SITE ASSESSMENT REPORT
UNDERGROUND STORAGE TANK SITES
GENERAL MOTORS LEEDS
AUTO ASSEMBLY PLANT
KANSAS CITY, MISSOURI

EMPLOYEE - OWNED
Burns & McDonnell
ENGINEERS - ARCHITECTS - CONSULTANTS
Kansas City, Missouri

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SEPTEMBER 1988

PROJECT NO. 88-119-3-005

BURNS & McDONNELL
Engineers-Architects-Consultants
Kansas City, Missouri

LEEDS005646

EMPLOYEE - OWNED

Burns & McDonnell

ENGINEERS · ARCHITECTS · CONSULTANTS

September 26, 1988

Mr. Doug Edwards
Missouri Department of
Natural Resources
P. O. Box 176
Jefferson City MO 65102

Site Assessment Report - Underground
Storage Tank Sites, General Motors
Leeds Auto Assembly Plant, Kansas City,
Missouri
Project No. 88-119-3-005

Dear Mr. Edwards:

Today I am transmitting to you one copy of the above-referenced report for your review and comments. This report is being presented on behalf of the General Motors Corporation and at the request of James Patton of the Missouri Department of Natural Resources. The document includes a description of the recent underground storage tank removal project at the Leeds Auto Assembly in Kansas City, Missouri and the discovery of previous releases associated with the operation of the tanks.

Associated with the removal of the ten underground storage tanks at three locations, excavated soil was stockpiled, monitoring wells were installed, and soil and groundwater samples were collected and analyzed. The results of these analyses are included as appendices to the report.

Initial remediation activities such as the removal of contaminated soil have already been started to prevent migration of the contaminants which include benzene, toluene and xylenes. We await your direction in determining the cleanup levels which will be necessary to adequately restore the site for use as an industrial facility and to safeguard the public interest.

Please contact me or Cindy Johnson (Tel. 913-281-7389) of the plant engineering staff at General Motors Leeds if you have any questions.

STATE OF MISSOURI
JOHN E. DIETER III
NUMBER E-19835
REGISTERED PROFESSIONAL ENGINEER

Sincerely,

John E. Dieter III

John E. Dieter III, P.E.
Underground Storage Tank
Program Manager

JED/skb.382
cc: Ms. Cindy Johnson, GM Leeds

LEEDS005647

4800 EAST 63rd STREET, P.O. BOX 419173, KANSAS CITY, MISSOURI 64141-0173 • TEL: 816-333-4375 TWX: 910-771-3059

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PART I

INTRODUCTION

A. PURPOSE AND SCOPE

The General Motors Leeds auto assembly plant was idled in the spring of 1988. The decision was made to remove the existing underground storage tanks (USTs) at the site in response to anticipated federal regulations. During an initial site survey by Burns & McDonnell, releases of petroleum products and solvents were discovered and two reports were telephoned to state and federal regulatory agencies. General Motors then authorized Burns & McDonnell to observe the tank removal process and monitor for obvious contamination. Some soil contamination and the presence of free product in an UST excavation were observed during tank removal operations. All tanks were removed by mid-July, 1988.

On June 29, 1988 the Missouri Department of Natural Resources (MDNR) requested that General Motors undertake a site assessment to determine the type, concentrations, and extent of contaminants in the vicinity of the USTs on site. This report contains the results of that investigation.

The site assessment included immediate response remedial activities including tank removal and soil and groundwater aeration. A subsurface investigation was performed which included surface soil sampling, sampling of stockpiled backfill material, soil sampling in tank

excavations, installation of eight monitoring wells, and soil and groundwater testing programs.

The test results were evaluated and an assessment of the occurrence, type and extent of soil and groundwater contamination was made. General alternatives for site remediation are presented.

B. BACKGROUND INFORMATION

The General Motors Corporation Leeds Plant is located at 6817 Stadium Drive in Kansas City, Missouri as shown on Figure INT-1.

The tank sites are located at the northwestern portion of the plant south of Stadium Drive and east of the western plant boundary. The property line borders Missouri Pacific Railroad tracks to the west of the plant.

Figure INT-2 shows the location of the tanks included in this report. Ten underground tanks are located on the site in three areas; 1) the tank farm area west of the pump house, 2) the diesel tank area north of the company car garage, and 3) the gasoline tank area north of the power house.

The tank farm contained seven 15,000-gallon steel tanks in an area approximately 30 feet wide by 90 feet long. Sheet piling extends along the eastern and western edges of the tank farm. The tank foundation consists of an 18-inch thick concrete slab. For purposes of this report

the tanks are numbered 1 through 7 with number 1 being the southernmost tank. The most recent contents of these tanks were:

- Tank No. 1 - Black Prime Paint: This tank has not been used for approximately ten years. Changes in the production process eliminated the need for black prime paint.

- Tank No. 2 - Waste Urethane Purge Thinner. This primarily consists of spent toluene, with a small amount of paint solids. The material is an EPA listed F005 hazardous waste. The tank and piping were last tested for leaks in July and November, 1987 respectively. The tank and piping were found to be tight.

- Tank No. 3 - Topcoat Purge Thinner. This consists of approximately 50 percent toluene and 50 percent naphtha.

- Tank No. 4 - Power Steering Fluid.

- Tank No. 5 - Automatic Transmission Fluid.

- Tank No. 6 - Topcoat Thinner. According to information provided by the manufacturer of this product, topcoat thinner consists of 30 percent to 50 percent naphtha and 55 percent to 65 percent butyl carbitol (diethylene glycol monobutyl ether.)

- Tank No. 7 - Waste Topcoat Purge Thinner. This product is a solvent whose virgin counterpart is contained in Tank No. 3. The material is an EPA listed F005 hazardous waste. The tank and piping were last tested for leaks in July and November, 1987. The tank and piping were found to be tight.

The diesel tank area, located north of the company car garage, contained a 1,000-gallon fiberglass tank. The tank most recently contained diesel fuel.

The gasoline tank area contains two steel tanks located approximately thirty feet north of the power house. The west tank has a capacity of 12,000 gallons and the east tank has a capacity of 10,000 gallons. Both of these tanks contained unleaded gasoline.

C. SITE HISTORY

The Leeds Plant has manufactured automobiles since 1929. On April 29, 1988, production of the Buick Skyhawk and Oldsmobile Firenza automobiles ceased at the Leeds Plant. Currently, the plant is idle until a new car is selected for assembly. General Motors reduced the quantity of material in each tank except Tank No. 1 prior to the idling of the plant and emptied all of the tanks by the end of May, 1988. Each tank was steam cleaned by Ace Pipe Cleaning Co. and purged of vapors using dry ice. As mentioned previously, Tank No. 1 was last used approximately ten years ago and was last cleaned in 1986.

On June 2, 1988, during the excavation and removal of vent lines connected to the tanks in the tank farm, a suspected release was discovered underlying the vent line for Tank No. 1. An examination of the vent pipe revealed a small hole in a welded pipe connection. Further sampling was conducted in the area for health and safety reasons. Soil removed from a hand augered bore hole (B) near Tank No. 1 was apparently contaminated with a petroleum product. Figure III-1 shows the boring location.

Both suspected releases discovered on June 2, 1988 (the contaminated material underlying vent pipe No. 1 and the contaminated cuttings from bore hole B) were reported to the National Response Center (Report No. 7283), federal EPA, and Missouri Department of Natural Resources (MDNR) on June 3, 1988. Laboratory analysis results received on June 8, 1988 confirmed the presence of hydrocarbon contamination in the suspected releases. Analysis results are discussed in detail in Part V of this report.

Organic vapors were detected in the pea gravel surrounding the diesel tank north of the company car garage on June 8, 1988 using a portable organic vapor analyzer (OVA). This suspected release was reported to MDNR on June 9, 1988.

Organic vapors were also detected on June 9, 1988 near the gasoline tanks north of the power house. This release was also reported to MDNR on the same day.

Laboratory analysis results which were received on June 13, 1988 confirmed the presence of hydrocarbon contamination at the gasoline and diesel storage tanks.

* * * * *

PART II - GEOLOGIC SETTING

PART II

GEOLOGIC SETTING

A. REGIONAL GEOLOGY

The General Motors Leeds Plant is located within the flood plain of the Blue River. Soils consist predominantly of fine grained alluvial materials. Previous subsurface investigations in the site vicinity indicate that soils extend to depths of over 50 feet in places. The soils are underlain by Pennsylvanian limestones and shales of the Kansas City and Pleasanton Groups.

The alluvial deposits in the floodplain area consist largely of silty clays with some interbedded sandy silt and silt lenses. The nature of these deposits is such that variations in soil composition may occur over a short distance vertically, although fairly thick sequences of uniform silty clay are known to occur in this vicinity.

Near the center of the Blue River Valley the limestones and shales of the Kansas City Group have been largely eroded away. The Pleasanton shale, therefore probably subcrops beneath the alluvium.

B. LOCAL HYDROGEOLOGY

The alluvial deposits that fill the Blue River Valley consist of clays and silts near the ground surface and gradually coarsen downward to chert and limestone gravel just above bedrock. The low permeability

upper clays and the shale bedrock for the most part limit vertical movement of groundwater creating a confined to semiconfined aquifer system. In general, the clays and silts have low permeability and the coarse sands and gravels have moderate to high permeability.

Recovery (bail-down) permeability tests were performed on wells MW-2 and MW-3, considered to be representative of the lowest and highest permeabilities of the eight wells. MW-2 had a transmissivity of 70 M^2/day. MW-3 had a transmissivity of 19 M^2/day and a hydraulic conductivity of 0.4 M/day. These are typical of the low permeability values found in clays and silts.

Saturated soils in the area of the General Motors Plant occur at a depth of approximately 15 feet below the ground surface. Because the aquifer is confined, water level readings from the observation wells range from 7.8 to 10.3 feet below the ground surface. The direction of groundwater flow is generally toward the Blue River to the west of the site. A groundwater contour map is shown in Figure II-1 and observed water level readings are contained in Appendix C.

* * * * *

PART III - FIELD INVESTIGATION

PART III

FIELD INVESTIGATION

A. GENERAL

Prior to removal of any USTs, near-surface soil samples were obtained and analyzed to evaluate safety precautions necessary for tank removal and to make a preliminary site assessment. Commonly, pavement was removed and soil sampled to depths of up to 7 feet with a hand auger. In addition, a Photovac photoionization detector was used to screen samples and monitor the breathing zone.

These preliminary shallow borings are designated as sampling locations A through J (See Figure III-1) in the tank farm area, K, L and M (See Figure III-2) in the gasoline tank area, and P-1, O-1 and PL-1 (See Figure III-1) at the ancillary piping in the tank farm vicinity. Results of the preliminary assessment are presented in Part V of this report.

Tank removal operations, which occurred from June 1 to July 15, 1988, were observed by a Burns & McDonnell environmental engineer. At that time, stockpiled backfill material and water from the tank farm excavation were sampled and analyzed.

Subsequent to tank removal, a test hole, monitoring well and sampling program was initiated to determine the general extent of contamination.

A total of eight 2-inch diameter monitoring wells were each installed to a depth of 22 feet. Soil samples were obtained from the well borings, from the tank excavations, and from stockpiled backfill material. Groundwater samples were obtained from the monitoring wells. Soil and water samples were analyzed. The results are evaluated in Part V and data presented in Appendices D and E.

A site safety plan was developed by Burns & McDonnell for demolition of the underground tank containment areas, the removal of the underground tanks, the excavation of any contaminated soil within the containment areas, the backfill of the excavation, and the pavement replacement. Addendum No. 1 to the safety plan includes provisions for drilling and well installation activities.

The safety plan states that all operations and equipment will comply with OSHA Regulations 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response" and applicable parts of OSHA 29 CFR 1910 and 1926.

The safety plan includes the following sections:

- Key personnel and responsibilities
- Operations risk assessment
- Employee training requirements
- Personnel protective equipment
- Medical surveillance
- Air monitoring
- Site security and control

- o Decontamination procedures
- o Standard operating procedures
- o Confined space entry requirements
- o Emergency procedures

All on-site personnel were required to work in level D protection. Level C protection was required if air, soil or debris indicated a significant health threat to workers as defined in the plan.

B. SOIL SAMPLES

Locations of soil samples obtained, including those obtained prior to removal of the USTs, are shown on Figures III-1, III-2, and III-3. The Photovac was used to screen samples and monitor the breathing zone. Borings E, H, I and J were augered around the tank farm excavation. The cuttings in Borings E, H, and I were apparently hydrocarbon stained below a depth of 6.0 to 7.0 feet. This depth corresponds to the depth of the top of the tanks. A sample was collected form Boring E (Sample E-1) to be analyzed for total petroleum hydrocarbons (TPH) by infrared spectrophotometry (IR). This sample was stained and emitted a strong hydrocarbon odor.

Borings A, B, D, F, and G were augered in the vicinity of the suspected vent pipe release. In an attempt to identify the extent of this suspected release, five samples were collected to be analyzed for total hydrocarbons by IR (Samples A-1, A-2, B-1, B-2, and D-1). Organic

vapors were detected with the Photovac in each of the bore holes except Boring F which was augered to a depth of 6.0 feet below the top of pavement.

Following the removal of the soil overlying the tank farm tanks, two water samples were collected from standing pools of water around the tanks (Samples EW-1 and EW-2). These samples were analyzed for total petroleum hydrocarbons, benzene, toluene, xylenes, and ethyl benzene.

Following removal of the diesel tank, a sample of the crushed rock backfill (Sample DT-1) was collected to be analyzed for total petroleum hydrocarbons by IR. The sample emitted a slight diesel odor.

Three shallow borings were augered around the gasoline tanks (Borings K, L, and M). A sample was collected from each boring to be analyzed for total petroleum hydrocarbons by IR.

In conjunction with the tank farm closure, underground product lines were removed in three locations around the pump house. Soil samples were collected from directly below the pavement at each of the three locations (Samples PL-1, O-1, and P-1). Each sample was analyzed for total petroleum hydrocarbons by IR.

Subsequent to tank removal, eight soil borings designated MW-1 through MW-8 were drilled by Layne-Western Company at the locations shown on Figures III-1, III-2, and III-3. Soil boring locations were chosen

based on the tank construction and configuration, the nature of the contaminants, and knowledge of the general hydrogeologic setting. Generally, borings were placed in the immediate vicinity of the excavations. One boring was located upgradient of presumed groundwater movement to establish background water quality and confirm the groundwater gradient.

All borings were completed to a depth of 22 feet using a Mobile B-61 drill rig. The borings were advanced using 6.25-inch hollow stem augers. Samples were taken every five feet using the split-barrel penetration test according to American Society for Testing Materials (ASTM) D1586. Boring logs, as prepared by a Burns & McDonnell geologist, are contained in Appendix A.

Elevations of the borings were obtained using the top of a sanitary sewer manhole (El. 762.58 U.S.G.S) located northeast of the tank farm elevation as a bench mark (See Figure II-1 for location).

C. GROUNDWATER MONITORING

Groundwater observation wells were installed in each of the eight soil borings to obtain water quality samples and water level readings. The observation wells are constructed of 2-inch diameter polyvinyl chloride (PVC) pipe with 15 feet of factory slotted screen (0.01-inch openings). Well construction details are contained in Appendix B. Water level readings were taken and a groundwater contour map constructed (Figure II-1).

Recovery (bail-down) permeability tests were performed on observation wells MW-2 and MW-3. Permeability tests were analyzed using standard methods (Papadopulos, Bredehoeft, Cooper, 1973). Test results are discussed in Part V, Section B.

D. QUALITY ASSURANCE

The shallow borings were hand augered with a 4-inch diameter stainless steel hand auger or a manual sample extractor. Cuttings samples were collected from the basket of the auger or extractor. The deep borings were augered with 6.25-inch hollow stem augers. Samples were taken with a 1.5-inch diameter split barrel sampler. All drilling equipment was decontaminated prior to drilling operations and between each bore hole using a high-pressure steam wash. The organic vapors at the top of each bore hole were monitored during drilling using the Photovac.

All samples were transferred to glass sample jars. The jars were filled to minimize head space and sealed with a Teflon lined lid. The samples were cooled and stored away from direct sunlight and were delivered or overnight mailed to the laboratory at the end of each work day. The head space of each sample was screened for organic vapors using the Photovac. The lid was loosened and lifted slightly to allow the nozzle of the Photovac to be inserted into the top of the jar. The screening was conducted at least ten minutes following sampling. This allowed

time for the vapors to establish an equilibrium concentration level in the headspace.

Water samples were taken from monitoring wells using a Teflon bailer. Samples were transferred to glass jars and sealed with Teflon lined lids. Samples were cooled and stored away from direct sunlight and were sent to the laboratory in ice packed coolers.

The hand auger, sample extractor and Teflon bailer were decontaminated between sampling points using a soap and water wash and a deionized water rinse. Disposable gloves used during sampling were changed between each sampling point.

All tested samples were analyzed for total petroleum hydrocarbons by IR or gas chromatography (GC). In addition, three shallow samples collected at the tank farm were analyzed for various solvents including benzene, toluene, and xylenes using a GC method. A chain of custody was provided for documenting sample custody and tracing. A log of all field activities was maintained including times and nature of operations.

* * * * *

PART IV - IMMEDIATE RESPONSE ACTIVITIES

PART IV

IMMEDIATE RESPONSE ACTIVITIES

A series of corrective actions were immediately implemented to reduce the potential for spreading of contaminants, to reduce contaminant concentrations and to eliminate potential contaminant sources. The details of the five immediate response activities are presented below:

1. CESSATION OF USE

   All tanks were taken out of service, emptied, steam cleaned, and purged of vapors. The product lines were drained and removed.

2. REMOVAL OF TANK, PIPING AND OBVIOUSLY CONTAMINATED MATERIAL

   The tanks and associated piping were removed. Construction materials such as concrete and reinforcing steel surrounding or underlying the tanks were excavated or removed and disposed of appropriately. All of the soil, including obviously contaminated soil, was stockpiled on site.

   Obviously contaminated soil is defined as follows:

   - Visually apparent contamination, i.e. staining, sheen, etc.
   - Presence of free product.
   - Containing a concentration of 100 ppm total organic vapors as measured by the Photovac in the head space of a contained sample.

Tanks, transfer piping, vent piping, and other accessories were removed, cleaned using high-pressure hoses and stored on site. Piping material will be recycled by American Compressed Steel, Kansas City, Missouri. Tank materials (carbon steel) will be recycled by Rig Industries, Inc., Kansas City, Missouri.

3. STOCKPILING OF CONTAMINATED MATERIAL

All obviously contaminated soil backfill materials and nonsalvageable construction materials were stockpiled in areas near the respective tank excavations. The material at the tank farm remained stockpiled until July 26, 1988 when it was removed to the south aeration field (see Figure INT-2) for aeration. Prior to aeration the soil was covered with plastic sheeting to prevent leaching of contaminants.

4. SOIL AERATION

Tank backfill material, which consists primarily of sand, was spread out for aeration to reduce contaminant levels. Two aeration fields were created: a south aeration field and a north aeration field (see Figure INT-2).

The south aeration field, the larger of the two, is located south of the barrel storage area near the truck dock. Sand from the tank farm excavation was spread to a thickness of approximately 6 to 18 inches at this location on July 26, 1988. Soil samples TF-1 and TF-2 were obtained from the stockpiled material, prior to aeration,

on June 16, 1988 and tested for barium, nitrobenzene and oil and grease (see Table IV-1) to determine if landfill disposal was a possible remediation alternative. Oil and grease concentrations of 312 and 816 mg/kg were measured. Additional soil samples were obtained on August 11, 1988, 17 days after aeration was begun, and were tested for Total Recoverable Petroleum Hydrocarbons (TRPH) to determine the effectiveness of aeration (Samples SAF-A through SAF-E, see Table IV-1). A maximum TPH concentration of 248 ppm was indicated in composite samples. This suggests an overall reduction in contaminant levels.

The north aeration field is located immediately south of the diesel tank excavation (See Figure II-4). The sand material was placed here in late June, 1988. A sample of the sand backfill material was tested for TPH prior to initiation of aeration activities (early June 1988). Sample DT-1 measured 1,140 mg/kg TPH. Another composite sample is presently being tested to evaluate the effectiveness of aeration.

5. GROUNDWATER AERATION

Groundwater accumulated in the tank farm excavation after the tanks and backfill materials were removed. This groundwater was sampled on June 28, 1988 and tested (Samples EW-1 and EW-2). Significant concentrations of petroleum hydrocarbons and some volatile organic compounds were detected (see Table V-1).

