore, existing soil under existing tanks, after removal of tanks, shall be sampled and tested for contamination by leakage from tanks. Samples shall be obtained by the Contractor from the bottom surface of the excavation and at a depth of three (3) feet below the bottom surface. If it is found that soils have been contaminated from leakage of a tank(s) such soils, as directed by the Contracting Officer, shall be removed, disposed of and new soil provided and placed in its place. All costs for the removal and disposal of existing soils and providing and placing new soils, due to leakage of a tank(s) will be paid for in accordance with applicable CONTRACT CLAUSES. New soil required shall be provided and placed in accordance with applicable provisions of SECTION 2C, "EXCAVATION, BACKFILLING, FILLING AND GRADING."

EXHIBIT 26

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 8-10-88 REPORT NO. 88

CONTRACTOR Anderson Excav & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force & Missile Site LOCATION Rac Mt

WEATHER: TYPE ______ TEMP. MAX ______ MIN ______ RAINFALL ______ GAGE READING ______

EMPLOYEES: SUPV. ______ SKILLED ______ LABORERS ______ LENGTH OF SHIFT ______ HR ______

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine Supv F Mark Tremblay Laborer

b. Dave Androsky Laborer G Norm Soulliere Truck Driver

c. Kirk Botts QC H Thomas Morningstar Truck Driver

d. Kim Sibley Laborer

e. Emmett McNall Operator

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Removed & Transported Night Watchman Trailer from Site C
2. Removed & Transported Fuel transfer truck D
3. Loaded Gas Maki Oil
4. Loaded Oil Maki Oil
5. Hauled Fill to Depot Site G, H
6. Cleaned Tanks - Fuel Depot B, F
7. Excavated Tanks E

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

EXHIBIT 27

RESULTS OF SURVEILLANCE CONTINUED:

TEST PERFORMED: TYPE, LOCATION, RESULTS including failures & Remedial Action, (Attach copy of test report or notation when it will be furnished.)

WORK ITEMS BEHIND SCHEDULE: Reason, Effect on Progress Schedule and Actions Taken.

JOB SAFETY: (Report conditions, Deficiencies, corrective Action & Results)

REMARKS: List attachments and other Management Actions Taken to Assure Quality Construction

IF INSPECTIONS & RESULTS ARE NOT LISTED THEN IT IS ASSUMED THAT QUALITY CONTROL IS NOT BEING IMPLEMENTED.

The above report is complete and correct and all materials & supplies incorporated in the work are in compliance with the terms of the contract except as noted:

Kirk Baltz

CONTRACTOR'S APPROVED REPRESENTATIVE SIGNATURE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 8-11-88 REPORT NO. 89

CONTRACTOR Andersen Excavating & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Raco MI

WEATHER: TYPE ______ TEMP. MAX ______ MIN ______ RAINFALL ______ GAGE READING ______

EMPLOYEES: SUPV. ______ SKILLED ______ LABORERS ______ LENGTH OF SHIFT ______ HR ______

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine Supv F. Norm Soulliere Truck Driver

b. Dave Andrusky Laborer G. Kirk Boots QC

c. Emmett McNall Operator

d. Thomas Morningstar Truck Driver

e. Mark Tremblay Laborer

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. Hauled Oil Maki Oil / Wayne Transport B
2. Excavated Tanks C
3. Cleaned Tanks E
4. Hauled Fill / Sand to Depot Site F D

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 5-12-88 REPORT NO. 90

CONTRACTOR Anderson Excavating & Wrecking CONTRACT NO. Area 35-87-C-0001

PROJECT NAME Demo Air Force & Missile Site LOCATION Raco MI

WEATHER: TYPE ____ TEMP. MAX ____ MIN ____ RAINFALL ____ GAGE READING ____

EMPLOYEES: SUPV. 1 SKILLED ____ LABORERS ____ LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine Supervisor

b. Kirk Bolts QC

c.

d.

e.

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Wayne Transport / Makioil on site

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 6-15-88 REPORT NO. 91

CONTRACTOR Anderson Excavating & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force & Missile Site LOCATION Raco MI

WEATHER: TYPE ____ TEMP. MAX ____ MIN ____ RAINFALL ____ GAGE READING ____

EMPLOYEES: SUPV. ____ SKILLED ____ LABORERS ____ LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine F. Dave Andrusky Laborer

b. Kim Sibley Laborer G. Norm Soulliere Truck Driver

c. Mark Tremblay Laborer H. Kirk Botts QC

d. Thomas Morningstar Truck Driver

e. Emmett McNall Operator

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Loaded Crane & Dismantled Boom / Hauled Lines Trk FBC

2. Mark oil No. 6 oil

3. Steam Cleaned No 6 Tanks B C

4. Hauled Filled to Depot site D, G

5. Excavated / Removed Tanks E

6. Norris Trucking Hauled tanks to scrap yd from Depot Site

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 8-16-88 REPORT NO. 92

CONTRACTOR Anderson Excavating & Wreck CONTRACT NO. DACA35-87-C-0021

PROJECT NAME Remo Air Force Missile Site LOCATION Kaco MI

WEATHER: TYPE ______ TEMP. MAX ______ MIN ______ RAINFALL ______ GAGE READING ______

EMPLOYEES: SUPV. ______ SKILLED ______ LABORERS ______ LENGTH OF SHIFT ______ HR ______

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. FRED PAINE SUPV f. Thomas Morningstar Laborer

b. EMMETT MCNALL OPERATOR g. Kim Sibley Laborer

c. MARK TREMBLAY LABORER h. KIRK BOLTS QC

d. DAVE ANDROSKY LABORER

e. Norm Soulliere ~~Truck~~ LABORER

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. NORRIS TRKING HAULED TANKS from Depot Site to Scrap yd
2. Cleaned tanks C D G
3. Burned Brush / General Cleanup ~~___~~ EF
4. Filled & GRADED Fuel Depot B
5. TESTED Soil (solids) E

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

9062935131

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: http://www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

MARQUETTE DISTRICT OFFICE
1990 US HIGHWAY 41 S
MARQUETTE MI 49855

Reports + File Doc.
Do a better job of cord
in future

December 19, 1996

Mr. Mike Geiger
U.S. Army Corps of Engineers
Detroit District
477 Michigan Avenue
Detroit, MI 48226

Dear Mr. Geiger:

SUBJECT: Former Raco Missile Site, UST Closure

The Michigan Department of Environmental Quality (MDEQ) reviewed the "Soil Probe Investigation and Closure Report for Former Raco Airfield and Bomarc Missile Site, Raco, Michigan" (the report) dated May 30, 1996. The report was submitted by BCM Engineers, Inc. on behalf of the U.S. Army Corps of Engineers (USACOE). The report outlines activities performed to investigate the extent of contamination from 14 underground storage tanks (USTs) removed from the Former Raco Missile site in 1988 as part of base demolition activities.

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Part 201 (Act 451, Part 201), MCL 324.20101 et seq. and its associated guidance, provides the requirements and procedures for remediation at sites of environmental contamination such as this one.

The MDEQ has determined that additional remedial work for the 14 USTs is not necessary, and that the UST portion of the site currently meets the requirements of a generic residential closure as described in Act 451, Part 201. This was determined by the installation of 113 soil borings and approximately 200 soil samples in and around the former UST locations. All sample results from the investigation by BCM showed contaminant levels below generic residential criteria.

EQP 0100e
(Rev. 10/95)

EXHIBIT 28

Y-60

In regard to the remainder of the site, the MDEQ still has concerns. Investigative work completed in 1996 and arranged through the Omaha District of the ACOE shows that lead (Pb) in the groundwater is present at a level that poses a human health risk. We will be addressing this issue in a separate letter to the Omaha District. For this reason, though, we cannot recommend removal of the Former Raco Missile site from the Act 451, Part 201 site list (formerly known as the 307 list).

The MDEQ is unable, also, to express any opinion as to whether the other portions of the site are clean or not, due to lack of information. We have no warranty or guarantee as to the fitness of this site for any general or specific use, and prospective purchasers or users of this site are advised to use due diligence in acquiring or using this site. The MDEQ reserves the right to require additional investigation or remedial action, pursuant to applicable regulations, should site conditions change or additional information become known or available.