Aeration of the excavation water was initiated in an attempt to reduce contaminant levels prior to implementation of a full scale remedial action program. Aeration is accomplished by pumping the water approximately eight feet into the air and allowing the spray to return to the excavation. Exposure to the air creates a stripping action which has resulted in the release of some of the volatile compounds from the water.

The excavation water was again sampled on August 25, 1988, more than 30 days after the start of aeration of the water. No toluene was detected (detection limit 1 ppb) and no TPH was detected (detection limit 3 ppm). The aeration operation seems successful in reducing contaminant levels to insignificant levels.

* * * * *

PART V - CONTAMINATION ASSESSMENT

PART V

CONTAMINATION ASSESSMENT

A. GENERAL

Generally, all water samples and soil samples from critical areas or soil samples that produced elevated Photovac readings or a petroleum odor were tested for total petroleum hydrocarbons. Selected samples were tested for benzene, toluene and xylenes as an indication of the presence of the more mobile and toxic components of the petroleum hydrocarbons and solvents. The chain of custody forms (Appendix F) give a summary of tests assigned to the samples.

Samples of stockpiled material (see Table IV-1) underwent waste characterization testing to determine if landfilling of the soils was an available option. Waste characterization tests were performed by National Analytical Laboratories and included the EP-Toxicity tests for eight metals, oil and grease, and tests for 26 waste solvent components as listed in Subpart D of the Code of Federal Regulations 40 CFR 261. Only detected compounds are listed in Table IV-1. The complete list of detected and undetected compounds is contained in Appendix D. Nitrobenzene and barium were detected in significant concentrations in the stockpiled soil, so they were tested for in other soil and water samples obtained from the borings and tank excavations.

Stockpile samples SAF-A and SAF-B, which measured the highest TPH concentrations were tested for flash point and determined to have flash points above 200 degrees Fahrenheit. The soil samples with TPH

concentrations as high as 2500 ppm were tested for flash point and determined to have flash points above 200 degrees Fahrenheit.

B. TANK FARM AREA

1. SOIL CONTAMINATION

During the preliminary investigation in the tank farm area, borings at locations C, E, H, and I (See Figure III-1) produced soil cuttings which were visibly contaminated with petroleum products to depths up to 7 feet. Samples E-1 and H-1 (from 7 and 4-foot depths, respectively) indicated 1393 and 765 mg/kg TPH, respectively (See Table V-1 for detected contaminant data for the Tank Farm Area). Following removal of the seven USTs in the tank farm area, two soil samples (TF-1 and TF-2) of the excavated backfill material were obtained and tested for waste characterization (EP - Toxicity metals and volatiles). These samples indicated several hundred ppm nitrobenzene and oil and grease in both samples (See Table IV-1 for detected contaminant data for stockpiled soil, see Appendices D and E for complete lab test results).

Samples of the natural soil beneath the tank farm excavation (Samples TFE-1 and TFE-2) were obtained at depths of 1.0 and 3.5 feet below the excavation base. The soil material was a moist silty clay. Sample TFE-1 was obtained at an elevation which corresponded to the elevation of water standing in the excavation. During sampling, however, water which might contaminate the sample was prevented from entering the sample hole from above by constructing a

dike around the sample location. The samples indicated the presence of a medium petroleum distillate (possibly petroleum naphtha) in concentrations of 6.0 ppm or less. Four test holes were drilled to depths of 22 feet around the perimeter of the tank farm excavation (MW-2, MW-3, MW-4 and MW-7). Monitoring wells were installed in each bore hole following drilling and soil sample collection. These borings were at distances of roughly 10 to 20 feet from the excavation and were intended to detect migration of contaminants away from the tank farm. During drilling, organic vapors were detected seven times in either the hole or the air space above the samples. A maximum concentration of 7.0 ppm was detected. (See Appendix A - Boring Logs for detailed records of vapor monitoring).

Two soil samples from each of the four borings were tested; one from the bottom of the borehole to indicate the vertical extent of contamination and one from near the top of the saturated zone where petroleum products may likely occur. No total petroleum hydrocarbons were detected in these samples using the IR method. The infrared method has a 100 ppm detection limit (DL). No benzene, toluene, xylenes (DL=0.01 ppm) and nitrobenzene (DL=0.05 ppm) were detected in any of these soil samples. Medium to heavy petroleum distillates were detected in all samples tested except in Well MW-3, Sample SS-5. Concentrations were less than 15.0 ppm except in Well MW-7, Sample SS-5 where 177 ppm heavy petroleum distillate (HPD) was detected.

The heavy petroleum distillate may be No.6 fuel oil or it may be the degradation product of a lighter fuel oil. The medium petroleum distillate may be petroleum naphtha or the degradation product of a lighter fuel or fuel oil.

Ancillary piping areas in the vicinity of the tank farm were investigated for possible contamination. A suspected release at the vent pipes immediately south of the tank farm was investigated with six shallow borings (6.0 feet or less); A, B, C, D, F, and G. Photovac readings indicated organic vapors in Borings A, B and D; therefore a total of five soil samples was tested with as much as 57,800 mg/kg TPH detected in Sample B-1.

Soil Samples P-1, 0-1, and PL-1 were obtained at depths of 1.0 to 1.5 feet in the rail unloading area and piping area immediately east of the pump house (See Figure III-1). Results indicate TPH concentrations of 23 mg/kg for Sample PL-1. Barium concentrations were consistent with expected background levels for natural soils in this area of Missouri.

2. GROUNDWATER CONTAMINATION

Groundwater (and a minor amount of rainfall) has accumulated in the tank farm excavation. This water was sampled and tested (Samples EW-1, EW-2 and EW-3). Sample EW-1 probably contained some free product since TPH concentrations were 57,800 ppm with a toluene

concentration of 32 ppm. Sample EW-2 indicated TPH concentration of 25 ppm and a toluene concentration of 764 ppm. Sample EW-3 indicated a TPH concentration of 30.2 ppm and a toluene concentration of 3.04 ppm.

The inordinately high toluene concentration in sample EW-2 compared to the much lower concentrations in the two other samples obtained from the same source may indicate the presence of a discontinuous free phase toluene film on the water surface.

Groundwater samples from Monitoring Wells MW-2, MW-3, MW-4 and MW-7 indicate no detectable benzene, toluene, or xylenes (DL=0.001 ppm) and no detectable nitrobenzene (DL=0.001 ppm detection limit). TPH concentrations ranged from 20.4 mg/l in Well MW-2 to below detection limits (5.0 mg/l) in Well MW-7. Medium petroleum distillates, which may indicate the presence of petroleum naphtha, were detected only in Well MW-7 at a concentration of 0.20 ppm. Barium concentrations were consistent with expected background levels of natural soils in this area of Missouri.

As was discussed in Part II of this report, the groundwater in the site vicinity is unconfined to semi-confined and the flow direction is generally toward the west. Therefore Wells MW-2 and MW-3 would be considered generally up gradient from the tank farm although contaminants from the rail unloading station may affect Well MW-3.

C. GASOLINE TANKS AREA

1. SOIL CONTAMINATION

Subsequent to the removal of the two gasoline tanks composite soil samples were obtained from the excavated material (Samples EGS-1 and EGS-2) and tested for waste characterization (EP - Toxicity metals and volatiles). Results of tests indicate oil and grease concentrations of 364 ppm in EGS-1 and 4820 ppm in EGS-2 (see Table IV-1 and Appendix D). Soil samples of the natural soil within the tank excavations were obtained at locations shown of Figure III-2. TPH concentrations in the six samples indicate a range of from 106 to 3190 mg/kg.

In the east gasoline tank excavation, the highest TPH concentrations (3190 mg/kg) occurred in Sample EGE-2. The sample was obtained from the excavation wall approximately 2 feet above the top of the concrete tank pad which supported the tank. Samples EGE-1 and EGE-3 were obtained at depths of about 5 feet below the top of the tank pad where the upper surface of the natural soil occurs. Concentrations of TPH were 106 mg/kg in sample EGE-1 and 539 mg/kg in sample EGE-3 indicating some migration of hydrocarbons into the natural soil.

In the west gasoline tank excavation, Sample WGE-1 was obtained 1 foot into the natural clay soil at the excavation base. Test results indicate no detectable petroleum hydrocarbons (DL=100 ppm),

no detectable benzene, toluene, or xylenes (BTX) (DL=0.01 ppm) and no detectable nitrobenzene (DL=0.05 ppm). Samples WGE-2 and WGE-3 were obtained at depths of 1 and 2.5 feet respectively into the natural clay soil on the north end of the west gasoline tank excavation. Tests indicated TPH concentrations of 600 ppm in Sample WGE-2 and 2500 ppm in Sample WGE-3 indicating some migration of petroleum hydrocarbons into the natural clay soils.

Well MW-5 was installed approximately 7 feet southwest of the west gasoline tank excavation. No TPH or BTX concentrations (DL=100 ppm and 0.01ppm, respectively) were detected in two soil samples obtained there. Well MW-6 is located approximately 60 feet southwest of the west gasoline tank excavation. Sample SS-3 measured a toluene concentration of 0.96 ppm and a xylene concentration of 3.6 ppm. TPH concentrations were not detected (DL=100 ppm).

2. GROUNDWATER CONTAMINATION

Samples of the groundwater from Wells MW-5 and MW-6 indicate no benzene, toluene or xylenes above detection limits (0.001 ppm) and no nitrobenzene above detection limits (0.01 ppm). A TPH concentration of 9.6 mg/l was detected in Well WM-5. Samples were not tested for MPD in Wells MW-5 or MW-6 because of the distance from the Tank Farm petroleum naphtha source. But because the detection limit for TPH in water is 5 ppm any petroleum naphtha or other medium petroleum distillates present would have been detected.

Some water is present in the bottom of the east gasoline tank excavation. Some of this water may be groundwater because of the proximity to the saturated zone. The remainder of the water consists of rainfall, surface runoff, and water from a broken sewer line which discharged into the excavation during tank removal. This water was not tested because it is a relatively small amount and high contaminant concentrations are not likely to be present.

D. DIESEL TANK AREA

1. SOIL CONTAMINATION

Subsequent to the removal of the diesel tank, a sample of the granular backfill material was tested (Sample DT-1). The TPH concentration was determined to be 1140 mg/kg. Later two samples (DTE-1 and DTE -2) were obtained at the location shown on Figure III-3 at depths of 1 and 2 feet, respectively. Tests of these two samples indicate no TPH above detection limits (D.L.=100 ppm), no benzene, toluene, or xylenes above detection limits (D.L.=0.01 ppm) and no nitrobenzene above detection limits (D.L.=0.05 ppm).

2. GROUNDWATER CONTAMINATION

The diesel tank excavation is not deep enough to intersect the saturated zone below and no water has accumulated in the excavation. Well MW-8 is located approximately 7 feet west of the diesel tank excavation as shown of Figure III-3. Well MW-1 is located approximately 75 feet northwest of the excavation. Groundwater

samples from these wells were tested and a TPH concentration of 18.8 mg/l was measured in Well MW-1. TPH was not detected in well MW-8 (D.L.=100 ppm). Benzene, toluene, and xylenes were not detected (D.L.=0.01 ppm) in either of the two wells.

* * * * *

PART VI - CONCLUSIONS

PART VI

CONCLUSIONS

1. The tank farm excavation backfill material was determined to be contaminated with petroleum hydrocarbons (TPH) subsequent to tank removal. Concentrations for the backfill material samples analyzed ranged from 312 ppm to 1393 ppm.

   At least 3.5 feet of the natural clay soil beneath the excavation is apparently contaminated with very low concentrations (6 ppm maximum) of a medium petroleum distillate.

2. The water within the tank farm excavation was contaminated with up to 30.2 ppm TPH and up to 72 ppm toluene where no free product occurred. The groundwater in monitoring wells surrounding the excavation indicated TPH concentrations ranging from 0.28 ppm to 20.4 ppm. No volatiles were detected in any of the groundwater samples obtained from monitoring wells surrounding the tank farm excavation. Contaminant concentrations are relatively low and groundwater contamination does not appear to extend more than a few feet beyond the tank farm excavation.

   Aeration of the excavation water has resulted in a reduction of the TPH and toluene to below detection limits as indicated in Sample EW-4.

The west gasoline tank excavation backfill material was determined to be contaminated with petroleum hydrocarbons subsequent to tank removal with concentrations ranging from 187 to 388 ppm.

At least some of the clay soil beneath the west gasoline tank is contaminated with up to 2500 ppm TPH to a depth of at least 2.5 feet.

4. The east gasoline tank excavation backfill material was contaminated with up to 8440 ppm TPH. The clay soil beneath and adjacent to the tank excavation is contaminated with from 106 ppm to 3190 ppm TPH.

5. The groundwater in Well MW-6 southwest of the west gasoline tank contained low concentrations of toluene and xylenes (3.6 ppm or less). This well is apparently upgradient of the tanks and so may indicate another source of contamination. It is also possible that groundwater gradient directions change in response to severe weather (e.g. flooding) or in response to construction or railroad activities. THe volatiles in MW-6 may, therefore, be remnants of a gasoline slug released at some time in the past from the gasoline tank area.

Well MW-5, immediately southwest of the west gasoline tank excavation, indicates 9.6 ppm TPH in the groundwater, but no benzene, toluene or xylenes were detected.

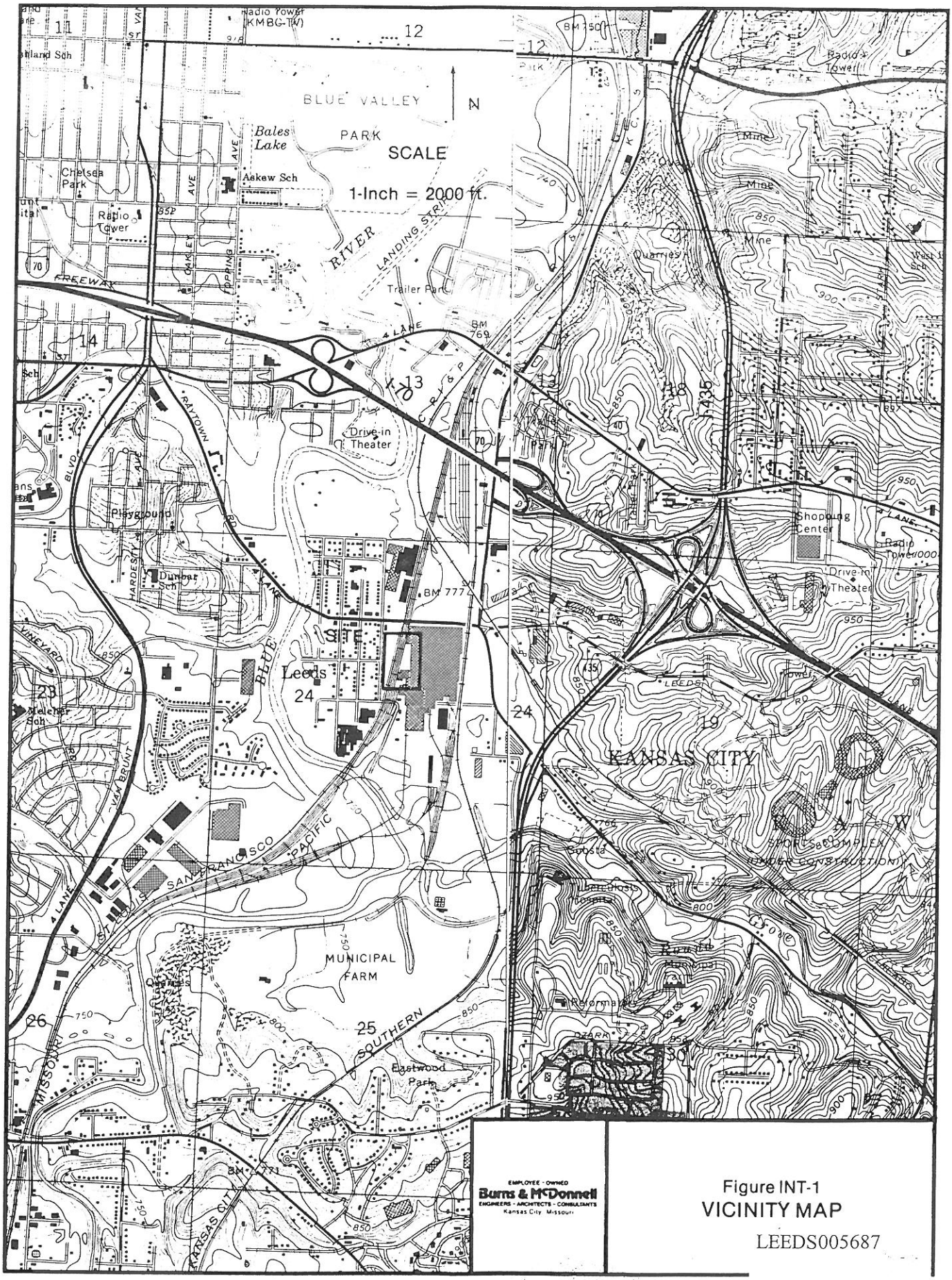
LEEDS005685

6. The diesel tank excavation backfill material was contaminated with 1140 ppm TPH after excavation of the materials. The clay soil beneath the excavation is apparently not significantly contaminated. Nearby monitoring Well MW-8 indicates no significant occurrence of groundwater contamination or soil contamination.

7. Well MW-1 located 75 feet northwest of the diesel tank excavation indicates low level MPD and TPH concentrations (45 ppm maximum). A source other than the USTs is possible or anomalous groundwater conditions, as described in conclusion no. 5, may have occurred.

8. The ancillary piping backfill material is somewhat contaminated with petroleum hydrocarbons. West and north of the pump house TPH contamination is slight (23 to 35 ppm). East of the pump house and near the vent pipe location contamination is in the range of 219 to 965 ppm TPH. One sample, which apparently contained some free product, indicated 57,800 ppm TPH.

* * * * *


BLUE VALLEY
PARK
SCALE
1-Inch = 2000 ft.
N
Bales Lake
Chelsea Park
Askew Sch
Radio Tower
Radio Tower (KMBC-TV)
RIVER
LANDING STRIP
FREEWAY
Trailer Park
Drive-in Theater
Playground
Dunbar Sch
Fletcher Sch
Leeds
MUNICIPAL FARM
Eastwood Park
Shopping Center
Drive-in Theater
KANSAS CITY
Mine
Quarries
Reformatory
Ozark
Kansas City
Missouri
Blue
Van Brunt
Raytown Rd
Hardesty
Vineyard
Oakley
Spring
Chelsea
Ave
Blvd
4 Lane
Sch
BM 777
BM 769
BM 750
Figure INT-1
VICINITY MAP
LEEDS005687
EMPLOYEE - OWNED
Burns & McDonnell
ENGINEERS - ARCHITECTS - CONSULTANTS
Kansas City, Missouri

RAILROAD SPUR

STOCKPILED BACKFILL MATERIAL

TRUCK DOCK

PROPERTY LINE

RAILROAD SPUR

MISSOURI PACIFIC RAILROAD

SOUTH AERATION FIELD

BARREL STORAGE

CAUSTIC

PAINT MIX

POWER HOUSE

RELOCATED

UNDERGROUND TANKS (7) AT TANK FARM

CHAIN LINK FENCE

PUMP HOUSE

COMPANY CAR GARAGE

DIESEL TANK

NORTH AERATION FIELD

RELOCATED TANK FARM EXCAVATION BACKFILL MATERIALS

GASOLINE TANKS

ABOVE GROUND DIESEL STORAGE TANKS

ASSEMBLY BUILDING

N

100 0 100 200

SCALE IN FEET (APPROX.)

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FIGURE INT-2
SITE MAP

LEEDS005688

NORTH

60 0 60 120
SCALE IN FEET
(APPROX.)

RAILROAD SPUR

MISSOURI PACIFIC RAILROAD

MW-6
753.53

MW-5

GASOLINE TANKS

PROPERTY LINE

MW-7
752.80

751

752

753

MW-4
753.28

POWER HOUSE

MW-2
754.20

754

CHAIN LINK FENCE

PUMP HOUSE

MW-3
754.84

755

COMPANY CAR GARAGE

MW-8
755.00

MW-1
753.33

ABOVE GROUND DIESEL STORAGE TANKS

UNDERGROUND TANKS (7) AT TANK FARM

DIESEL TANK

ASSEMBLY BUILDING

℄ STADIUM DR.

LEGEND

- MONITORING WELL
- BENCH MARK - EL. 762.58 FT. U.S.G.S.

LEEDS005689

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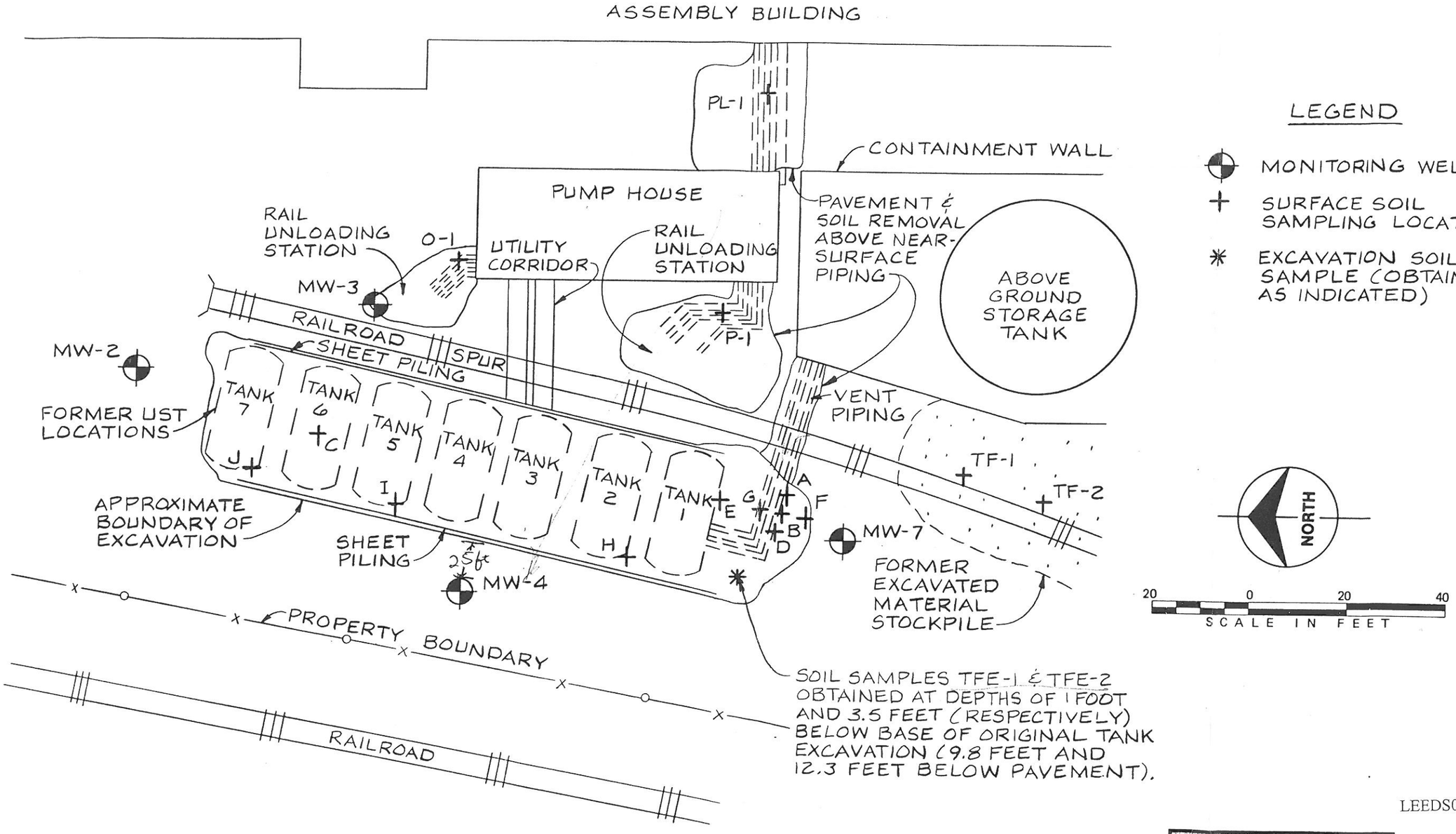
FIGURE II-1
GROUNDWATER CONTOUR MAP
DATA OBTAINED 8-11-88



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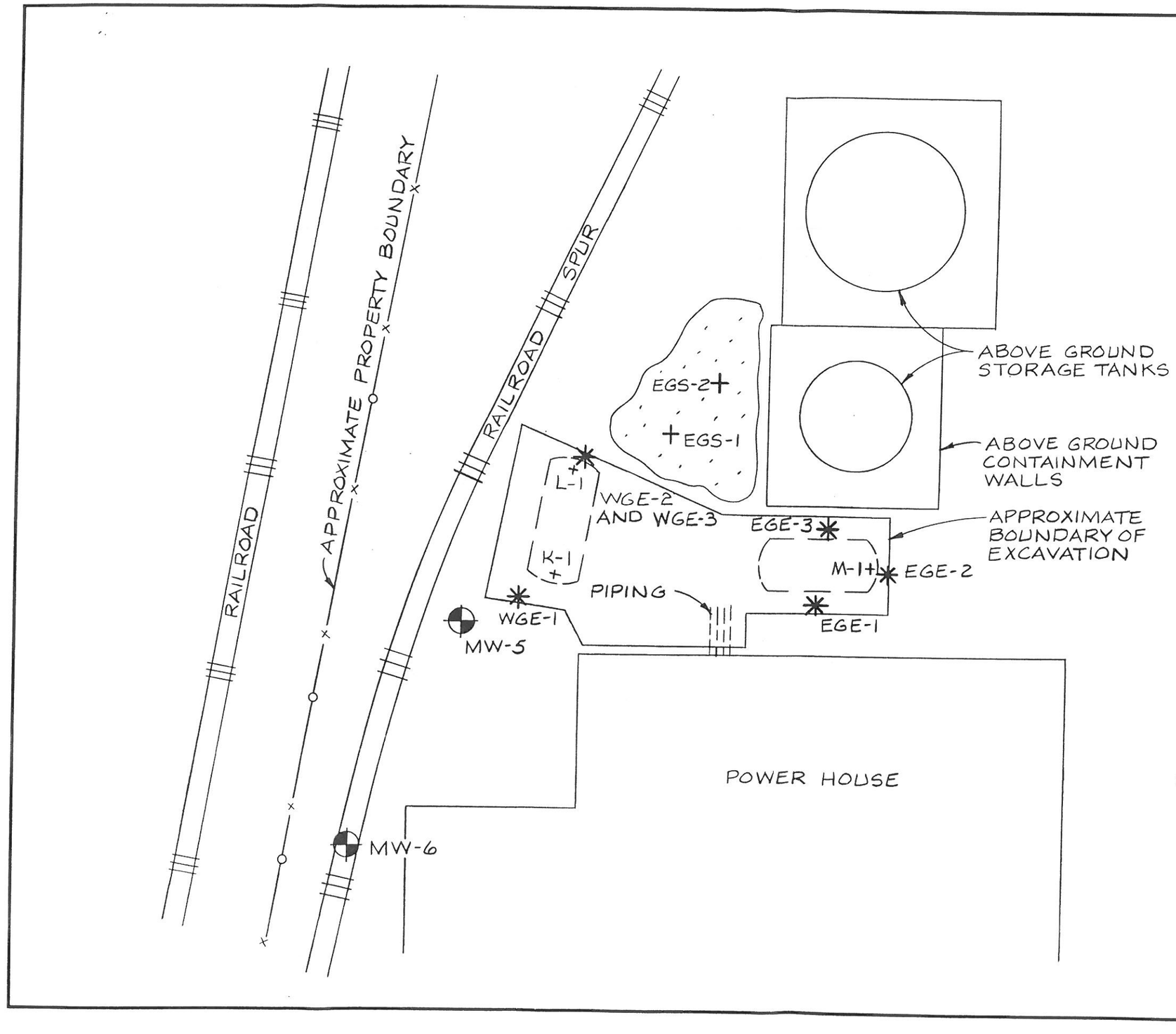
Burns & McDonnell

FIGURE III-1

TANK FARM AND ANCILLARY PIPING SAMPLING LOCATIONS



LEEDS005691

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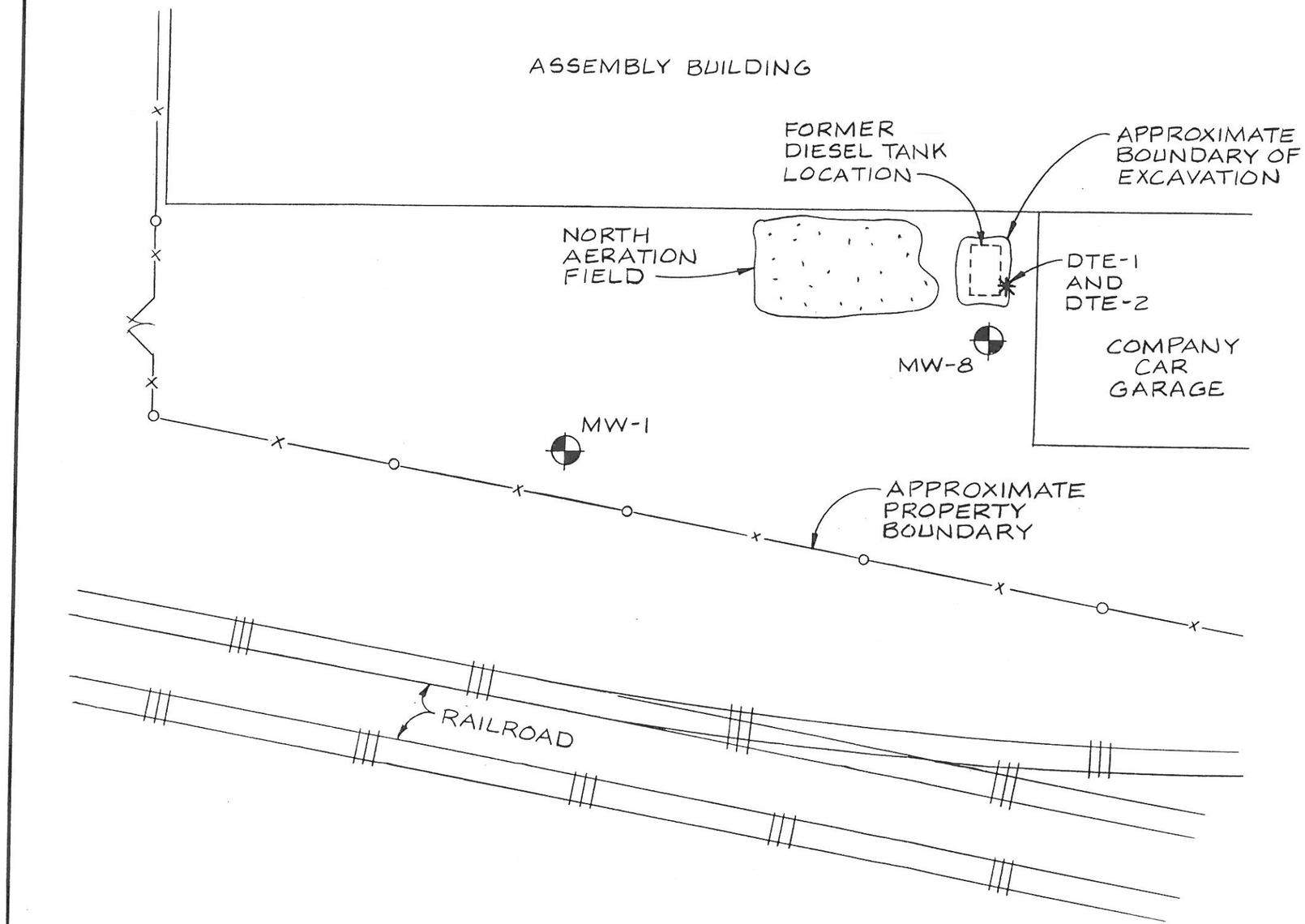
FIGURE III-2
GASOLINE TANKS
SAMPLING LOCATIONS



LEGEND

- MONITORING WELL
- ✱ SOIL SAMPLING LOCATION - SAMPLE OF NATURAL SOIL NEAR BASE OF ORIGINAL TANK EXCAVATION.

NORTH

20 0 20 40
SCALE IN FEET

LEEDS005692

Burns & McDonnell

FIGURE III-3
DIESEL TANK
SAMPLING LOCATIONS

TABLE 4-7
SUMMARY OF DETECTED SOIL SAMPLE RESULTS
STOCKPILED SOIL

BORING NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH (FT)	GENERAL LOCATION	DATE COLLECTED	DETECTED CONTAMINANT	CONTAMINANT CONCENTRATION
(NA)	TF-1	SOIL	0.5 FT	TANK FARM AREA	6/16/88	BARIUM	0.99 mg/L
						NITROBENZENE	1290 ppm
						DICHLOROETHENE	516 ug/kg
(NA)	TF-2	SOIL	0.5 FT	TANK FARM AREA	6/16/88	BARIUM	0.74 mg/L
						NITROBENZENE	660 ppm
						OIL&GREASE	312 mg/kg
(NA)	EGS-1	SOIL	0.5 FT	EAST GAS TANK AREA	7/7/88	BARIUM	5.62 mg/L
						OIL&GREASE	1364 ppm
(NA)	EGS-2	SOIL	0.5 FT	EAST GAS TANK AREA	7/7/88	BARIUM	12.81 mg/L
						OIL&GREASE	14520 ppm
(NA)	SAF-A	SOIL	0.5 FT	SOUTH AERATION FIELD	8/11/88	TPH	215 ppm
						FLASH POINT	>200 F
(NA)	SAF-B	SOIL	0.5 FT	SOUTH AERATION FIELD	8/11/88	TPH	248 ppm
						FLASH POINT	>200 F
(NA)	SAF-D	SOIL	0.5 FT	SOUTH AERATION FIELD	8/11/88	TPH	175 ppm
(NA)	SAF-E	SOIL	0.5 FT	SOUTH AERATION FIELD	8/11/88	TPH	161 ppm

NOTES: mg/kg = mg/l = ppm
TPH = TOTAL PETROLEUM HYDROCARBONS

TABLE 4-1
SUMMARY OF DETECTED SOIL DATA
TAN PLAN AREA

BORING NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH (FT)	GENERAL LOCATION	DATE COLLECTED	DETECTED CONTAMINANT	CONTAMINANT CONCENTRATION
E	E-1	SOIL	7.0	TANK FARM	6/2/88	TPH	1393 mg/kg
H	H-1	SOIL	4.0	TANK FARM	6/2/88	TPH	1765 mg/kg
TFE-1	TFE-1	SOIL	1.0' BELOW EXCAVATION BASE	TANK FARM	7/24/88	MPD	6 ppm
						FLASH POINT	>200 F
TFE-2	TFE-2	SOIL	3.5' BELOW EXCAVATION BASE	TANK FARM	7/24/88	MPD	15.3 ppm
MW-7	SS-5	SOIL	15.0 FT	TANK FARM	7/21/88	MPD	177 ppm
	SS-7	SOIL	20.0 FT	TANK FARM	7/21/88	MPD	18.4 ppm
MW-2	SS-5	SOIL	15.0 FT	TANK FARM	7/19/88	MPD	14.3 ppm
	SS-7	SOIL	20.0 FT	TANK FARM	7/19/88	MPD	18.4 ppm
						FLASH POINT	>200 F
MW-3	SS-7	SOIL	20.0 FT	TANK FARM	7/20/88	MPD	13.0 ppm
MW-4	SS-5	SOIL	15.0 FT	TANK FARM	7/20/88	MPD	13.0 ppm
	SS-7	SOIL	20.0 FT	TANK FARM	7/20/88	MPD	17.1 ppm
(NA)	EW-1	WATER	(NA)	(TANK FARM EXCAVATION)	6/16/88	TPH	157600 mg/l
						TOLUENE	764 mg/l
(NA)	EW-2	WATER	(NA)	(TANK FARM EXCAVATION)	6/16/88	TPH	125 mg/l
						TOLUENE	172 mg/l
(NA)	EW-3	WATER	(NA)	(TANK FARM EXCAVATION)	6/27/88	TPH	130.2 mg/l
						TOLUENE	13.04 mg/l
MW-2	MW-2	WATER	22.0 FT	TANK FARM	7/28/88	TPH	120.4 mg/l
MW-3	MW-3	WATER	22.0 FT	TANK FARM	7/28/88	TPH	18.8 mg/L
MW-4	MW-4	WATER	22.0 FT	TANK FARM	7/28/88	TPH	6.3 mg/l
MW-7	MW-7	WATER	22.0 FT	TANK FARM	7/28/88	MPD	10.28 mg/l

NOTES: mg/kg = mg/l = ppm
MPD = MEDIUM PETROLEUM DISTILLATE, e.g. PETROLEUM NAPTHA
HPD = HEAVY PETROLEUM DISTILLATES, e.g. NO. 6 FUEL OIL
TPH = TOTAL PETROLEUM HYDROCARBONS

TABLE 4-1
SUMMARY OF DETECTED CONTAMINATES
ANCILLARY PIPING AREAS

BORING NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	GENERAL LOCATION	DATE COLLECTED	PHOTOVAC READING	DETECTED CONTAMINANT	CONTAMINANT CONCENTRATION
(NA)	P-1	SOIL	11.5 FT	(EAST OF PUMP HOUSE)	6/9/88	--	TPH	219 mg/Kg
(NA)	D-1	SOIL	1.0 FT	(NORTH OF PUMP HOUSE)	6/17/88	--	TPH	35 mg/Kg
(NA)	P-1	SOIL	1.0 FT	(WEST OF PUMP HOUSE)	6/17/88	--	TPH	23 mg/Kg
A	A-1	SOIL	2.0	TANK FARM VENT PIPES	6/2/88	35 ppm	TPH	317 mg/Kg
	A-2	SOIL	3.0		6/2/88	50-85 ppm	TPH	343 mg/Kg
B	B-1	SOIL	1.5	VENT PIPES	6/2/88	100 ppm (BOREHOLE)	TPH	157600 mg/Kg
	B-2	SOIL	3.0	VENT PIPES	6/2/88		TPH	622 mg/Kg
D	D-1	SOIL	4.0	VENT PIPES	6/2/88	35-85 ppm	TPH	765 mg/Kg

NOTES: mg/kg = mg/l = ppm
TPH = TOTAL PETROLEUM HYDROCARBONS

TABLE 1-1

SUMMARY OF DETECTED SOIL AND WATER SAMPLES

GASOLINE TANKS AREA

BORING NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	GENERAL LOCATION	DATE COLLECTED	DETECTED CONTAMINANT	CONTAMINANT CONCENTRATION
K	K-1	SOIL	12.5 FT	WEST GAS. TANK	6/9/88	TPH	1388 mg/Kg
L	L-1	SOIL	12.0 FT	WEST GAS. TANK	6/9/88	TPH	1187 mg/Kg
M	M-1	SOIL	13.5 FT	EAST GAS. TANK	6/9/88	TPH	8440 mg/Kg
EGE-1	EGE-1	SOIL	15'BELOW PAD TOP	EAST GAS. TANK	7/7/88	TPH (C-8=>C-19)	106 mg/Kg (C-8=>C-12)
EGE-2	EGE-2	SOIL	2'ABOVE PAD TOP	EAST GAS. TANK	7/7/88	TPH (C-8=>C-19)	1190 mg/Kg (C-8=>C-12)
EGE-3	EGE-3	SOIL	15'BELOW PAD TOP	EAST GAS. TANK	7/7/88	TPH (C-8=>C-19)	539 mg/Kg (C-8=>C-12)
WGE-2	WGE-2	SOIL	1' BELOW EXCAVATION BASE	WEST GAS. TANK	7/24/88	TPH	600 ppm
WGE-3	WGE-3	SOIL	2.5' BELOW EXCAVATION BASE	WEST GAS. TANK	7/24/88	TPH FLASH POINT	2500 ppm >200 F
MW-6	SB-3	SOIL	10.0 FT	WEST GAS. TANK VICINITY	7/21/88	TOLUENE XYLENE	10.96 ppm 13.6 ppm
MW-5	MW-5	WATER	22.0 FT	WEST GAS. TANK VICINITY	7/28/88	TPH	19.6 mg/l

NOTES: mg/Kg = mg/l = ppm

TPH = TOTAL PETROLEUM HYDROCARBONS

TABLE 7--
SUMMARY OF DETECTED CONTAMINANTS
DIESEL TANK AREA

BORING NUMBER	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DEPTH	GENERAL LOCATION	DATE COLLECTED	DETECTED CONTAMINANT	CONTAMINANT CONCENTRATION
(NA)	DT-1	BACKFILL MATERIAL	0.5 FT	DIESEL TANK		TPH	1140 mg/kg
MW-1	SS-5	SOIL	15.0 FT	NW OF TANK	7/19/88	HPD	.264 gm
						FLASH POINT	>200 F
MW-1	SS-7	SOIL	20.0 FT	NW OF TANK	7/19/88	HPD	45 ppm
MW-1	MW-1	WATER	22.0 FT	NW OF TANK	7/28/88	TPH	18.8 ppm