We appreciate your willingness to resolve this incident, and your obvious concern for the environment. If you have any questions, or need further assistance, please contact Scott Schaefer at the MDEQ Newberry Field Office, Rte. 4, P.O. Box 796, Newberry, MI 49868, or at 906-293-5131.

Sincerely,

Clifton Clark

Clifton Clark
District Supervisor
Environmental Response Division
906-228-6561

cc: Mr. Jeffrey King, BCM Engineers, Inc.
Mr. Marvin Taylor, USACOE, Omaha
Ms. Carol Jorgensen, USFS, St. Ignace
Mr. Scott Schaefer, MDEQ, Newberry

District 4 - Newberry
...ment of Natural Resources
... 1996
RE...

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

[illegible]E 6-20 REPORT NO. 58

[illegible]NTRACTOR Anderson Excavating + Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Rco Mich.

WEATHER: TYPE Clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 3 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine F. Bill Hartshorn H Rick Demoure

b. Kirk Botts G. Mike Dinkel

c. Emmett McNall ~~+ Tom Morrington~~

d. Dave Condrosky h Jim Traynor

e. Morm Soullere I Mark Trombley

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantle Beams, Trusses Comp. Building, -d, F. G. ~~A~~, I, H
2. Truck fill from Borrow pit to silo area, - c, e
3. haul fill from borrow pit to silo area, H

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

EXHIBIT 29

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

81-88 REPORT NO. 59

CTOR Anderson Ex + Wrecking Co CONTRACT NO. DACA 35-87-C-001

ECT NAME Dam Air Force + Missile site LOCATION Raco Mich

ATHER: TYPE Clear TEMP. MAX 80s MIN 50s RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 3 LABORERS 5 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine 7 Mike Dinkel

b. Kirk Bolts 6 Norm Saulleora Rick Demoure - K

c. Dave Andrrosky H. Tom Morningstar

d. Bill Hartshoen 5 Jim Traynor

e. Emmett McNall I Mark Tremblay

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantle, Beams Trusses Comp Bldg = c, d, 7 I
2. Loaded Trucks w/fill from borrow pit = e
3 Trucked fill " " = H - 6 - K
4 hauled " " = I.

Rick Demoure Seemed Home, Hand Injury In Pain.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

...2-88 REPORT NO. 60

...TOR Anderson Ex + Wrecking Co CONTRACT NO. DACA-35-87-C-0001

...CT NAME Dom Air Force + Missile site LOCATION Raco Mich

...ATHER: TYPE Clear TEMP. MAX 80s MIN 50s RAINFALL 0 GAGE READING 0

...MPLOYEES: SUPV. 1 SKILLED 7 LABORERS 5 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Vaino f. Tom Morningstar

b. Dave Androsky g. Jim Traynor

c. Bill Hartshorn h. Mark Tremblay

d. Emmett McNall

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantled Beams + Trusses = B, C, h.
2. Loaded Trucks from borrow pit to silo area = ~~d~~
3. Trucked Fill " " " = f. e
4. hauled " " = g

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

6-23-88 REPORT NO. 61

TRACTOR Anderson Ex & Wrecking Co CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Dane Air force + Missile Site LOCATION Rao Mich

WEATHER: TYPE Clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paris f Tom Maringstor

b. Dave Condrosky 6 Jim Traynor

c. Bill Hartshorn h Mark Tremblay

d. Emmett McHall

e. Norm Saillore

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. Dismantled Beams & trusses Comp Bldg. = b, c, h - e
2. loaded truck from borrow pit./silo area, = d.
3 Trucked fill " " = f.
4 hauled fill " " = g.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 62

-88

Anderson EY + Wrecking CONTRACT NO. DACA-35-87-C-0001

NAME Demo Air force & Missile Site LOCATION Rogers Mich

ER: TYPE clean TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

PLOYEES: SUPV. 1 SKILLED 3 LABORERS 4 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Prino — f Tom Morningstar

b. Dave Andrusky — g Jim Traynor (V)

c. Bill Hartshorn — h Mark Trembley

d. Emmett McNall

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1 dismantle Beam + Trusses Comp. Building = b, c, h, e,