NOTES: mg/kg = mg/l = ppm
HPD = HEAVY PETROLEUM DISTILLATE, e.g. NO. 6 FUEL OIL
TPH = TOTAL PETROLEUM HYDROCARBONS

APPENDIX A - BORING LOGS

Drilling Log

Project Name: GMLEEDS						Boring No.: MW-1	
Project No.: 88-119-3-005						Page: 1 of 2	
Ground Elevation: 761.64	Location: N. OF COMPANY CAR GARAGE					Total Footage: 22.0'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
HA	6"	22.0'	—	7 (SS)	—	15.5	7-18-88
Drilling Co.: LAYNE-WESTERN CO.				Driller (s): RANDY CROWL; TOM BUTLER			
Drilling Rig.: MOBILE B-61				Type of Penetration Test: SPLIT SPOON			
Date: 7-18-88	To: 7-18-88			Field Observer (s): ERIC G. WILLIAMS			

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
0	CINDER + GRAVEL FILL, BLACK, TOP 8" CONCRETE					STARTED DRILLING : 2:00 pm
1						HNU
2						AIR 0.0
3	CLAY, BLACK WITH GRAVEL (FILL)					
4						
5						CUTTINGS 0.0 HOLE 0.0
6	SILTY CLAY, DARK GREEN-GRAY, MOIST, STIFF, HIGH PLAST.		3/4/6/6	17"/24"	1	SAMPLE 0.0
7						AIR 0.0
8						CUTTINGS 0.0
9			-/-/1/6	17"/24"	2	SAMPLE 0.0
10	VERY SILTY CLAY, GRAY WITH RUST MOTTLES, MOIST, MED. STIFF, MED. TO LOW PLAST.					
11			2/3/4/6	20"/24"	3	SAMPLE 0.0 LEEDS005699
12						AIR 0.0 CUTTINGS 0.0
13			3/4/5/6	24"/24"	4	SAMPLE 0.0
14						

Drilling Log, continued

Project Name: GM LEEDS
Project No.: 88-119-3-005
Boring No.: MW-1
Page: 2 of 2
Date: 7-18-88

Depth	Description	Log or Class	Blow Count	Core Recov. & Loss	Box or Sample No.	Remarks
14					4	HNU
15						AIR 0.0
16	SAME AS ABOVE, SATURATED		1/1/3/4	22" / 24"	5 LAB SAMPLE	SAMPLE 0.0
17	VERY SILTY CLAY, GRAY, VERY MOIST TO WET, MED. STIFF TO SOFT					CUTTINGS 0.0
18			4/2/3/-	22" / 24"	6	HOLE 0.0 SAMPLE 0.0 AIR 0.0
19						
20	SAME AS ABOVE, GREEN GRAY, 1/4" BROWN ORGANIC CLAY SEAM @ 21.4'		2/2/3/3	22" / 24"		
21					7 LAB SAMPLE	HOLE 0.0 SAMPLE 0.0 AIR 0.0
22	TOTAL DEPTH 22.0'					FINISHED DRILLING: 3:25 pm

2" PVC MONITOR WELL INSTALLED. 15', 0.10" SLOT SCREEN.

FINISHED MONITOR WELL CONSTRUCTION:

LEEDS005700

051281

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Form TS-GT-2-2

Drilling Log

Project Name: GM LEEDS						Boring No.: MW-2	
Project No.: 88-119-3-003						Page: 1 of 2	
Ground Elevation: 762.31		Location: N. OF TANK No. 7				Total Footage: 22.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
HOLLOW AUGERS	6"	22.0	0.0	7	N-A.	SEE REMARKS	—
Drilling Co.: LAYNE-WESTERN					Driller (s): RANDY CROWEL		
Drilling Rig.: MOBILE B-61					Type of Penetration Test: STANDARD		
Date: 7/19/88	To: 7/19/88				Field Observer (s): GLEN ERNSTMANN		

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
0	CONCRETE					
1	BLACK SILTY CLAY, SOME GRAVEL AND COBBLES, MOIST					
2						
3						HNU-HOLE 0.0
4	GRAY SILTY CLAY, TRACE MEDIUM SAND, HIGH PLASTICITY, MOIST					LEEDS005701
5					5.0	HNU-SAMPLE 0.0 ppm
6			12/3/4/6	10"/24"	SS-1	HNU-CUTTINGS 0.00 ppm
7					7.0	
8					7.5	HNU-SAMPLE 0.0 ppm
9			2/5/4/6	12"/24"	SS-2	HNU-CUTTINGS 0.0 ppm
10	LIGHT GRAY SILTY CLAY, MEDIUM TO HIGH PLASTICITY, REDDISH BROWN STAINS, MOIST				9.5	HNU-HOLE 0.0 ppm
11			2/6/6/10	13"/24	10.0 SS-3	HNU-SAMPLE 0.0 ppm HNU-CUTTINGS 0.0 ppm
12					12.0	
13			3/4/6/5	24"/24"	12.5 SS-4	HNU-SAMPLE 0.0 ppm HNU-CUTTINGS 0.0 ppm
14						

Drilling Log, continued

Project Name: GM LEEDS
Project No.: 88-119-3-003
Boring No.: MW-2
Page: 2 of 2
Date: 7/19/88

Depth	Description	Log or Class	Blow Count	Core Recov. & Loss	Box or Sample No.	Remarks
15	LIGHT GRAY SILTY CLAY, MEDIUM TO HIGH PLASTICITY, REDDISH BROWN (IRON) STAINS, MOIST		2/4/4/5	24"	SS-4	HNU-HOLE 0.0 ppm
16	BROWN CLAYEY SILT, TRACE FINE SAND, LOW PLASTICITY, SATURATED			24"	SS-5	HNU-SAMPLE 0.0 ppm SATURATED MATERIAL @ 15'. SAMPLE SS-5 WAS PRESERVED FOR TESTING
17						
18			3/4/3/4	24"	SS-6	HNU - SAMPLE 0.0 ppm
19	GRAY CLAYEY SILT, LOW PLASTICITY, SOME SILTY CLAY SEAMS, HIGH PLASTICITY, SATURATED			24"		HNU - CUTTINGS 0.0 ppm
20						HNU - HOLE 0.0 ppm
21			3/2/3/2	24"	SS-7	HNU - SAMPLE 0.0 ppm
22	TOTAL DEPTH 22.0			24"		HNU - CUTTINGS 0.0 ppm SAMPLE PRESERVED FOR TESTING.
23						A 2" PVC PIEZOMETER WAS INSTALLED. 15' SCREEN. FILTER PACKED W/ SILICA SAND TO 5'. BENTONITE PELLE TO 3' GROUT TO SURFAC FLUSH-MOUNTED STEEL PROTECTIVE COVER.
24						
25						NOTE: THE HEADSPACE IN ALL SAMPLE JARS WAS SCREENED FOR ORGANIC VAPO AT LEAST 1 HR. AFT SAMPLING. THE HEADSPACE READING WAS 0.0 FOR ALL SAMPLES.

Drilling Log

Project Name: GM LEEDS						Boring No.: MW-3	
Project No.: 88-119-3-003						Page: 1 of 2	
Ground Elevation: 762.85		Location: E. of RAILROAD SPUR				Total Footage: 22.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
HOLLOW AUGER	6"	22.0	0.0	7	N/A.	SEE REMARKS	-
Drilling Co.: LAYNE-WESTERN					Driller (s): RANDY CROWEL		
Drilling Rig.: MOBILE B-61					Type of Penetration Test: STANDARD		
Date: 7/19/88	To: 7/19/88				Field Observer (s): GLEN ERNSTMANN		

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
1	BLACK SILTY CLAY, TRACE FINE GRAVEL, HIGH PLASTICITY, MOIST					HNU - CUTTINGS 0.0 ppm
2						
3						
4						
5	GRAY SILTY CLAY, TRACE SAND, MEDIUM PLASTICITY, MOIST					LEEDS005703
					5.0	HNU - SAMPLE 0.0 ppm
6			4/3/4/4	15" / 24"	SS-1	HNU - CUTTINGS 0.0 ppm
7					7.0	HNU - HOLE 0.0 ppm
					7.5	
8			4/6/6/8			HNU - SAMPLE 0.0 ppm
9				17" / 24"	SS-2	HNU - CUTTINGS 0.0 ppm
					9.5	
10	GRAY CLAYEY SILT, TRACE FINE SAND, REDDISH BROWN (IRON) STAINS, MEDIUM TO LOW PLASTICITY, MOIST TO DAMP				10.0	HNU - BOREHOLE 2.0 ppm
11			2/4/6/6	24" / 24"	SS-3	HNU - SAMPLE 0.0 ppm
12					12.0	HNU - CUTTINGS 0.0 ppm
					12.5	
13			3/4/6/5	24" / 24"	SS-4	HNU - BOREHOLE 0.0 ppm
14						HNU - SAMPLE 0.0 ppm
						HNU - CUTTINGS 0.0 ppm

Drilling Log, continued

Boring No. MW-3
Project Name GMLEEDS
Page 2 of 2
Project No. 88-119-3-603
Date 7/19/88

Depth	Description	Log or Class	Blow Count	Core Recov. & Loss	Box or Sample No.	Remarks
14					SS-4	
				14.5		SATURATED MATERIAL @ 15'
15	BROWN CLAYEY SILT, SOME SILTY CLAY SEAMS, SATURATED		2/2	15.0		HNU - BOREHOLE 0.0
	FEW FINE SANDY SILT SEAMS, SATURATED			24"		TWO JAR SAMPLES
16			2/1	24"	SS-5	PRESERVED FOR ANALYSIS
17				17.0		HNU - SAMPLE 0.0 ppm
				24" 17.5		
18			1/2/2/3	24"		HNU - CUTTINGS 0.0 ppm
					SS-6	
19	GRAY CLAYEY SILT, TRACE FINE SAND, LOW TO MEDIUM PLASTICITY, SATURATED					HNU - SAMPLE 0.0 ppm
				19.5		
20				20.0		
			1/2/2/1	19"		TWO JAR SAMPLES
21				24"	SS-7	PRESERVED FOR ANALYSIS.
22	TOTAL DEPTH 22.0			22.0		HNU - SAMPLE 0.0 ppm
						HNU - CUTTINGS 0.0 ppm
23						HNU - BOREHOLE 0.0 ppm
24						A 2" PVC PIEZOMETER WAS INSTALLED TO 22.0
25						15' SCREEN
						FILTER PACKED W/ SILICA SAND TO 5.0'
						BENTONITE PELLETS TO 3.0'
						GROUT TO SURFACE
						FLUSH MOUNTED STEEL PROTECTIVE COVER.
						NOTE: THE HEADSPACE IN ALL SAMPLE JARS WAS SCREENED FOR ORGANIC VAPORS AT LEAST 30 MINS. AFTER SAMPLING. THE HEADSPACE READING WAS 0.0 PPM FOR ALL SAMPLES.

Drilling Log

Project Name: GMLEEDS						Boring No.: MW-4	
Project No.: 88-119-3-005						Page: 1 of 2	
Ground Elevation: 762.28		Location: W. OF TANK No. 4				Total Footage: 22.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
H.A.	6"	22.0	0.0	7	N.A.	~	~
Drilling Co.: Layne Western				Driller (s): Randy Crowl			
Drilling Rig.: Mobile B-61				Type of Penetration Test: STANDARD			
Date: 7-20-88	To: 7-20-88			Field Observer (s): Eric Williams			

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
	CONCRETE					HNU
1	V. DARK BROWN SILTY CLAY, WITH SMALL GRAVEL (FILL) MOIST, MED PLAST., MED STIFF					STARTED 7:40
2						
3						
4						
5						
6			1/6/5/11	0" / 24"	1	2.4 HOLE 4.0
7						CUTTINGS: 2.6
8	BROWN-GRAY SILTY CLAY, MOIST, MED PLAST, STIFF		3/4/8/10	16" / 24"	2	SAMPLE 1.0
9						
10						
11	GRAY SILTY CLAY WITH SOME IRON OXIDE & DK. BROWN MOTTLES, MOIST, MED PLAST, STIFF		1/2/4/4		3	AIR 0.0 SAMPLE: 0.0
12						LEEDS005705
13	SAME NO DK BROWN, LITTLE FOSSILS SOFT BROWN 3" CLAY SEAM @ 13.5'		3/3/5/5	24" / 24"	4	AIR 0.0 SAMPLE: 0.0 HOLE: 0.0
14						

090280

Burns & McDonnell
ENGINEERS · ARCHITECTS · CONSULTANTS

Form TS-GT-2-1

Drilling Log, continued

Boring No. MW-4

Project Name GMLEEDS

Page 2 of 2

Project No. 88-119-3-005

Date MW-4

Depth	Description	Log or Class	Blow Count	Core/ Recov. & Loss	Box or Sample No.	Remarks
15	SAME TO 15.8				4	
16	MORE BROWN (1/2) SATURATED		2/1/3/2	24" / 24" LAB	5 LAB SAMPLE	AUGER: 0.6 SAMPLE:
17						
18	RED BROWN V. FINE SANDY SILTY CLAY, SATURATED, FEW TO CLAYEY SILT		3/2/4/3	18" / 24"	6	SAMPLE: 0.0
19						
20	RED BROWN (FEW) V SILTY CLAY SAND				1	
21			1/4/3/2	24" / 24" LAB	7 LAB SAMPLE	SAMPLE AT AUGER REF
22	GRAY SILTY CLAY W/ LITTLE FEW SAND					
						FINISHED 8:35 DRILLING
						MW

LEEDS005706

Drilling Log

Project Name: GM LEEDS						Boring No.: MW-5	
Project No.: 88-119-3-005						Page: 1 of 2	
Ground Elevation: 761.49	Location: S.W. - WEST GASOLINE TANK					Total Footage: 22.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
H.A.	6"	22.0	0.0	7	N.A.	—	—
Drilling Co.: Layne-Western					Driller (s): Randy Crowl		
Drilling Rig: Mobile B-61					Type of Penetration Test: Standard		
Date: 7-20-88	To: 7-20-80				Field Observer (s): Eric Williams		

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
	CONCRETE					HNU
1	GRAVEL					START: 9:30
	DARK BROWN ~~GRAY~~ SANDY CLAY (FILL)					
2						
3						CUTTINGS 0.0
4						AIR 0.0
5						
6	GRAY SILTY CLAY, MOIST, STIFF, MED PLAST,		4/4/6/7	4" / 24"	1	HOLE 0.0 SAMPLE 0.0 LEEDS005707
7						CUTTINGS 0.0
8				18" / 24"	2	AIR 0.0 HOLE SAMPLE 0.0
9	GRADES FROM GRAY TO GREEN		3/3/4/7			
10						CUTTINGS 0.0
11	SAME, DK. GREEN-GRAY		2/2/3/3	18" / 24"	3 LAB SAMPLE	AIR 0.0 HOLE 1.0 SAMPLE 0.0
12						CUTTINGS 0.0
13	SAME, GRAY GREEN, DARK GRAY 3" CLAY SEAM @ 14.0		2/4/4/5	24" / 24"	4	AIR SAMPLE HOLE
14						

Drilling Log, continued

Boring No. MW-5

Project Name GMLEEDS

Page 2 of 2

Project No. 88-119-3-005

Date ~~MAY 95~~ 7-20

Depth	Description	Log or Class	Blow Count	Core Recov. & Loss	Box or Sample No.	Remarks
15	SAME, SOME BROWN FEO2 STAIN INCREASING W/ DEPTH, SATURATED		~		4	
16			2/3/4/4	24" / 24" (LAB)	5 LAB SAMPLE	AIR 0.0 HOLE 6.0 SAMPLE 0.0
17	GRAY + GREEN + BROWN ~~SAND~~, TRACE V. FINE SAND, V. SILTY SATURATED					
18			2/1/2/2	24" / 24"	6	AIR 0.0 HOLE 2.5 SAMPLE 0.0
19						
20						
21	SAME		2/2/3/3	(LAB)	7 LAB SAMPLE	AIR 0.0 HOLE 2.5 SAMPLE
22	GREEN BROWN V. SILTY CLAY, MUCH FEO2, TRACE V. F-C SAND SATURATED					FINISH DRILLING 10:30A

LEEDS005708

Drilling Log

Project Name: GM LEEDS			Boring No.: MW-6
Project No.: 88-119-3-005			Page: 1 of 2
Ground Elevation: 763.55	Location: W. OF POWER HOUSE		Total Footage: 22.0

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
H/A.	6"	22.0	0.0	7	N/A.	—	—

Drilling Co.: Layne-Western		Driller (s): Randy Crowl	
Drilling Rig.: Mobile B-61		Type of Penetration Test: Standard	
Date: 7.20-88	To: 7-20-88	Field Observer (s): Eric Williams	

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
1	ASPHALT CONCRETE GRAVEL DARK BROWN SANDY CLAY (FILL)					HNU START: 12:30 p.m.
2						
3	DARK GRAY BROWN SILTY CLAY, MOIST, STIFF, HIGH PLASTIC.					
4						
5	SAME, DK GREEN-GRAY					
6			3/3/5/6	24"/24"	1	AIR 0.0 HOLE 0.0 SAMPLE 0.0
7						
8			2/4/6/8	18"/24"	2	AIR 0.0 HOLE 0.0 SAMPLE 0.0
9						
10						LEEDS005709
11			2/4/6/6	24"/24"	3	AIR 0.0 HOLE 5.0 SAMPLE 0.0
12					LAB SAMPLE	CUTTINGS
13	SAME, DK. GRAY GREEN		-/4/4/6	18"/24"	4	~~AIR~~ ~~HOLE~~ SAMPLE 0.0
14						

Drilling Log, continued

Boring No. MW-6

Project Name GM LEEDS

Page 2 of 2

Project No. 88-119-3-005

Date 7-20 ~~14-0006~~

Depth	Description	Log or Class	Blow Count	Core Recov. & Loss	Box or Sample No.	Remarks
15	GRAY GREEN V. SILTY CLAY, W/ SOME FeO_2, MOIST TO WET, ~~STIFF~~		1/3/3/4	24" / 24"	4	
16					5 LAB SAMPLE	AIR 0.0 NOSE 3.0 SAMPLE 0.0
17	GREEN GRAY + BROWN V. SILTY CLAY, BROWN INCREASES W/ DEPTH, ~~SATURATED~~ WET					
18			3/3/3/5	24" / 24"	6	AIR 0.0 NOSE 15 SAMPLE 0.0
19						
20	BROWN V. FINE SANDY, SILTY CLAY SATURATED					
21			7/21/2/4	—	7 LAB SAMPLE	AIR 0.0 NOSE 15.0 SAMPLE 0.0
22	~~TOTAL DEPTH~~ 22.0'					

FINISH DRILLING: 1:25

WATER LEVEL AFTER DRILLING: 16.7'

LEEDS005710

Drilling Log

Project Name: G M LEEDS						Boring No.: MW-7	
Project No.: 88-119-3-065						Page: 1 of 2	
Ground Elevation: 761.54		Location: S. OF TANK No. 1				Total Footage: 22.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. Core Boxes	Depth To Water	Date Measured
H.A.	6"	22.0	0.0	~~8~~ 7	N.A.	~	~
Drilling Co.: Layne - Western				Driller (s): Randy Crowl			
Drilling Rig: B-61				Type of Penetration Test: Standard			
Date: 7-21-88	To: 7-21-88			Field Observer (s): Eric Williams			

Depth	Description	Class.	Blow Count	Recov.	Sample or Box No.	Remarks
0	SAND & GRAVEL					START: 8:00
1	DK BROWN CLAY & GRAVEL					
2						
3	DK ~~GREEN~~ GRAY SILTY CLAY, MOIST, STIFF, MED TO HIGH PLAST.					
4						
5						
6			3/4/6/7	24" / 24"	1	AIR 0.0 HOLE 70.? SAMPLE 0.0
7						
8						AIR 0.0
9			4/4/6/6	24" / 24"	2	HOLE 2.0 SAMPLE 0.0
10						CUTTINGS CONTAINED
11	GREEN GRAY SILTY CLAY, LITTLE BROWN FE OX, MOIST, STIFF, MED. PLAST.		3/2/3/4	20" / 24"	3	AIR 0.0 HOLE 20.0 ? SAMPLE 0.5 ?
12						LEEDS005711
13	SAME, STIFF TO VISTIFF, MORE SILT		2/3/4/5	2	4	AIR 0.0 HOLE 0.0 SAMPLE 0.0
14						

NATIONAL ANALYTICAL LABORATORIES

A Division of U.S. POLLUTION CONTROL, INC.

JOHN DIETER
BURNS & MCDONNELL ENG. CO
P.O. BOX 173

KANSAS CITY MO 64141

REPORT NUMBER: F097002

SAMPLE IDENTIFICATION: 3016-01
CUSTOMER IDENTIFICATION: SAMPLE TF-1
DATE SAMPLED: 6/16/88
TYPE OF MATERIAL: SOLID

DATE RECEIVED: 6/17/88
DATE COMPLETED: 7/05/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
EP-TOX EXTRACTION	1310		
ARSENIC	6010	0.1 MG/L	BDL MG/L
BARIUM	6010	0.01 MG/L	0.99 MG/L
CADMIUM	6010	0.01 MG/L	BDL MG/L
CHROMIUM	6010	0.01 MG/L	BDL MG/L
LEAD	6010	0.1 MG/L	BDL MG/L
MERCURY	7470	0.0005 MG/L	BDL MG/L
SELENIUM	6010	0.1 MG/L	BDL MG/L
SILVER	6010	0.01 MG/L	BDL MG/L
F-WASTE SOLVENTS		**	**
TETRACHLOROETHYLENE	8010	0.001 WT%	BDL WT%
TRICHLOROETHYLENE	8010	0.001 WT%	BDL WT%
METHYLENECHLORIDE	8010	0.001 WT%	BDL WT%
1,1,1-TRICHLOROETHANE	8010	0.001 WT%	BDL WT%
CARBON TETRACHLORIDE	8010	0.001 WT%	BDL WT%
TRICHLORO-1,2,2-TRIFLUOROETHANE	8010	0.001 WT%	BDL WT%
TRICHLOROFLUOROMETHANE	8010	0.001 WT%	BDL WT%
CHLOROBENZENE	8010	0.001 WT%	BDL WT%
O-DICHLOROBENZENE	8010	0.001 WT%	BDL WT%
XYLENES	8015/8020	0.001 WT%	BDL WT%
ACETONE	8015/8020	0.001 WT%	BDL WT%
ETHYL ACETATE	8015/8020	0.001 WT%	BDL WT%
ETHYLBENZENE	8015/8020	0.001 WT%	BDL WT%
ETHYL ETHER	8015/8020	0.001 WT%	BDL WT%
METHYL ISOBUTYL KETONE	8015/8020	0.001 WT%	BDL WT%
N-BUTYL ALCOHOL	8015/8020	0.001 WT%	BDL WT%
CYCLOHEXANONE	8015/8020	0.001 WT%	BDL WT%
METHANOL	8015/8020	0.001 WT%	BDL WT%
CRESOLS/CRESYLIC ACID	8015/8020	0.001 WT%	BDL WT%
NITROBENZENE	8015/8020	0.001 WT%	0.029 WT%
TOLUENE	8015/8020	0.001 WT%	BDL WT%
METHYL ETHYL KETONE	8015/8020	0.001 WT%	BDL WT%
CARBON DISULFIDE	8015/8020	0.001 WT%	BDL WT%
ISOBUTANOL	8015/8020	0.001 WT%	BDL WT%
PYRIDINE	8015/8020	0.001 WT%	BDL WT%

BDL = BELOW DETECTION LIMIT

LEEDS005738

NATIONAL ANALYTICAL LABORATORIES

A Division of U.S. POLLUTION CONTROL, INC.

JOHN DIETER
BURNS & MCDONNELL ENG. CO
P.O. BOX 173

REPORT NUMBER: F097002

SAMPLE IDENTIFICATION: 3016-01
CUSTOMER IDENTIFICATION: SAMPLE TF-1
DATE SAMPLED: 6/16/88
TYPE OF MATERIAL: SOLID

DATE RECEIVED: 6/17/88
DATE COMPLETED: 7/05/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
TOTAL CHLORIDES BY BOMB	D808/300.0	100 MG/KG	BDL MG/K
OIL & GREASE BY IR		1 MG/KG	816 MG/K

BDL = BELOW DETECTION LIMIT

LEEDS005739

NATIONAL ANALYTICAL LABORATORIES

A Division of U.S. POLLUTION CONTROL, INC.

JOHN DIETER
BURNS & MCDONNELL ENG. CO
P.O. BOX 173

KANSAS CITY MO 64141

REPORT NUMBER: F097002

SAMPLE IDENTIFICATION: 3016-02
CUSTOMER IDENTIFICATION: SAMPLE TF-2
DATE SAMPLED: 6/16/88
TYPE OF MATERIAL: SOLID

DATE RECEIVED: 6/17/88
DATE COMPLETED: 7/05/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
EP-TOX EXTRACTION	1310		
ARSENIC	6010	0.1 MG/L	BDL MG/L
BARIUM	6010	0.01 MG/L	0.74 MG/L
CADMIUM	6010	0.01 MG/L	BDL MG/L
CHROMIUM	6010	0.01 MG/L	BDL MG/L
LEAD	6010	0.1 MG/L	BDL MG/L
MERCURY	7470	0.0005 MG/L	BDL MG/L
SELENIUM	6010	0.1 MG/L	BDL MG/L
SILVER	6010	0.01 MG/L	BDL MG/L
F-WASTE SOLVENTS		**	**
TETRACHLOROETHYLENE	8010	0.001 WT%	BDL WT%
TRICHLOROETHYLENE	8010	0.001 WT%	BDL WT%
METHYLENECHLORIDE	8010	0.001 WT%	BDL WT%
1,1,1-TRICHLOROETHANE	8010	0.001 WT%	BDL WT%
CARBON TETRACHLORIDE	8010	0.001 WT%	BDL WT%
TRICHLORO-1,2,2-TRIFLUOROETHANE	8010	0.001 WT%	BDL WT%
TRICHLOROFLUOROMETHANE	8010	0.001 WT%	BDL WT%
CHLOROBENZENE	8010	0.001 WT%	BDL WT%
O-DICHLOROBENZENE	8010	0.001 WT%	BDL WT%
XYLENES	8015/8020	0.001 WT%	BDL WT%
ACETONE	8015/8020	0.001 WT%	BDL WT%
ETHYL ACETATE	8015/8020	0.001 WT%	BDL WT%
ETHYLBENZENE	8015/8020	0.001 WT%	BDL WT%
ETHYL ETHER	8015/8020	0.001 WT%	BDL WT%
METHYL ISOBUTYL KETONE	8015/8020	0.001 WT%	BDL WT%
N-BUTYL ALCOHOL	8015/8020	0.001 WT%	BDL WT%
CYCLOHEXANONE	8015/8020	0.001 WT%	BDL WT%
METHANOL	8015/8020	0.001 WT%	BDL WT%
CRESOLS/CRESYLIC ACID	8015/8020	0.001 WT%	BDL WT%
NITROBENZENE	8015/8020	0.001 WT%	0.066 WT%
TOLUENE	8015/8020	0.001 WT%	BDL WT%
METHYL ETHYL KETONE	8015/8020	0.001 WT%	BDL WT%
CARBON DISULFIDE	8015/8020	0.001 WT%	BDL WT%
ISOBUTANOL	8015/8020	0.001 WT%	BDL WT%
PYRIDINE	8015/8020	0.001 WT%	BDL WT%

BDL = BELOW DETECTION LIMIT

NATIONAL ANALYTICAL LABORATORIES

A Division of U.S. POLLUTION CONTROL, INC.

JOHN DIETER
BURNS & MCDONNELL ENG. CO
P.O. BOX 173

REPORT NUMBER: F097002

SAMPLE IDENTIFICATION: 3016-02
CUSTOMER IDENTIFICATION: SAMPLE TF-2
DATE SAMPLED: 6/16/88
TYPE OF MATERIAL: SOLID

DATE RECEIVED: 6/17/88
DATE COMPLETED: 7/05/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
TOTAL CHLORIDES BY BOMB	D808/300.0	100 MG/KG	BDL MG/K
OIL & GREASE BY IR		1 MG/KG	312 MG/K

BDL = BELOW DETECTION LIMIT

LEEDS005741

LANGSTON LABORATORIES, INC.
Research • Testing • Problem Solving
2005 W. 103rd Terrace (B) • Leawood, KS 66206-2695 • Ph. 913-341-7800

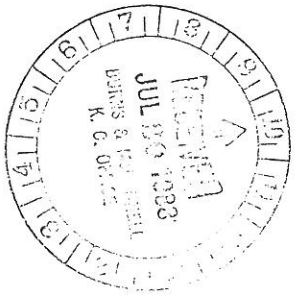
LABORATORY REPORT

CLIENT: Burns & McDonnell
P. O. Box 419173
Kansas City, MO 64141-0173
ATTN: Glen Ernstmann

RECEIVED: July 8, 1988 (10:00 am)
COMPLETED: July 13, 1988
LLI NO.: 88-7028

SAMPLE DESCRIPTION: Soil Samples Collected on July 7, 1988 by G. Ernstmann

SAMPLE IDENTIFICATION	ANALYSIS	RESULTS
EGE-1 (3:30 pm)	C-8 through C-19 Hydrocarbons	106 mg/kg (C-8/C-12)
EGE-2 (3:30 pm)	C-8 through C-19 Hydrocarbons	3,190 mg/kg (C-8/C-12)
EGE-3 (3:30 pm)	C-8 through C-19 Hydrocarbons	539 mg/kg (C-8/C-12)



APPROVED: Don Phillips (for JR)
Judith A. Russell
Laboratory Manager

LEEDS005742

NATIONAL ANALYTICAL LABORATORIES
A Division of
U.S. POLLUTION CONTROL, INC

JOHN DIETER
BURNS & MCDONNELL ENG. CO
4800 EAST 63RD STREET
P.O. BOX 419173
KANSAS CITY MO 64141

REPORT NUMBER: G018002

SAMPLE IDENTIFICATION: 3081-01
CUSTOMER IDENTIFICATION: EGS-1
DATE SAMPLED: 7/07/88
TYPE OF MATERIAL: SOIL

DATE RECEIVED: 7/08/88
DATE COMPLETED: 7/22/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
EP-TOX EXTRACTION	1310		
ARSENIC	6010	0.1 MG/L	BDL MG/L
BARIUM	6010	0.01 MG/L	5.62 MG/L
CADMIUM	6010	0.01 MG/L	BDL MG/L
CHROMIUM	6010	0.01 MG/L	BDL MG/L
LEAD	6010	0.1 MG/L	BDL MG/L
MERCURY	7470	0.0005 MG/L	BDL MG/L
SELENIUM	6010	0.1 MG/L	BDL MG/L
SILVER	6010	0.01 MG/L	BDL MG/L
TETRACHLOROETHYLENE	8010	10 MG/KG	BDL MG/K
TRICHLOROETHYLENE	8010	10 MG/KG	BDL MG/K
METHYLENECHLORIDE	8010	10 MG/KG	BDL MG/K
1,1,1-TRICHLOROETHANE	8010	10 MG/KG	BDL MG/K
CARBON TETRACHLORIDE	8010	10 MG/KG	BDL MG/K
TRICHLORO-1,2,2-TRIFLUOROETHANE	8010	10 MG/KG	BDL MG/K
TRICHLOROFLUOROMETHANE	8010	10 MG/KG	BDL MG/K
CHLOROBENZENE	8010	10 MG/KG	BDL MG/K
O-DICHLOROBENZENE	8010	10 MG/KG	BDL MG/K
XYLENES	8015/8020	10 MG/KG	BDL MG/K
ACETONE	8015/8020	10 MG/KG	BDL MG/K
ETHYL ACETATE	8015/8020	10 MG/KG	BDL MG/K
ETHYLBENZENE	8015/8020	10 MG/KG	BDL MG/K
ETHYL ETHER	8015/8020	10 MG/KG	BDL MG/K
METHYL ISOBUTYL KETONE	8015/8020	10 MG/KG	BDL MG/K
N-BUTYL ALCOHOL	8015/8020	10 MG/KG	BDL MG/K
CYCLOHEXANONE	8015/8020	10 MG/KG	BDL MG/K
METHANOL	8015/8020	10 MG/KG	BDL MG/K
CRESOLS/CRESYLIC ACID	8015/8020	10 MG/KG	BDL MG/K
NITROBENZENE	8015/8020	10 MG/KG	BDL MG/K
TOLUENE	8015/8020	10 MG/KG	BDL MG/K
METHYL ETHYL KETONE	8015/8020	10 MG/KG	BDL MG/K
CARBON DISULFIDE	8015/8020	10 MG/KG	BDL MG/K
ISOBUTANOL	8015/8020	10 MG/KG	BDL MG/K
PYRIDINE	8015/8020	10 MG/KG	BDL MG/K
TOTAL CHLORIDES BY BOMB	D808/300.0	1000 MG/KG	BDL MG/K

BDL = BELOW DETECTION LIMIT

LEEDS005743

NATIONAL ANALYTICAL LABORATORIES
A Division of
U.S. POLLUTION CONTROL INC

JOHN DIETER
BURNS & MCDONNELL ENG. CO
4800 EAST 63RD STREET

REPORT NUMBER: G018002 PAGE 2

SAMPLE IDENTIFICATION: 3081-01
CUSTOMER IDENTIFICATION: EGS-1
DATE SAMPLED: 7/07/88
TYPE OF MATERIAL: SOIL

DATE RECEIVED: 7/08/88
DATE COMPLETED: 7/22/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
INORGANIC CHLORIDES	D808/300.0	1000 MG/KG	BDL MG/KG
TOTAL ORGANIC CHLORIDES	D808/300.0	1000 MG/KG	BDL MG/KG
OIL & GREASE BY IR		100 PPM	364 PPM

BDL = BELOW DETECTION LIMIT

LEEDS005744

NATIONAL ANALYTICAL LABORATORIES

A Division of U.S. POLLUTION CONTROL, INC.

JOHN DIETER
BURNS & MCDONNELL ENG. CO
4800 EAST 63RD STREET
P.O. BOX 419173
KANSAS CITY MO 64141

REPORT NUMBER: G018002

SAMPLE IDENTIFICATION: 3081-02
CUSTOMER IDENTIFICATION: EGS-2
DATE SAMPLED: 7/07/88
TYPE OF MATERIAL: SOIL

DATE RECEIVED: 7/08/88
DATE COMPLETED: 7/22/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
EP-TOX EXTRACTION	1310		
ARSENIC	6010	0.1 MG/L	BDL MG/L
BARIUM	6010	0.01 MG/L	2.81 MG/L
CADMIUM	6010	0.01 MG/L	BDL MG/L
CHROMIUM	6010	0.01 MG/L	BDL MG/L
LEAD	6010	0.1 MG/L	BDL MG/L
MERCURY	7470	0.0005 MG/L	BDL MG/L
SELENIUM	6010	0.1 MG/L	BDL MG/L
SILVER	6010	0.01 MG/L	BDL MG/L
TETRACHLOROETHYLENE	8010	10 MG/KG	BDL MG/KG
TRICHLOROETHYLENE	8010	10 MG/KG	BDL MG/KG
METHYLENECHLORIDE	8010	10 MG/KG	BDL MG/KG
1,1,1-TRICHLOROETHANE	8010	10 MG/KG	BDL MG/KG
CARBON TETRACHLORIDE	8010	10 MG/KG	BDL MG/KG
TRICHLORO-1,2,2-TRIFLUOROETHANE	8010	10 MG/KG	BDL MG/KG
TRICHLOROFLUOROMETHANE	8010	10 MG/KG	BDL MG/KG
CHLOROBENZENE	8010	10 MG/KG	BDL MG/KG
O-DICHLOROBENZENE	8010	10 MG/KG	BDL MG/KG
XYLENES	8015/8020	10 MG/KG	BDL MG/KG
ACETONE	8015/8020	10 MG/KG	BDL MG/KG
ETHYL ACETATE	8015/8020	10 MG/KG	BDL MG/KG
ETHYLBENZENE	8015/8020	10 MG/KG	BDL MG/KG
ETHYL ETHER	8015/8020	10 MG/KG	BDL MG/KG
METHYL ISOBUTYL KETONE	8015/8020	10 MG/KG	BDL MG/KG
N-BUTYL ALCOHOL	8015/8020	10 MG/KG	BDL MG/KG
CYCLOHEXANONE	8015/8020	10 MG/KG	BDL MG/KG
METHANOL	8015/8020	10 MG/KG	BDL MG/KG
CRESOLS/CRESYLIC ACID	8015/8020	10 MG/KG	BDL MG/KG
NITROBENZENE	8015/8020	10 MG/KG	BDL MG/KG
TOLUENE	8015/8020	10 MG/KG	BDL MG/KG
METHYL ETHYL KETONE	8015/8020	10 MG/KG	BDL MG/KG
CARBON DISULFIDE	8015/8020	10 MG/KG	BDL MG/KG
ISOBUTANOL	8015/8020	10 MG/KG	BDL MG/KG
PYRIDINE	8015/8020	10 MG/KG	BDL MG/KG
TOTAL CHLORIDES BY BOMB	D808/300.0	1000 MG/KG	BDL MG/KG

BDL = BELOW DETECTION LIMIT

LEEDS005745

NATIONAL ANALYTICAL LABORATORIES
A Division of
U.S. POLLUTION CONTROL INC

JOHN DIETER
BURNS & MCDONNELL ENG. CO
4800 EAST 63RD STREET

REPORT NUMBER: G018002

SAMPLE IDENTIFICATION: 3081-02
CUSTOMER IDENTIFICATION: EGS-2
DATE SAMPLED: 7/07/88
TYPE OF MATERIAL: SOIL

DATE RECEIVED: 7/08/88
DATE COMPLETED: 7/22/88

PARAMETER	REF. METHOD	DET. LIMIT	RESULT
INORGANIC CHLORIDES	D808/300.0	1000 MG/KG	BDL MG/KG
TOTAL ORGANIC CHLORIDES	D808/300.0	1000 MG/KG	BDL MG/KG
OIL & GREASE BY IR		100 PPM	4820 PPM

BDL = BELOW DETECTION LIMIT

LEEDS005746

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

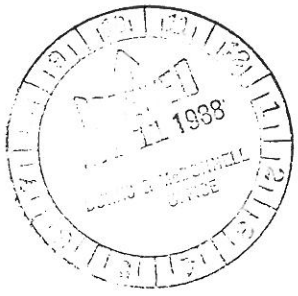
LABORATORY REPORT

August 9, 1988

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

Soil
SAMPLE
RECEIVED: 07-22-88

TEI NO. 57814				
SAMPLE IDENTIFICATION: SS-7	7/20/88	Well MW-5		
T. Rec. Pet. Hydrocarbons	<100.			ppm
Benzene	<0.01			ppm
Toluene	<0.01			ppm
Xylene	<0.01			ppm
TEI NO. 57815				
SAMPLE IDENTIFICATION: SS-3	7/20/88	Well MW-6		
T. Rec. Pet. Hydrocarbons	<100.			ppm
Benzene	<0.01			ppm
Toluene	0.96			ppm
Xylene	3.6			ppm
TEI NO. 57816				
SAMPLE IDENTIFICATION: SS-4	7/21/88	Well MW-8		
T. Rec. Pet. Hydrocarbons	<100.			ppm
Benzene	<0.01			ppm
Toluene	<0.01			ppm
Xylene	<0.01			ppm
TEI NO. 57817				
SAMPLE IDENTIFICATION: SS-3	7/20/88	Well MW-5		
T. Rec. Pet. Hydrocarbons	<100.			ppm
Benzene	<0.01			ppm
Toluene	<0.01			ppm
Xylene	<0.01			ppm



Proj. No. 88-119-3-003 GMLEEDS

g. e. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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LABORATORY REPORT

August 9, 1988 #9075 - Page 2

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

Soil
SAMPLE
RECEIVED: 07-22-88

TEI NO. 57818
SAMPLE IDENTIFICATION: SS-5 7/20/88 Well MW-5

T. Rec. Pet. Hydrocarbons	<100.	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm

Proj. No. 88-119-3-003 GMLEEDS

G. E. Marks
Gayle E. Marks, Ph.D.

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August 9, 1988 **LABORATORY REPORT** #9075 - Page 3

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

Soil
SAMPLES
RECEIVED: 07-22-88

T. Rec. Pet. Hydrocarbons

TEI No.	SAMPLE IDENTIFICATION				
57819	SS-5	7/20/88	Well MW-6	<100.	ppm
57820	SS-7	7/20/88	Well MW-6	<100.	ppm
57821	SS-7	7/21/88	Well MW-8	<100.	ppm
57822	SS-1	7/20/88	Well MW-4	No sample receiv	
57823	SS-1	7/21/88	Well MW-7	<100.	ppm

Proj. No. 88-119-3-003 GMLEEDS

G. E. Marks

Gayle E. Marks, Ph.D.