2 loaded Truck from borrow pit. to, silo area, = d

3 ~~Trucked~~ fill " " = f

4 hauled fill " " = g

5 hauled saw dust to silo area - c

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

REPORT NO. 63

...nderson Ex + Wrecking Co. CONTRACT NO. DACA 55-87-C-0001

...AME Pern Air Force + Missile Site LOCATION Raco Mich

...R: TYPE clean TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

...OYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Tom Morningstar

b. Dave Androsky g Jim Traynor (V)

c. Bill Hartshorn h Mark Tremblay

d. Emmett McNull

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beamsatron Comp Building b, c, h,
2. loaded Truck from borrow pit To silo area, d
3. Trucked fill " " e + f
4. hauled fill " " g

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 6-29-88 REPORT NO. 64

CONTRACTOR Anderson Ex. Wrecking Co. CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Penic Air Force Missile Site LOCATION Race Point

WEATHER: TYPE clear TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 2 LABORERS 5 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine Tom Morningstar

b. Dave Ondrosky Jim Traynor

c. Bill Hartshor Mark Tremblay

d. Emmett McNall

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. dismantled Beam from Com Building = b.c,h
2. loaded Trucks from borrowpit to silo area = d
3 Trucked fill " " = e f,
4. hauled fill " " = g
5. cracked composit Building floor - A

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

6-30-88

REPORT NO. 65

TRACTOR Anderson Ex. & Wrecking CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Dem Air Force Missile site LOCATION Rais Mich

WEATHER: TYPE Sun TEMP. MAX 80 MIN 50 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 1 SKILLED 3 LABORERS 4 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Tom Mokingstar

b. Dave Andersky g Jim Traynor

c. Bill Hartshorn h Mark Tremblay

d. Emmett McNeil

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. dismantled Beams from Comp. Building, b,c,e,h,
2. loaded Trucks from borrow pit to silo area - d
3. Trucked fill " " - f
4. hauled fill " " - g
5. Demolished slab's & Volts & Cistern - Puget Pipe's
5. mixed Sawdust & dirt
6. spread Fertilizer Silo Area.
7. compacted cistern with wrecking ball.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

7-5-88 REPORT NO. 66

CONTRACTOR Anderson Ex & Wrecking Co. CONTRACT NO. DACA 85-87-C-0001

PROJECT NAME Demo Air Force Missile Site LOCATION Rudo Mich.

WEATHER: TYPE Clear TEMP. MAX 88 MIN 62 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 4 LABORERS 1 LENGTH OF SHIFT ____ HR ____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine F. Jim Traynor

b. [redacted]ky G. Mark Trembley

c. Emmett McNally H. Dennis Krivinchuk.

d. Norm Sowlber.

e. Tom Moringstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1 dismantled Beams from Comp Building. = G

2, Work on Loader c, d.

3, loaded Trucks from borrow pit to silo area, = C

4. Trucked fill " " = d

5, hauled fill " " = F

paperwork = H.

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

6-88 REPORT NO. 67

ACTOR Anderson EX + Wrecking Co CONTRACT NO. DACA-35-87-C-0001

ECT NAME Demo Air Force Missile Site LOCATION Raco Mich

ATHER: TYPE clear TEMP. MAX 90 MIN 60 RAINFALL 0 GAGE READING 0

PLOYEES: SUPV. 2 SKILLED 4 LABORERS 3 LENGTH OF SHIFT 10 HR

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f- Jim Traynor

b. Dennis Kruwmchuk g Mark Tremblay

c. Dave Gndrosky h Tom Moringstar

d. Emmett McNull I Gary Rott.

e. Norm Soulliere

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beams from comp building, = I. g, C.
2. loaded Beam on truck, = c+g.
3. Loaded Trucks from borrow pit to silo area, = d
4. Truck fill " " = e + I
5. Paper work + parts, = b

C. Fertilized

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE: Fred Paine + Ron Peerce met and discusses removal of oil contents + removal of tanks,

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

7-7-88 REPORT NO. 68

NTRACTOR Anderson Ex + Wrecking Co. CONTRACT NO. DACA35-87-C-0001

PROJECT NAME Demo Air Force & missile Site LOCATION Roco Mich

WEATHER: TYPE Clear TEMP. MAX 95 MIN 65 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV.______ SKILLED______ LABORERS______ LENGTH OF SHIFT______ HR____

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine 7 Tim Traynor (✓)

b. Dennis Krivinchuk 9 Mark Tremblay

c. Dave Androsky h Gary Kott

d. Norm Soulliere

e. Tom Morningstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE (Relate to items on the Progress Chart or CPM)

1. dismantled Beams from Comp. = c, 9, h.
2. loaded Trucks from borrow pit to silo area, e,
3. Truck fill " " , " , d
4. leveled dirt in silo area, = 7 ..
5. paper work & parts - b

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

DATE 7-14-88 REPORT NO. 71

CONTRACTOR Anderson EX + Wrecking Co CONTRACT NO. DACA 35-87-C-0001

PROJECT NAME Demo Air Force + Missile Site LOCATION Raco MI

WEATHER: TYPE Clear TEMP. MAX 80 MIN 59 RAINFALL 0 GAGE READING 0

EMPLOYEES: SUPV. 2 SKILLED 2 LABORERS 4 LENGTH OF SHIFT ______ HR ______

WORK RESPONSIBILITY: NAME (PRIME OR SUBCONTRACTOR) AND AREA OF RESPONSIBILITY.

a. Fred Paine f Dave Androsky

b. Dennis Krivinchuk g Norm Soulliere

c. Emmett Mullull h Mark Tremblay

d. Jim Traynor

e. Tom Morningstar

WORK PERFORMED TODAY: (LOCATION, DESCRIPTION, QUANTITY AND RESPONSIBILITY BY LETTER REFERENCE
(Relate to items on the Progress Chart or CPM)

1. dismantled beams from comp building,

2. loaded Trucks from borrow pit to silo area = #L & maintenance building area, = d

3. Trucked fill from borrow pit to silo + maint. Building area = c

4. a load of tin went out.-

5. leveled dirt around silo + maint. building = c

5. took sample of soil under Tank c-4 = b

INSPECTION: (Description of Inspection and Location. Include Off-Site, Materials and Equipment Inspection.)

a. PREPARATORY PHASE:

b. INITIAL PHASE:

c. CONTINUOUS PHASE:

RESULTS OF INSPECTION: (Include Findings, Deficiencies observed & corrective Action)

NCE FORM 63
6 May 77

EDITION OF 22 June 76 is OBSOLETE

RESULTS OF SURVEILLANCE CONTINUED:

TEST PERFORMED: TYPE, LOCATION, RESULTS including failures & Remedial Action, (Attach copy of test report or notation when it will be furnished.)

WORK ITEMS BEHIND SCHEDULE: Reason, Effect on Progress Schedule and Actions Taken.

JOB SAFETY: (Report conditions, Deficiencies, corrective Action & Results)

Safety meeting about. 10mins.
safety on backing up & looking for men working in the area, hand signals