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LABORATORY REPORT

August 9,1988 #9075 - Page 4

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SOIL
SAMPLE
RECEIVED: 07-22-88

TEI NO. 57824		
SAMPLE IDENTIFICATION: SS-5	7/21/88 Well MW-7	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	130	ppm
Hydrocarbons	HPD 177	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57825		
SAMPLE IDENTIFICATION: SS-5	7/18/88 Well MW-1	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	267	ppm
Hydrocarbons	HPD 264	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57826		
SAMPLE IDENTIFICATION: SS-7	7/18/88 Well MW-1	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	124	ppm
Hydrocarbons	HPD 45	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm

HPD - Heavy Petroleum Distillate
MPD - medium Petroleum Distillate

Proj. No. 88-119-3-003 GMLEEDS

G. E. Marks
Gayle E. Marks, Ph.D.

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August 9, 1988 **LABORATORY REPORT** #9075 - Page 5

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SOIL
SAMPLE
RECEIVED: 07-22-88

TEI NO. 57827		
SAMPLE IDENTIFICATION:	SS-5 7/19/88 Well MW-2	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	177	ppm
Hydrocarbons	HPD 4.3, MPD 2.6	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57828		
SAMPLE IDENTIFICATION:	SS-5 7/19/88 Well MW-3	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	163	ppm
Hydrocarbons	<0.1	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57829		
SAMPLE IDENTIFICATION:	SS-5 7/20/88 Well MW-4	
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	104	ppm
Hydrocarbons	HPD 5.0	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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LABORATORY REPORT

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SOIL
SAMPLE
RECEIVED: 07-22-88

TEI NO. 57830		
SAMPLE IDENTIFICATION:SS-7 7/21/88 Well MW-7		
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	157	ppm
Hydrocarbons	HPD 8.4	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57831		
SAMPLE IDENTIFICATION: SS-7 7/19/88 Well MW-2		
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	207	ppm
Hydrocarbons	HPD 121	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57832		
SAMPLE IDENTIFICATION: SS-7 7/19/88 Well MW-3		
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	206	ppm
Hydrocarbons	HPD 13	ppm
Nitrobenzene	<0.05	ppm
TEI NO. 57833		
SAMPLE IDENTIFICATION:SS-7 7/20/88 Well MW-4		
T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	162	ppm
Hydrocarbons	HPD 7.1	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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LABORATORY REPORT

August 10, 1988 #9089 - Page 1

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57846
SAMPLE IDENTIFICATION: DTE-1
T. Rec. Pet. Hydrocarbons <100. ppm

TEI NO. 57847
SAMPLE IDENTIFICATION: WGE-2
T. Rec. Pet. Hydrocarbons 600. ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

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LABORATORY REPORT

August 10,1988 #9089 - Page 2

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57848
SAMPLE IDENTIFICATION: DTE-2

T. Rec. Pet. Hydrocarbons	<100.	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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August 10, 1988 **LABORATORY REPORT** #9089 - Page 3

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57849
SAMPLE IDENTIFICATION: TFE-1

T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	173	ppm
Hydrocarbons	MPD 6	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

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LABORATORY REPORT

August 10, 1988 #9089 - Page 4

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57850
SAMPLE IDENTIFICATION: TFE-2

T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	227	ppm
Hydrocarbons	MPD 5.3	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

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LABORATORY REPORT

August 10, 1988

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57851
SAMPLE IDENTIFICATION: WGE-1

T. Rec. Pet. Hydrocarbons	<100.	ppm
Sample Preparation		
Barium	248	ppm
Benzene	<0.01	ppm
Toluene	<0.01	ppm
Xylene	<0.01	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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August 10, 1988 **LABORATORY REPORT** #9089 - Page 6

Burns & McDonnell Eng.
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P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 07-25-88

TEI NO. 57852
SAMPLE IDENTIFICATION: WGE-3

T. Rec. Pet. Hydrocarbons	2500.	ppm
Nitrobenzene	<0.05	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/22/88

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 22, 1988 **LABORATORY REPORT** #9147

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLES
RECEIVED: 08-12-88

TEI No.	SAMPLE IDENTIFICATION	T. Rec. Pet. Hydrocarbons	
58371	SAF-A	215	ppm
58372	SAF-B	248	ppm
58373	SAF-C	<100.	ppm
58374	SAF-D	175	ppm
58375	SAF-E	181	ppm
58376	SAF-F	<100.	ppm

Proj. No. 88-119-3-004 GMLEEDS 8/11/88

G. E. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 22, 1988 **LABORATORY REPORT** #9147

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLES
RECEIVED: 08-12-88

TEI No.	SAMPLE IDENTIFICATION	T. Rec. Pet. Hydrocarbons	
58371	SAF-A	215	ppm
58372	SAF-B	248	ppm
58373	SAF-C	<100.	ppm
58374	SAF-D	175	ppm
58375	SAF-E	181	ppm
58376	SAF-F	<100.	ppm

Proj. No. 88-119-3-004 GMLEEDS 8/11/88

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 26, 1988 **LABORATORY REPORT** #9187

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

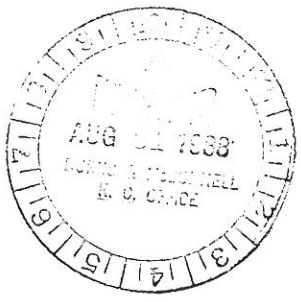
SAMPLE
RECEIVED: 08-18-88

TEI NO. 58562
SAMPLE IDENTIFICATION: MW-1, SS-5 7-18-88
Flash Point, Closed Cup >200 F

TEI NO. 58563
SAMPLE IDENTIFICATION: MW-2, SS-7 7-19-88
Flash Point, Closed Cup >200 F

TEI NO. 58564
SAMPLE IDENTIFICATION: WGE-3 7-22-88
Flash Point, Closed Cup >200 F

TEI NO. 58565
SAMPLE IDENTIFICATION: TFE-1 7-22-88
Flash Point, Closed Cup >200 F



GMLEEDS

g. e. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 26, 1988 **LABORATORY REPORT** #9187

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE RECEIVED: 08-18-88

TEI NO. 58562
SAMPLE IDENTIFICATION: MW-1, SS-5 7-18-88
Flash Point, Closed Cup >200 F

TEI NO. 58563
SAMPLE IDENTIFICATION: MW-2, SS-7 7-19-88
Flash Point, Closed Cup >200 F

TEI NO. 58564
SAMPLE IDENTIFICATION: WGE-3 7-22-88
Flash Point, Closed Cup >200 F

TEI NO. 58565
SAMPLE IDENTIFICATION: TFE-1 7-22-88
Flash Point, Closed Cup >200 F

GMLEEDS

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 26, 1988 **LABORATORY REPORT** # 9188

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 08-22-88

TEI NO. 58586		
SAMPLE IDENTIFICATION:	SAF-A	
Flash Point, Closed Cup	>200	F
TEI NO. 58587		
SAMPLE IDENTIFICATION:	SAF-B	
Flash Point, Closed Cup	>200	F

GMLEEDS 8/11/88

G. E. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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August 26, 1988 **LABORATORY REPORT** # 9188

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE RECEIVED: 08-22-88

TEI NO. 58586		
SAMPLE IDENTIFICATION:	SAF-A	
Flash Point, Closed Cup	>200	F
TEI NO. 58587		
SAMPLE IDENTIFICATION:	SAF-B	
Flash Point, Closed Cup	>200	F

GMLEEDS 8/11/88

Gayle E. Marks, Ph.D.

APPENDIX E - RESULTS OF WATER ANALYSES

LANGSTON LABORATORIES, INC.
Research • Testing • Problem Solving
2005 W. 103rd Terrace (B) • Leawood, KS 66206-2695 • Ph. 913-341-7800

LABORATORY REPORT

CLIENT: Burns & McDonnell
P. O. Box 419173
Kansas City, MO 64141-0173
ATTN: John Dieter

RECEIVED: June 17, 1988 (9:00 am)
COMPLETED: June 21, 1988
LLI NO.: 88-6679

SAMPLE DESCRIPTION: Soil and Liquid Samples Collected on June 16, 1988 by Andy Smith

	SAMPLE IDENTIFICATION	ANALYSIS	RESULTS
SOIL	0-1 (3:00)	Total Hydrocarbons by IR	35 mg/kg
SOIL	P-1 (3:50)	Total Hydrocarbons by IR	23 mg/kg
WATER	EW-1 (1:00) Grab tative	Total Hydrocarbons by IR	57,800 mg/liter
		Benzene	< 10 mg/liter
		Xylene	< 10 mg/liter
		Toluene	764 mg/liter
		Ethyl Benzene	< 10 mg/liter
WATER	EW-2 (1:00) Grab tative	Total Hydrocarbons by IR	25 mg/liter
		Benzene	< 10 mg/liter
		Xylene	< 10 mg/liter
		Toluene	72 mg/liter
		Ethyl Benzene	< 10 mg/liter

RECEIVED JUN 27 1988 BURNS & McDONNELL OFFICE

APPROVED:
Judith A. Russell
Laboratory Manager

LEEDS005766

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

LABORATORY REPORT

August 16, 1988

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLE
RECEIVED: 07-29-88

TEI NO. 58073		
SAMPLE IDENTIFICATION:	MW-1	
Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm
TEI NO. 58074		
SAMPLE IDENTIFICATION:	MW-4	
Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm
TEI NO. 58075		
SAMPLE IDENTIFICATION:	MW-5	
Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm
TEI NO. 58076		
SAMPLE IDENTIFICATION:	MW-6	
Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm
TEI NO. 58077		
SAMPLE IDENTIFICATION:	MW-7	
Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/28

G. E. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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August 16, 1988 **LABORATORY REPORT** #9116 - Page 2

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLE
RECEIVED: 07-29-88

TEI NO. 58078
SAMPLE IDENTIFICATION: MW-7a

Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm

TEI NO. 58079
SAMPLE IDENTIFICATION: Rinsate (Field Blank)

Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.001	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/28

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

LABORATORY REPORT

August 16, 1988

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLES
RECEIVED: 07-29-88

T. Rec. Pet. Hydrocarbons

TEI No.	SAMPLE IDENTIFICATION		
58080	MW-1	18.8	mg/l
58081	MW-2	20.4	mg/l
58082	MW-3	8.8	mg/l
58083	MW-4	6.3	mg/l
58084	MW-5	9.6	mg/l
58085	MW-6	<5	mg/l
58086	MW_7	<5	mg/l
58087	MW-8	<5	mg/l
58088	MW-7a	<5	mg/l

Proj No. 88-119-3-003 GMLEEDS 7/28

g. e. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN · NILES, ILLINOIS · 60648 · 312/647-1345

August 16, 1988 **LABORATORY REPORT** #9116 - Page 4

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLES
RECEIVED: 07-29-88

TEI No.	SAMPLE IDENTIFICATION	Nitrobenzene	
58089	MW-1	<0.01	ppm
58090	MW-4	<0.01	ppm
58091	MW-5	<0.01	ppm
58092	MW-6	<0.01	ppm
58093	MW-7	<0.01	ppm
58094	MW-8	<0.01	ppm
58095	MW-7a	<0.01	ppm
58096	Rinsate (Field Blank)	<0.01	ppm

Proj. No. 88-119-3-003 GMLEEDS 7/28

g. e. Marks

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

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August 16, 1988 **LABORATORY REPORT** #9116 - Page 5

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLES
RECEIVED: 07-29-88

TEI No.	SAMPLE IDENTIFICATION	Hydrocarbons	
58097	MW-1	<0.005	ppm
58098	MW-3	<0.005	ppm
58099	MW-4	<0.005	ppm
58100	MW-7	0.28	ppm
58101	MW-7a	0.44	ppm

LEEDS005771

Proj. No. 88-119-3-003 GMLEEDS 7/28

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 16, 1988

LABORATORY REPORT

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLE
RECEIVED: 07-29-88

TEI NO. 58102		
SAMPLE IDENTIFICATION:	MW-1	
Sample Preparation		
Barium	0.42	mg/l
TEI NO. 58103		
SAMPLE IDENTIFICATION:	MW-5	
Sample Preparation		
Barium	1.27	mg/l
TEI NO. 58104		
SAMPLE IDENTIFICATION:	MW-6	
Sample Preparation		
Barium	2.80	mg/l
TEI NO. 58105		
SAMPLE IDENTIFICATION:	MW-7	
Sample Preparation	Sample not received	
Barium	Sample not received	
TEI NO. 58106		
SAMPLE IDENTIFICATION:	MW-8	
Sample Preparation		
Barium	0.57	mg/l
TEI NO. 58107		
SAMPLE IDENTIFICATION:	MW-7a	
Sample Preparation	Sample not received	
Barium	Sample not received	

Proj. No. 88-119-3-003 GMLEEDS 7/28

G. E. Marks
Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

August 16, 1988 **LABORATORY REPORT** #9116 - Page 7

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

GROUNDWATER
SAMPLE
RECEIVED: 07-29-88

TEI NO. 58108
SAMPLE IDENTIFICATION: Rinsate (Field Blank)

Sample Preparation		
Barium	<0.05	mg/l

Proj. No. 88-119-3-003 GMLEEDS 7/28

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

LABORATORY REPORT

September 7, 1988 #9233 - Page 1

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 08-26-88

TEI NO. 58661
SAMPLE IDENTIFICATION: EW-~~3~~ 4 8-24-88 Tank Farm Excavation

T. Rec. Pet. Hydrocarbons	<3	mg/l

Proj. No. 88-119-3-005 GMLEEDS

Gayle E. Marks, Ph.D.

TEI ANALYTICAL, INC.

7177 NORTH AUSTIN • NILES, ILLINOIS • 60648 • 312/647-1345

September 7, 1988 **LABORATORY REPORT** #9233 - Page 2

Burns & McDonnell Eng.
4800 E. 63rd Street
P.O. Box 419173
Kansas City, MO 64141
Attn: Glen Ernstmann

SAMPLE
RECEIVED: 08-26-88

TEI NO. 58662
SAMPLE IDENTIFICATION: EW-4 8-24-88 Tank Farm Excavation

Benzene	<0.001	ppm
Toluene	<0.001	ppm
Xylene	<0.01	ppm

Proj. No. 88-119-3-005 GMLEEDS

g. e. marks
Gayle E. Marks, Ph.D.

APPENDIX F - CHAIN-OF-CUSTODY FORMS

Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: BURNS & McDONNELL
Address: 4800 E. 63RD ST
City, State: KANSAS CITY, MO 64130
Telephone: (816) 333-4375
Attention: JOHN DIETER

Laboratory: NATIONAL ANALYTICAL LABORATORY
Address: 4322 S. 49TH WEST AVE.
City, State: TULSA, OK 74107
Telephone: (918) 446-1162

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-081-1 PROJECT NAME GMLEEDS

SAMPLERS: (Signature) Andrew B Smith, Glen Rustmann

STA.NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis: TOX	EP Tox METALS	PCB'S FOR PCB'S SCAN	FOOD SOLVENT SCAN	OIL & GREASE		REMARKS
EGS-1	7/7/88	3:30	X		STOCKPILED SOIL FROM	5	X	X	X	X	X		
EGS-2	7/7/88	4:00	X		EAST GAS TANK EXCAVATION	5	X	X	X	X	X		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	

LEEDS005777

SOIL SAMPLES

Glen Ernstmann
Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: GM Leeds
Address:
City, State:
Telephone:
Attention:

Gayle Marks
Laboratory: TEI Analytical
Address: 7177 N. Austin
City, State: Niles, IL 60648
Telephone: (312) 647-1345

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-003 PROJECT NAME GMLEEDS

SAMPLERS: (Signature) Glen Ernstmann

STA.NO. - SAMPLE	DATE	TIME	COMP.	GRAB	STATION LOCATION - WELL DESIGNATION	NO. OF CONTAINERS	Analysis: T.P.H.	BTX	nitrobenzene	petr. naptha	barium	REMARKS
5	7/18/88	pm		✓	well MW-1	1	X	X	X	X	X	
7	7/18/88	pm		✓	well MW-1	1	X	X	X	X	X	
SS-5	7/19/88	am		✓	well MW-2	2	X	X	X	X	X	
SS-7	7/19/88	am		✓	well MW-2	2	X	—	X	X	X	
SS-5	7/19/88	pm		✓	well MW-3	2	X	X	X	X	X	
SS-7	7/19/88	pm		✓	well MW-3	2	X	—	X	X	X	
5	7/20/88	am		✓	well MW-4	1	X	X	X	X	X	
7	7/20/88	am		✓	well MW-4	1	X	—	X	X	X	
3	7/20/88	am		✓	well MW-5	1	X	X	—	—	—	
5	7/20/88	am		✓	well MW-5	1	X	X	—	—	—	Jar Headspace - Hnu reading - 50.0ppm

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Glen Ernstmann	7/21/88 3:00pm				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
		g. e. Marks	7-22-88/1030		

LEEDS005778

Glen Ernstmann
Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: GM Leeds
Address:
City, State:
Telephone:
Attention:

Gayle Marks
Laboratory: TEI Analytical
Address: 7177 N. Austin
City, State: Niles, IL 60648
Telephone: (312) 647-1345

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-003 PROJECT NAME GMLEEDS

SAMPLERS: (Signature) Glen Ernstmann

STA.NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis: TPH	BTX	Nitrobenzene	petr. naptha	barium	REMARKS
7	7/20/88	am		✓	well MW-5 /	1	X	X				
3	7/20/88	pm		✓	well MW-6 /	1	X	X				Jar Headspace - Hnu reading - 0.4 ppm
5	7/20/88	pm		✓	well MW-6 /	1	X					Jar Headspace - Hnu reading - 72.0 ppm
7	7/20/88	pm		✓	well MW-6 /	1	X					
5	7/21/88	am		✓	well MW-7 /	1	X	X	X	X	X	
7	7/21/88	am		✓	well MW-7 /	1	X		X	X	X	
5	7/21/88	am		✓	well MW-8 /	1	X	X				
7	7/21/88	am		✓	well MW-8 /	1	X					
~~1~~	~~7/20/88~~	~~am~~		✓	~~well MW-4~~	~~1~~						
1	7/21/88	am		✓	well MW-7 /	1	X					Not Recid g. e Marks 7/22.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Glen Ernstmann	7/21/88 3:00pm				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
		g e Marks	7/22/88 1030		

LEEDS005779

pg. 2 or 2

Glen Ernstmann
Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: GM LEEDS
Address:
City, State:
Telephone:
Attention:

Laboratory: Gayle Marks, TEI Analytical
Address: 7177 N. Austin
City, State: Niles, IL 60648
Telephone:

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-003 PROJECT NAME GM LEEDS

SAMPLERS: (Signature) Glen Ernstmann

STA.NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis: TPH	BTX	nitrobenzene	petr. naptha	barium	REMARKS
DTE-1	7/22/88	am		✓	Diesel Tank Excavation	1	X					
DTE-2	7/22/88	am		✓	" " "	1	X	X	X			
TFE-1	7/22/88	am		✓	Tank Farm Excavation	1	X			X	X	
TFE-2	7/22/88	am		✓	" " "	1	X	X	X	X	X	
WGE-1	7/22/88	am		✓	West Gasoline Tank Excavation	1	X	X	X		X	
WGE-2	7/22/88	am		✓	" " "	1	X					
WGE-3	7/22/88	am		✓	" " "	1	X		X			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Glen Ernstmann	7/22/88 3:00p				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
			7-23-88/0820		

LEEDS005780-

Water Samples

Glen Ernstmann
Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: GM LEEDS
Address:
City, State:
Telephone:
Attention:

Gayle Marks
Laboratory: TEI Analytical
Address: 7177 N. Austin
City, State: Niles, IL 60648
Telephone: (312) 647-1345

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-003 PROJECT NAME GM LEEDS

SAMPLERS: (Signature) Glen Ernstmann

STA.NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis: T.R.P.H.	BTX	Base/neutrals (nitrobenzene)	petroleum naptha	barium	REMARKS
	7/28	pm		✓	MW-1	5	X	X	X	X	X	
	"	am		✓	MW-2	1	X					
	"	am		✓	MW-3	2	X			X		
	"	am		✓	MW-4	4	X	X	X	X		
	"	am		✓	MW-5	4	X	X	X		X	
	"	pm		✓	MW-6	4	X	X	X		X	
	"	am		✓	MW-7	5	X	X	X	X	X	
	"	pm		✓	MW-8	3	X		X		X	
	"	am		✓	MW-7a	5	X	X	X	X	X	
	"			✓	Rinsate (field blank)	3		X	X		X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Glen Ernstmann	7/28/88 4:00pm				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	

This chain of custody applies to a shipment of 3 coolers.