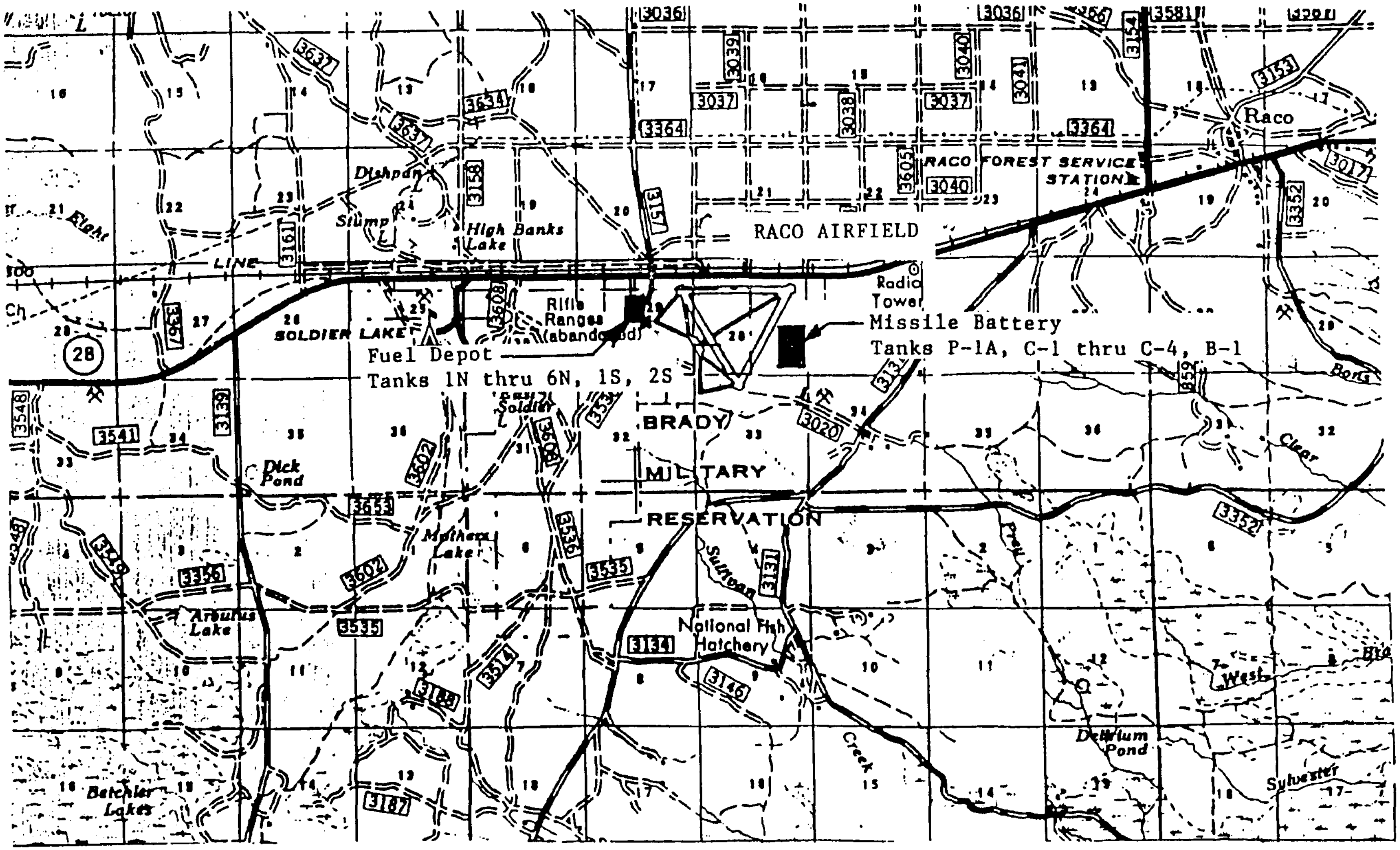
REMARKS: List attachments and other Management Actions Taken to Assure Quality Construction

IF INSPECTIONS & RESULTS ARE NOT LISTED THEN IT IS ASSUMED THAT QUALITY CONTROL IS NOT BEING IMPLEMENTED.
The above report is complete and correct and all materials & supplies incorporated in the work are in compliance with the terms of the contract except as noted:

Dennis Kruinchuk

CONTRACTOR'S APPROVED REPRESENTATIVE SIGNATURE

EXHIBIT 30



GENERAL LOCATION MAP

Raco Air Force Missile Site and Air Field

Raco, Michigan

Encl. 1

[redacted]

Bob —

Concerning the shell found on the Raco site.