LEEDS005781

Glen Ernstmann
Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client: GM LEEDS
Address:
City, State:
Telephone:
Attention:

Gayle Marks.
Laboratory: TEI Analytical
Address: 7177 N. Austin
City, State: Niles, ILL 60648
Telephone: (312) 647-1345

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-004 PROJECT NAME GM LEEDS

SAMPLERS: (Signature) Glen Ernstmann

STA.NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis Total Rec. Petroleum Hydr	REMARKS
SAF-A	8/11/88		✓		South Aeration Field	1	X	
SAF-B	8/11/88		✓		" " "	1	X	
SAF-C	8/11/88		✓		" " "	1	X	
SAF-D	8/11/88		✓		" " "	1	X	
SAF-E	8/11/88		✓		" " "	1	X	
SAF-F	8/11/88		✓		" " "	1	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Glen Ernstmann	8/11/88 4:30p				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
		J. L. Marks	8-11-88/1055		

LEEDS005782

Burns & McDonnell Engineering Co.
4800 East 63rd Street
P.O. Box 419173
Kansas City MO 64141
Telephone: (816) 333-4375

Client:
Address:
City, State:
Telephone:
Attention:

Laboratory: TEI ANALYTICAL
Address: 7177 N. AUSTIN
City, State: NILES, IL 60648
Telephone:
ATTN: GAYLE MARKS

CHAIN OF CUSTODY RECORD

PROJ.NO. 88-119-3-005 PROJECT NAME GMLEEDS

SAMPLERS: (Signature) Eric G. Will

STA.NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Analysis TRPH	Analysis BTX	REMARKS
EW-3	8-24-88	2:10 pm			TANK FARM EXCAVATION	2	X	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Eric G. Will	8-25-88				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
		g. e. Marks	8/26/88/1030		

LEEDS005783

APPENDIX G - TANK TEST CERTIFICATES

Data Chart for Tank System Tightness Test

petro TITE
TANK TESTER

LEASE PRINT

1. OWNER Property [X] Tank(s) [X]: GM Assembly Plant | 6817 Stadium Drive | Cindy Johnson | 333-4375
   Name | Address | Representative | Telephone
   Name | Address | Representative | Telephone

2. OPERATOR
   Name | Address | Telephone

3. REASON FOR TEST (Explain Fully): Plant was shut down for model change, this is the only time they can test. They test before they start up again.

4. WHO REQUESTED TEST AND WHEN: John Dieter | Civil Engineer | Burns & McDonnell | Date
   Name | Title | Company or Affiliation
   Address: 4800 E 63rd K.C., MO.
   Address | Telephone

5. WHO IS PAYING FOR THIS TEST? Burns & McDonnell | John Dieter | C.E.
   Company, Agency or Individual | Person Authorizing | Title | Telephone
   Billing Address | City | State | Zip
   Attention of: | Order No. | Other Instructions

6. TANK(S) INVOLVED: 1 2 3 4 5 6 7

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
# 2	15,000		H_2O	30 yrs	steel (Fiberglass steel design)
# 7	15,000		H_2O	30 yrs	steel

7. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
North west of bldg.	concrete	3"	3"		pumps are in a pump house do not know mak
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

8. UNDERGROUND WATER: Depth to the Water table 0 "
   Is the water over the tank? [ ] Yes [X] No

9. FILL-UP ARRANGEMENTS
   Tanks to be filled _____ hr. _____ Date Arranged by _____
   Name | Telephone
   Extra product to "top off" and run TSTT. How and who to provide? Consider NO Lead.
   Terminal or other contact for notice of tank test: Company | Name | Telephone

10. CONTRACTOR, MECHANICS, any other contractor involved: Double Check COMPANY INCORPORATED
    PO BOX 17456 K. C., MO 64130
    PHONE (816) 921-5032

The criteria established of gallon/hour is a mathematical calculation based on actual liquid volume change and temperature change, and is not intended as a permission of a leak.

11. OTHER INFORMATION OR REMARKS: Cindy Johnson - GM engineering department
    John Dieter - Burns & McDonnell - Civil engineer
    Did not find water table to elevate.
    Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

12. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for petro TITE as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
# 2	Tight		7-13-87
# 7	Tight		7-13-87

LEEDS005785

13. CERTIFICATION: June 1987
    Date
    844 630
    Serial No. of Thermal Sensor

This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Wm D Talley Jr
C J Campion Jr.
Technicians

Double Check COMPANY INCORPORATED
Testing Contractor | Signature
Address
PO BOX 17456 K. C., MO 64130
PHONE (816) 921-5032

North

14. Leeds GM Plant (Name of Supplier, Owner or Dealer) 6817 Stadium Drive (Address — No. and Street(s)) Kansas City (City) Missouri (State) 7-13-87 (Date of Test)

15. TANK TO TEST: # 2 (Identity by position); H2O (Brand and Grade)

16. CAPACITY: Nominal Capacity 15000 Gallons; By most accurate capacity chart available 15,100 Gallons; Is there doubt as to True Capacity? ☐ See Section "DETERMINING TANK CAPACITY"

From: ☐ Station Chart ☒ Tank Manufacturer's Chart ☐ Company Engineering Data ☐ Charts supplied with Petro Tite ☐ Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up: 0 (to ½ in.) - 0 (Gallons)

Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter: 126"

	Stick Readings to ½ in.	Gallons	Total Gallons ea. Reading
Inventory	126"	15,100	15,100
	H2O	Testing	Material
	Tap Off	+45	15,145
Product in full tank (up to fill pipe)	+3	Man way	+20

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

See manual sections applicable. Check below and record procedure in log (28).

☐ Water in tank ☐ High water table in tank excavation ☐ Line(s) being tested with LVLLT

Sample Gravity ____
Sample Temperature ____ °F
API Corrected to 60° ____

VAPOR RECOVERY SYSTEM: ☐ Stage I ☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade*	153½"
Add 30" for 4" L	30"
Add 24" for 3" L or air cool	"
Total tubing in assembly Approximate	183"

20. EXTENSION HOSE SETTING

Tank top to grade*	2' ½"
Extend hose on suction tube 6" or more below tank top	32"

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Is Today Warmer? ( ) Cooler? ( ) 786 °F Product in Tank ___ °F Fill-up Product on Truck ___ °F Expected Change (+ or -)

22. Thermal-Sensor reading after circulation: 18756 (ogee) 79/80 (Nearest) + 18871 314

23. Digits per °F in range of expected change: 318 (ogee)

24. 15.167 (total quantity in full tank (16 or 17)) × .00015051 (coefficient of expansion for involved product) = 2.282785 (gallons volume change in this tank per °F) (.0072)

25. 2.282785 (volume change per °F (24)) ÷ 318 (Digits per °F in test Range (23)) = .0071785 (Volume change per digit. Compute to 4 decimal places.) This is test factor (a)

26. LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (VI) RECORDED TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
27. DATE / TIME (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Level to which Restored	32. Product in Gradeuate: Before Reading	After Reading	Product Replaced (−) Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (a) = Expansion + Contraction −	Temperature Adjustment / Volume Minus Expansion (+) or Contraction (−) #33(V) − #37(T)	At High Level record Total Net Behavior / At Low Level accumulate Change per Hour (50% criteria)
0130	Double Check Arrives.											
0245	Started Getting Equip out of Tank.											
0830	Started setting up on the tanks.											
---	---	---	---	---	---	---	---	---	---	---	---	---
1115	Pumps Primed & Running.							Factor	(a)	(.0072)		
1315	1st High Level Sensor Reading	1		42		.345		756				
1330	Start High Level Test.	2	43.2	42	.345	.565	+.220	760	+4	+.029	+.191	
1345	Cont'd High Level Test.	3	43.2	42	.000	.220	+.220	765	+5	+.036	+.184	
1400		4	44	42	.220	.515	+.295	767	+2	+.014	+.281	
1415		5	42.2	42	.515	.520	+.005	769	+2	+.014	−.009	
1430		6	42.5	42	.520	.560	+.040	769	+0	+.000	+.040	
1445		7	42	42	.560	.560	+.000	770	+1	+.007	−.007	
1500		8	42.3	42	.560	.585	+.015	771	+1	+.007	+.008	
1515		9	42.6	42	.585	.635	+.050	775	+4	+.029	+.021	
1530		10	41.8	42	.635	.575	−.060	777	+2	+.014	−.074	
1545		11	42.6	42	.575	.625	+.050	779	+2	+.014	+.036	
1546	Drop To Low Level.	X										
1600	1st Low Level Sensor Reading	12		12		.000		783				
1615	Start Low Level Test	13	12.8	12	.000	.065	+.065	785	+2	+.014	+.051	
1630	Low Level Test Cont'd	14	12.7	12	.065	.115	+.050	788	+3	+.022	+.028	+.028
1645		15	12.6	12	.115	.145	+.030	791	+3	+.022	+.008	+.036
1700		16	12.6	12	.145	.175	+.030	792	+1	+.007	+.023	+.059
		17	12.7	12	.175	.215	+.040	799	+7	+.050	−.010	+.049

The criteria established of ±.050 gallon/hour is a mathematical calculation based on actual liquid volume change and temperature change, and is not intended as a permission for a leak.

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PO BOX 17456 K.C., MO 64130
PHONE (816) 221-0038

Double Check COMPANY INCORPORATED
4614 PROSPECT KANSAS CITY, MO. 64130

Petro Tite TANK TESTERS

LEEDS005786

NORTH

14. G.M. LEEDS PLANT 6817 Stadium Drive K.C. MO 7-13-87
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

Petro Tite TANK TESTER

15. TANK TO TEST: #7 (Identity by position)
WATER with LOC (Brand and Grade)

16. CAPACITY
Nominal Capacity 15,000 Gallons
By most accurate capacity chart available 15,100 Gallons
From: [ ] Station Chart [X] Tank Manufacturer's Chart [ ] Company Engineering Data [ ] Charts supplied with Petro Tite [ ] Other
Is there doubt as to True Capacity? [ ] See Section "DETERMINING TANK CAPACITY"

17. FILL-UP FOR TEST
Stick Water Bottom before Fill-up 0 to ¼ in. - 0 Gallons
Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

	Stick Readings to ¼ in.	Gallons	Total Gallons ea. Reading
Inventory	126		15,100
(1) MANWAY		+10	15,110
Top OFF		+35	15,145
Product in full tank (up to fill pipe)			15,145

Tank Diameter 126

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
See manual sections applicable. Check below and record procedure in log (28).
[X] Water in tank [ ] High water table in tank excavation [ ] Line(s) being heated with LVLLT
Sample Gravity
Sample Temperature °F
API Corrected to 60° .72
VAPOR RECOVERY SYSTEM [ ] Stage I [ ] Stage II
Supply & Suction Shut OFF

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to Grade* 126"
Add 30" for 4" L 30"
Add 24" for 3" L or air seal "
Total tubing to assemble Approximate 156"

20. EXTENSION HOSE SETTING
Tank top to grade* 24"
Extend hose on suction tube 6" or more below tank top 30"
*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK
In Today Warmer? ( ) Colder? ( ) ___° F Product in Tank ___° F Fill-up Product on Truck ___° F Expected Change (+ or -)
22. Thermal-Sensor reading after circulation 16997 (digits) 74/75 (Record) + 73.8
23. Digits per °F in range of expected change 321 (digits)
24. 15,145 (total quantity in full tank (16 or 17)) × .00013324 (coefficient of expansion for involved product) = 2.0179198 gallons (volume change in this tank per °F)
25. 2.0179198 (volume change per °F (24)) ÷ 321 (Digits per °F in test Range (23)) = .0062863 (.0063) Volume change per digit. Compute to 4 decimal places. This is test factor (a)

5N844
17273-319

26. LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS TO RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
27. DATE / TIME (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Level to which Restored	32. Product to Graduate: Before Reading	After Reading	Product Replaced (−) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (e)	37. Computation (e) × (a) = Expansion + Contraction −	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (−) #32(Y) − #37(T)	At High Level record Total Cost Reduction / At Low Level compute Change per Hour (GPH) entered
730	ARRIVED AT LOCATION											
745	REMOVED Equip From TRUCK											
8:00	START SET UP ON TANKS.											
	John DIETER ARRIVED											
1000	Pumps PRIMED & RUNNING							16		FACTOR a (.0063)		
1200	1ST High LEVEL SENSOR READING	1				.130		997				
1215	START High LEVEL TEST	2	42.1	42	.130	.130	+.000	003	+6	+.038	-.038	
1230	Cont'd High LEVEL TEST	3	41.8	42	.470	.430	-.040	005	+2	+.013	-.053	
1245		4	41.5	42	.430	.380	-.050	012	+7	+.044	-.094	
1300	Adj Cir. Tube. MANHOLE IS	5	41.5	42	.380	.330	-.050	012	+0	+.000	-.050	
1315	AT ONE END of TANK.	6	41.7	42	.330	.300	-.030	017	+5	+.032	-.062	
1330		7	41.9	42	.300	.290	-.010	017	+0	+.000	-.010	
1345		8	41.9	42	.290	.270	-.020	017	+0	+.000	-.020	
1400		9	41.7	42	.270	.230	-.040	017	+0	+.000	-.040	
1415		10	41.7	42	.550	.505	-.045	022	+5	+.032	-.077	
1430		11	41.6	42	.505	.465	-.040	026	+4	+.025	-.065	
1431	DROP to 12" Low LEVEL TEST	X										
1445	1ST Low LEVEL SENSOR READING	12				.010		029				
1500	START Low LEVEL TEST	13	12.8	12	.010	.145	+.135	032	+3	+.019	+.116	
1515	Cont'd Low LEVEL TEST	14	12.7	12	.145	.230	+.085	034	+2	+.013	+.072	
1530		15	12.5	12	.230	.270	+.040	035	+2	+.013	+.027	+.027
1545		16	12.4	12	.270	.285	+.015	041	+6	+.038	-.023	+.004
1400		17	12.4	12	.285	.320	+.035	045	+4	+.025	+.010	+.014
1415		18	12.3	12	.320	.340	+.020	049	+4	+.025	-.005	+.009

The criteria established of .050 gallon/hour is a mathematical calculation based on actual liquid volume change and temperature change, and is not intended as a permission of a leak.

Double Check COMPANY INCORPORATED
PO BOX 17468 K.C., MO 64130
PHONE [illegible]

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LEEDS005787

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4614 PROSPECT KANSAS CITY, MO. 64130
PHONE (816) 921-5032

LIQUID VOLUMETRIC LINE LEAK TEST

DATE OF TEST 11-18-87
JOB # 14802

1 LOCATION: 6817 Stadium Dr. K.C Mo
(Street No. and/or Corner / City / State / Telephone No.)

2 OWNER: G.M Leeds Plant 6817 Stadium Dr.
(Name / Address / Representative / Position / Telephone No.)

3 OPERATOR: G.M Leeds
(Name / Dealer, Mgr. or Other / Address (If different than Location) / Telephone No.)

4 REASON FOR TEST: Required by Plant Engineers to complete E.P.A. Requirements

5 TEST REQUESTED BY: John Dieter Burns & McDonald Engineering.
(Name / Position / Order No. / Billing Address)

6 SPECIAL INSTRUCTIONS: Bring 2-2" plugs & 2 3" caps

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Double Check Co. Corky Campion

8 IS A K-M TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

9 MAKE AND TYPE OF PUMP OR DISPENSERS

10 WEATHER 41° TEMPERATURE IN TANKS ____ °F ____ °C COVER OVER LINES Concrete (Concrete, Black Top, etc.) APPROXIMATE BURIAL DEPTH 3-4 Ft

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME BURETTE READING BEFORE	15 VOLUME BURETTE READING AFTER	NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
TANK #2 Return line	1105	Start line test						
	1120	Cont'd line test	12	5	.0880	.0000	.0880	
					.0980	.0000	.0980	
					.0970	.0000	.0970	
					.0900	.0000	.0900	
					.0920	.0450	.0470	-.425
	1135		12	12	.0990	.0990	+.0000	-.0005
	1150		12	11	.0950	.0945	-.0005	
	1205		12	12	.0940	.0940	+.0000	
	1220		12	12	.0940	.0940	+.0000	
	1221	Bleed Back	12	0	.0110	.0970	+.086	
					.0140	.0960	+.082	
					.0160	.0950	+.079	
					.0150	.0970	+.082	
					.0150	.0970	+.082	+.483
					.0200	.0820	+.062	

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LIQUID VOLUMETRIC LINE LEAK TEST

DATE OF TEST 11-23-87
JOB # 14802

1 LOCATION: 6817 Stadium Dr (Street No. and/or Corner) KC (City) MO (State)
2 OWNER: General motors (Name) 6817 Stadium Dr (Address) KC. MO (Representative) John Dieter (Position) (Telephone No.)
3 OPERATOR: General motors (Name) Leedr Plant (Dealer, Mgr. or Other) (Address (If different than Location)) (Telephone No.)
4 REASON FOR TEST Test lines for tightness
5 TEST REQUESTED BY: John Deiter (Name) P.E. (Position) Burns & McDonald (Order No.) 4600 E 63rd ST KC MO (Billing Address)
6 SPECIAL INSTRUCTIONS:
7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME Double check Co. Corky Campion
8 IS A K-M TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO
9 MAKE AND TYPE OF PUMP OR DISPENSERS
10 WEATHER 56° TEMPERATURE IN TANKS ____ °F ____ °C COVER OVER LINES partial Concrete partial Labase ground (Concrete, Black Top, etc.) APPROXIMATE BURIAL DEPTH 3 to 4 Ft

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME BURETTE READING BEFORE	15 VOLUME BURETTE READING AFTER	NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
Gravity Return to	925	Start line test		12				
Tank #2	940	Cont. line test	12	12	.0920	.0920	+.000	
KT Test	955		12	12	.0850	.0850	+.000	-.0005
	1010		12	12	.0830	.0830	+.000	
	1025		12	11	.0820	.0815	-.0005	
	1026	Bleed Back	12	0	.0140	.0980	+.084	
					.0150	.0976	+.082	+.250
Suction Line for pump #7	930	Start line test			.0130	.0950	+.084	
	945	Cont. line test	12	12	.0960	.0960	+.000	
	1000		12	12	.0840	.0840	+.000	+.000
	1015		12	12	.0820	.0820	+.000	
	1016		12	12	.0140	.0140	+.000	
	1031	Bleed Back	12	0	.0140	.0410	+.027	
~~Tank #1~~								
gravity Return	935	Start line test						
Line	950	Cont. line test	12	12	.0960	.0960	+.000	
	1005		12	12	.0830	.0830	+.000	+.006
	1020		12	12	.0820	.0820	+.000	
	1035		12	15	.0330	.0360	+.006	
	1036		12	0	.0120	.0430	+.031	
Gravity								
Return line	1045	Start line test		12				
to Tank #2	1100	Cont. line test	12	11	.0840	.0835	-.0005	
2nd test	1115		12	12	.0450	.0450	+.000	+.0015
	1130		12	12	.0440	.0440	+.000	
	1145		12	14	.0440	.0460	+.002	
	1146		12	0	.0130	.0980	+.085	
					.0160	.0940	+.078	+.235
					.0240	.0960	+.072	
Loading								
Station	1150	Start line test		20				
	1205	Cont. line test	20	12	.0160	.0100	+.000	
	1220		20	18	.0120	.0140	+.002	+.004
	1235		20	19	.0200	.0220	+.002	
	1250		20	20	.0200	.0200	+.000	
	1251		20	0	.0100	.0590	+.049	

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DATE OF TEST 11-23-87

LIQUID VOLUMETRIC LINE LEAK TEST

JOB # 14802

1 LOCATION: 6817 Stadium Dr. (Street No. and/or Corner) K.C. (City) mo (State) (Telephone No.)

2 OWNER: General motors (Name) 6817 Stadium Dr. K.C. mo (Address) (Representative) John Dieter (Position) (Telephone No.)

3 OPERATOR: Genuine motors Leeds Plant (Name) (Dealer, Mgr., or Other) (Address (If different than Location)) (Telephone No.)