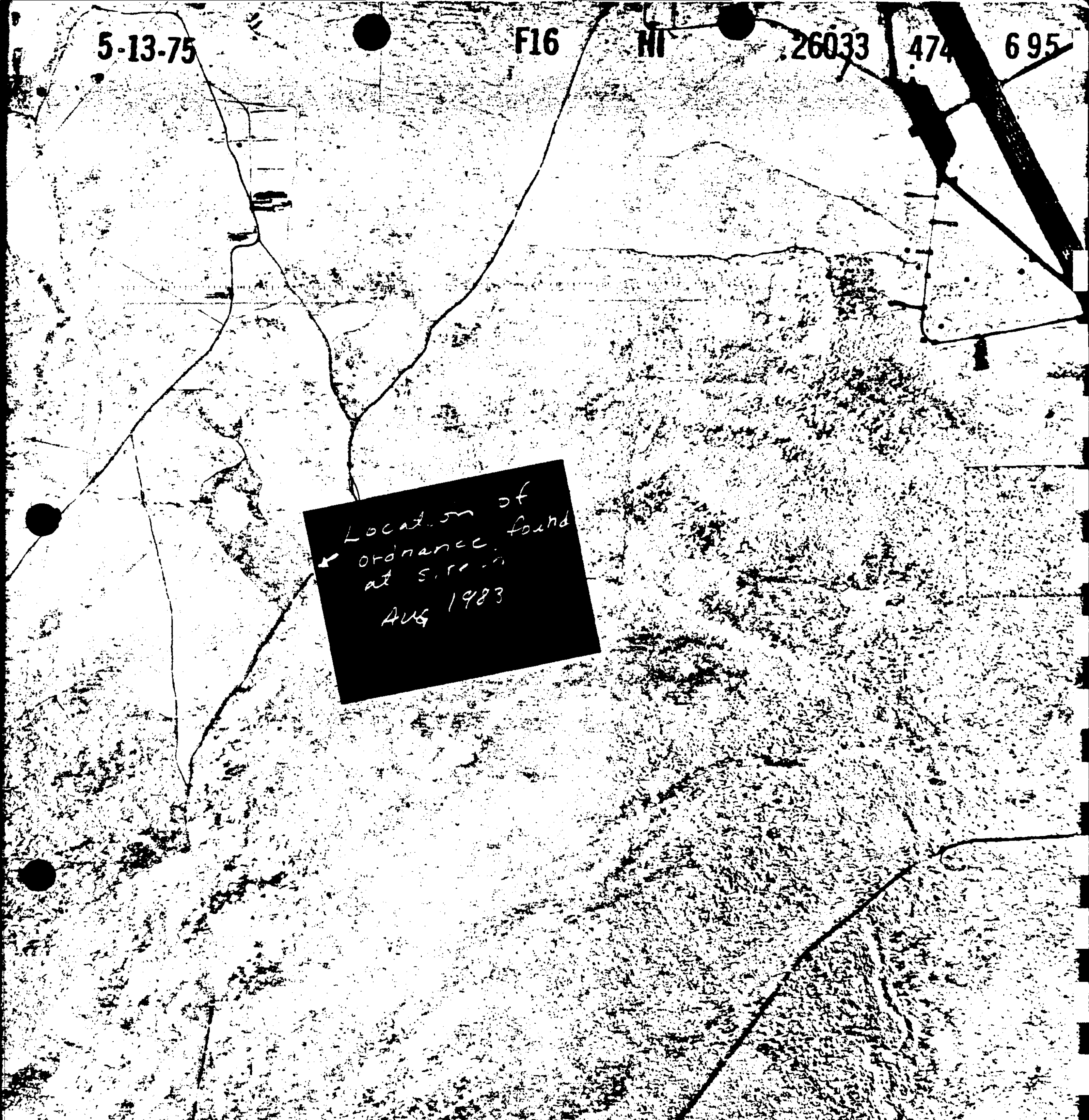
Was found in Aug 1983 by Steve Wherritt of the Soo District Rangers office.

Was exploded by the State Police from the Negaunee Crime Lab (906 - 475 - 7841) by Det. Capt Raymond Kenny & Det. Sgt Tom Hslip.

They would have filed a report. Note photo location for where found.

[redacted]

EXHIBIT 31


5-13-75
F16
HI
26033
474
695
Location of ordnance found at site
Aug 1983