4 REASON FOR TEST: Test Lines For Tightness.

5 TEST REQUESTED BY: John Dieter (Name) P.E. (Position) Burns & McDonald (Order No.) 4600 E 63rd ST KC. MO (Billing Address)

6 SPECIAL INSTRUCTIONS:

7 CONTRACTOR OR COMPANY MAKING TEST MECHANIC(S) NAME: Double check Co. Corky Campion

8 IS A K-M TANK TEST TO BE MADE WITH THIS LINE TEST? ☐ YES ☒ NO

9 MAKE AND TYPE OF PUMP OR DISPENSERS

10 WEATHER 56° TEMPERATURE IN TANKS ____ °F ____ °C

COVER OVER LINES: partial Concrete partial above ground (Concrete, Black Top, etc.) APPROXIMATE BURIAL DEPTH 3 to 4 FT

11 IDENTIFY EACH LINE AS TESTED	12 TIME (MILITARY)	13 LOG OF TEST PROCEDURES, AMBIENT TEMPERATURE, WEATHER, ETC.	14 PRESSURE psi OR kPa BEFORE	14 PRESSURE psi OR kPa AFTER	15 VOLUME BURETTE READING BEFORE	15 VOLUME BURETTE READING AFTER	15 VOLUME NET CHANGE	16 TEST RESULTS CONCLUSIONS, REPAIRS AND COMMENTS
gravity Return line to tank #2	1315	Start line test		12				
	1330	Cont. line test	12	12	.0100	.0100	+.000	+.013
	1345		12	18	.0100	.0280	+.010	
	1400		12	14	.0260	.0280	+.002	
	1415		12	13	.0280	.0240	+.001	
	1416		12	0	.0140	.0620	+.048	

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APPENDIX H - MATERIAL SAFETY
DATA SHEETS

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

****

PRODUCT NAME: SOLVENT 9981183

GENERAL MOTORS
LEEDS PLANT
6817 STADIUM DRIVE
KANSAS CITY MO 64129

05 50 015 3601880-
DATA SHEET NO: 0186394-001
LATEST REVISION DATE: 08/85-85226
PRODUCT: 2917215
INVOICE: 551034
INVOICE DATE: 09/03/85
TO: SAME

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: SOLVENT BLEND

HAZARD CLASSIFICATION: (03) FLAMMABLE LIQUID (173.115)

SECTION II-HAZARDOUS COMPONENTS

INGREDIENT	% (BY VOL)	PEL	TLV		NOTE
AROMATIC HYDROCARBON *	30-60	200	100	PPM - SKIN	(1)
ALIPHATIC HYDROCARBONS *	30-60	500	300	PPM	(2)

(1): SKIN ABSORPTION MAY POTENTIALLY CONTRIBUTE TO THE OVERALL EXPOSURE TO THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT THE TLV IS NOT INVALIDATED.

(2): NIOSH RECOMMENDS A LIMIT OF 350 MG/CUM - 8 HOUR TIME WEIGHTED AVERAGE, 1800 MG/CUM AS DETERMINED BY A 15 MINUTE SAMPLE.

*THE SPECIFIC CHEMICAL IDENTITY HAS BEEN WITHHELD AS A TRADE SECRET.

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
INITIAL BOILING POINT	FOR COMPONENT(30-60 %)	232.00 DEG F (111.11 DEG C)
VAPOR PRESSURE	FOR COMPONENT(30-60 %)	@ 760.00 MMHG 22.00 MMHG @ 68.00 DEG F (20.00 DEG C)
VAPOR DENSITY		HEAVIER THAN AIR
SPECIFIC GRAVITY		LESS THAN WATER
PERCENT VOLATILES		100.00%
EVAPORATION RATE		SLOWER THAN ETHER

SECTION IV-FIRE AND EXPLOSION DATA

FLASH POINT(TCC) 20.00 - 99.00 DEG F
(-6.66 - 37.22 DEG C)

EXPLOSIVE LIMIT (LOWEST VALUE OF COMPONENT) LOWER - .9%

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

SPECIAL FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.

UNUSUAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.
VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR MAY BE MOVED BY VENTILATION AND IGNITED BY PILOT LIGHTS, OTHER FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT, SEE SECTION II AND SECTION IX.

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CONTINUED ON PAGE: 2

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DIVISION OF ASHLAND OIL, INC.
P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 889-3333
24-HOUR EMERGENCY TELEPHONE (606) 324-1133

SECTION V-HEALTH HAZARD DATA (CONTINUED)

EFFECTS OF OVEREXPOSURE: FOR PRODUCT

EYES - CAUSES IRRITATION, REDNESS, TEARING.
SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.
BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS, AND EVEN ASPHYXIATION.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION

SKIN ABSORPTION
SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL.

LARGE SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS. PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

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CONTINUED ON PAGE: 3

Ashland Chemical Company
DIVISION OF ASHLAND OIL, INC.
P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 889-3333
24-HOUR EMERGENCY TELEPHONE (606) 324-1133

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS (CONTINUED)

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

OVEREXPOSURE TO COMPONENTS HAS APPARENTLY BEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:, LIVER ABNORMALITIES, KIDNEY DAMAGE, LUNG DAMAGE, SPLEEN DAMAGE

OVEREXPOSURE TO COMPONENTS HAS BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS IN HUMANS:, LIVER ABNORMALITIES

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

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MATERIAL SAFETY DATA SHEET OHS14460

OCCUPATIONAL HEALTH SERVICES, INC.
450 SEVENTH AVENUE, SUITE 2407
NEW YORK, NEW YORK 10123
(800) 445-MSDS (212)-967-1100

EMERGENCY CONTACT:
JOHN S. BRANSFORD, JR. (615)292-1180

SUBSTANCE IDENTIFICATION

SUBSTANCE: METHYL ETHYL KETONE

CAS-NUMBER 78-93-3
RTEC-NUMBER EL6475000

TRADE NAMES/SYNONYMS:
BUTANONE: 2-BUTANONE: ETHYL METHYL KETONE: METHYL ACETONE: U159:
STCC 4909243: UN 1193: OHS14460

CHEMICAL FAMILY:
KETONE, ALIPHATIC

MOLECULAR FORMULA: C4-H8-O MOL WT: 72.12

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYL ETHYL KETONE PERCENT: 100

OTHER CONTAMINANTS: NONE

EXPOSURE LIMIT:
METHYL ETHYL KETONE:
200 PPM OSHA TWA
200 PPM ACGIH TWA; 300 PPM ACGIH STEL
200 PPM NIOSH RECOMMENDED 10 HOUR TWA

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID WITH AN ACETONE-LIKE ODOR.

BOILING POINT: 176 F (80 C) MELTING POINT: -123 F (-86 C)

SPECIFIC GRAVITY: 0.81 EVAPORATION RATE: (ETHER=1) 2.7

SOLUBILITY IN WATER: 27.5% VAPOR DENSITY: 2.5

VAPOR PRESSURE: 71.2 MMHG @ 20 C ODOR-THRESHOLD: 25 PPM

OTHER SOLVENTS (SOLVENT - SOLUBILITY):
ALCOHOL, ETHER, BENZENE, ACETONE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: 16 F (-9 C) (CC) UPPER EXPLOSION LIMIT: 11.4% @ 200 F

LOWER EXPLOSION LIMIT: 1.4% @ 200 F AUTOIGNITION TEMP.: 759 F (404 C)

FLAMMIBILITY CLASS (OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR FOAM
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR FOAM
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. COOL FIRE-EXPOSED CONTAINERS WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK DUE TO FIRE (1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER. APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

WATER MAY BE INEFFECTIVE (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, EIGHTH EDITION).

ALCOHOL FOAM (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIAL, EIGHTH EDITION).

TRANSPORTATION

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172.101 AND 172.402:
FLAMMABLE LIQUID

TOXICITY

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METHYL ETHYL KETONE:
350 PPM EYE-HUMAN IRRITATION; 80 MG EYE RABBIT IRRITATION; 500 MG/24 HOURS

SKIN-RABBIT MODERATE IRRITATION; 402 MG/24 HOURS SKIN-RABBIT MILD IRRITATION; 13,780 UG/24 HOUR OPEN SKIN-RABBIT MILD IRRITATION; 2000 PPM/4 HOURS INHALATION-RAT LCLO; 2737 MG/KG ORAL-RAT LD50; 100 PPM/5 MIN INHALATION-HUMAN TCLO; 13 GM/KG SKIN-RABBIT LD50; 40 GM/M3/2 HOURS INHALATION-MOUSE LC50; 616 MG/KG INTRAPERITONEAL-MOUSE LD50; 2000 MG/KG INTRAPERITONEAL-GUINEA PIG LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); CARCINOGEN STATUS: NONE.

METHYL ETHYL KETONE IS AN EYE, SKIN AND MUCOUS MEMBRANE IRRITANT AND CENTRAL NERVOUS SYSTEM DEPRESSANT. METHYL ETHYL KETONE MAY ENHANCE THE NEUROTOXIC EFFECTS OF N-HEXANE OR METHYL N-BUTYL KETONE. PERSONS WITH A HISTORY OF CHRONIC RESPIRATORY DISEASE MAY BE AT AN INCREASED RISK FROM EXPOSURE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
METHYL ETHYL KETONE:
IRRITANT/NARCOTIC. 3000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE- INHALATION OF VAPOR CONCENTRATIONS OF 100-200 PPM CAUSED MILD NOSE AND THROAT IRRITATION; 300 PPM WAS OBJECTIONABLE AND CAUSED HEADACHE AND THROAT IRRITATION; AND EXTREMELY HIGH CONCENTRATIONS MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH DIZZINESS AND DROWSINESS. ODOR AND IRRITATION ARE GENERALLY SUFFICIENT TO PREVENT OVEREXPOSURE. METHYL ETHYL KETONE MAY ENHANCE THE NEUROTOXIC EFFECTS OF N-HEXANE OR METHYL N-BUTYL KETONE.

CHRONIC EXPOSURE- EXPOSURE TO 300-600 PPM FOR UNSPECIFIED LENGTHS OF TIME CAUSED NAUSEA, HEADACHE, AND NUMBNESS OF THE EXTREMITIES. RATS EXPOSED TO 2150-4740 PPM FOR 4-6 WEEKS SHOWED NO SIGNS OF NEUROTOXICITY. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN OFFSPRING OF PREGNANT RATS FOLLOWING EXTENDED EXPOSURE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
METHYL ETHYL KETONE:
NARCOTIC.

ACUTE EXPOSURE- LIQUID MAY DEFAT AND PARTIALLY DEHYDRATE THE SKIN WITHOUT PRODUCING IRRITATION OR INFLAMMATION, AND MAY BE ABSORBED TO CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH HEADACHE AND NUMBNESS OF THE EXTREMITIES. ANIMAL STUDIES INDICATE THAT LETHAL AMOUNTS MAY BE ABSORBED THROUGH INTACT SKIN. METHYL ETHYL KETONE MAY ENHANCE THE NEUROTOXIC EFFECTS OF N-HEXANE OR METHYL N-BUTYL KETONE.

CHRONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE MAY CAUSE IRRITATION AND DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
METHYL ETHYL KETONE:
IRRITANT.

ACUTE EXPOSURE- 200 PPM CAUSED IRRITATION, 3300 PPM PRODUCED MODERATE IRRITATION AND 10,000 PPM WAS INTOLERABLE TO HUMANS. DIRECT CONTACT OR THE

LEEDS005797

LIQUID WITH THE EYES CAUSED PAINFUL IRRITATION AND TEMPORARY CORNEAL INJURY IN RABBITS. IN GUINEA PIGS, 10% VAPOR FOR 30 MINUTES CAUSED TEMPORARY CORNEAL OPACITY WHICH CLEARED WITHIN 8 DAYS.
CHRONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE MAY CAUSE CONJUNCTIVITIS. REPEATED SYSTEMIC INTOXICATION BY INHALATION OR INGESTION MAY RESULT IN OPTIC NEURITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
METHYL ETHYL KETONE:
NARCOTIC.
ACUTE EXPOSURE- INGESTION MAY CAUSE IRRITATION OF THE GASTROINTESTINAL TRACT WITH NAUSEA AND VOMITING, AND POSSIBLY CENTRAL NERVOUS SYSTEM DEPRESSION. LARGE DOSES OF KETONES MAY CAUSE TRANSIENT LIVER AND KIDNEY DAMAGE. METHYL ETHYL KETONE MAY ENHANCE THE NEUROTOXIC EFFECTS OF N-HEXANE OR METHYL N-BUTYL KETONE.
CHRONIC EXPOSURE- NO HUMAN DATA AVAILABLE.

FIRST AID- REMOVE BY GASTRIC LAVAGE OR EMESIS USING ACTIVATED CHARCOAL. DO NOT PERFORM GASTRIC LAVAGE OR EMESIS ON AN UNCONSCIOUS PERSON. MAINTAIN BLOOD PRESSURE AND RESPIRATION. GIVE OXYGEN IF RESPIRATION IS DEPRESSED. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. LAVAGE AND OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY SECTION

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
METHYL ETHYL KETONE:
CHLOROFORM: VIGOROUS, EXOTHERMIC REACTION IN THE PRESENCE OF A BASE.
CHLOROSULFONIC ACID: MIXING IN CLOSED CONTAINER MAY RESULT IN INCREASED TEMPERATURE AND PRESSURE.
HYDROGEN PEROXIDE, NITRIC ACID: PRODUCES SHOCK AND HEAT SENSITIVE OILY PEROXIDE.
ISOPROPANOL: ACCELERATES PEROXIDATION OF THE ALCOHOL BY SENSITIZING THE PHOTOCHEMICAL OXIDATION PRODUCING AN EXPLOSIVE PRODUCT.
OLEUM: MIXING IN CLOSED CONTAINER MAY RESULT IN INCREASED TEMPERATURE AND PRESSURE.
OXIDIZERS (STRONG): POSSIBLE FIRE AND EXPLOSION HAZARD.
POTASSIUM TERT-BUTOXIDE: IGNITION REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

CONDITIONS TO AVOID

MAY BE IGNITED BY HEAT, SPARKS OR FLAMES. CONTAINER MAY EXPLODE IN HEAT OF FIRE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. RUN-OFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

SPILLS AND LEAKS

OCCUPATIONAL-SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT SECTION

VENTILATION:
PROVIDE LOCAL EXHAUST OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS OR NIOSH CRITERIA DOCUMENTS; OR DEPARTMENT OF LABOR, 29CFR1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION.

1000 PPM- ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE AND ORGANIC VAPOR CARTRIDGE.

3000 PPM- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE OR FRONT OR BACK-MOUNTED ORGANIC VAPOR CARTRIDGE.
ANY SUPPLIED-AIR RESPIRATOR OPERATED IN CONTINUOUS FLOW MODE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE..

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE OR FRONT OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

OR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

AUTHORIZED - OCCUPATIONAL HEALTH SERVICES, INC.

CREATION DATE: 09/28/84 REVISION DATE: 09/01/87

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GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

==========

(P) 061410 TOLUENE
370285

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 110178
2 -->MSDS signed by: Not Provided
3 -->Title: Not Provided
4 -->Comments: Not Provided
5 -->Safe Use Category: None Assigned
6 -->Last Date Updated: 112581

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: AROMATIC HYDROCARBON
2 -->Formula: C6H5CH3

(*)MID: #534527
ASHLAND CHEMICAL CO
DUNS Account #: 00-500-3264
Emergency telephone #: 614/889-3333
DIV OF ASHLAND OIL INC
P O BOX 2219
COLUMBUS, OH 43216

Shipping Name: TOLUENE(TOLUOL)
Hazard Class: Flammable Liquid
U.N. Code: UN1294
Flash Point: 40F C.C.

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
000108883	= 100% BY VOL	Toluene

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS#	LISTS
000108883	= 01, 02, 03, 04, 06, 07, 08, 09, 10, 11, 14, 15, 16, 17, 19, 20, 21, 23, 31, 32, 36, 37, 38, 39, 42, 46, 47, 48.

- REGULATORY LIST KEY -

LEEDS005801

01 - OSHA-PEL ;	02 - GM-EEG ;	03 - ACGIH-TLV ;	04 - GM-Spec Chem;
06 - EPA HW261.33;	07 - EPA HW-App 8;	08 - MCMR ;	09 - FWPC-Sec 311;
10 - EPA PriorPol;	11 - NY Subs Conc;	14 - MI Air Pollu;	15 - Sup Tax Chem;
16 - MI HW-Act 64;	17 - CA Haz Subst;	19 - MA Subst ;	20 - NJ Env Subst;
21 - Tot Tox Org ;	23 - MD Class II ;	31 - Allghny Cty ;	32 - IL-RTK ;

36 - Pro EP Tox ; 37 - MO Species ; 38 - MO-RTK ; 39 - ONT 654/86 ;
42 - WI TABLE 1 ; 46 - GM SP SARA ; 47 - SARA TOXCHEN; 48 - SARA HAZ SUB.

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: 232F @ 760 MMHG
2 -->Specific Gravity: 0.871 @ 60F
3 -->Vapor Pressure: 38 MMHG @ 68F
4 -->% Volatile by Volume: 100%
5 -->% Solid by Weight: Not Provided
6 -->Vapor Density: 4.5
7 -->Evaporation Rate: 4.5, ETHER=1
8 -->Solubility in H2O: INSOLUBLE
9 -->pH: Not Provided
10 -->Appearance & Odor: COLORLESS LIQUID, BENZOL-LIKE ODOR
11 -->State: LIQUID

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: 1.2%
2 -->Flammable Limits - UEL: Not Provided
3 -->Extinguishing Media: REGULAR FOAM, CO2, DRY CHEMICAL
4 -->Special Fire Fighting Procedures: SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.
5 -->Unusual Fire & Explosion Hazards: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR MAY BE MOVED BY VENTILATION AND IGNITED BY PILOT LIGHTS, OTHER FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT. NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: EYES - CAN CAUSE SEVERE IRRITATION. SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION. INHALATION - VAPORS CAN CAUSE RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, HEADACHE, UNCONSCIOUSNESS, AND EVEN ASPHYXIATION. INGESTION - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
2 -->Threshold Limit Value: 200 PPM
3 -->Permissible Exposure Limit: Not Provided
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: EYES - FLUSH WITH LARGE AMOUNTS OF WATER, GET MEDICAL ATTENTION. SKIN - WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDER BEFORE RE-USE. INHALATION - REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION. INGESTION - DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMING CAN BE FATAL.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: Not Provided
3 -->Incompatible Materials: STRONG OXIDIZING AGENTS
4 -->Hazardous Decomposition Products: CO2, CO, VARIOUS HYDROCARBONS, ETC.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: Not Provided

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: ELIMINATE ALL IGNITION SOURCES. PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL. DIKE AREA, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP BY ANY ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.
2 -->Waste Disposal Method: DESTROY BY LIQUID INCINERATION. CONTAMINATED ABSORBENTMAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): Not Provided
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: IF TLV EXCEEDED, NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR
2 -->Local Exhaust: SUFFICIENT TO MAINTAIN BELOW TLV
3 -->Special: SUFFICIENT TO MAINTAIN BELOW TLV
4 -->Mechanical: SUFFICIENT TO MAINTAIN BELOW TLV
5 -->Other: SUFFICIENT TO MAINTAIN BELOW TLV
6 -->Protective Gloves (Specify type): BUNA-N
7 -->Eye Protection (Specify type): CHEMICAL SPLASH GOGGLES
8 -->Other Protective Equipment: IMPERVIOUS CLOTHING AND BOOTS

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES, ALL HAZARD PRECAUTIONS GIVEN MUST BE OBSERVED.
2 -->Other Precautions: Not Provided

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: Not Provided

GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

(P) 17676/ ACRYLIC DISPERSION THINNER 3865-R66
3865-R66
58001HM12
FERROUS

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 061286
2 -->MSDS signed by: WALTER STUECKEN
3 -->Title: LABORATORY MANAGER
4 -->Comments: Not Provided
5 -->Safe Use Category: 2 - SOLVENTS - Flash Point: < 100F
6 -->Last Date Updated: 070286

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: SOLVENT BLEND
2 -->Formula: SOLVENT BLEND

(*)MID: #516919
GROW GROUP INC
DUNS Account #: 00-532-0551
Emergency telephone #: 313/643-4600
3155 W. BIG BEAVER RD
SUITE 200
TROY, MI 48084

Shipping Name: PAINT RELATED MATERIAL
Hazard Class: Flammable Liquid
U.N. Code: NA1263
Flash Point: 63F TCC

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
064742490	20 /30% BY VOL	Hydrotreated Light Naphtha (Petroleum)
064742478	10 /20% BY VOL	Hydrotreated Light Distillate (Petroleum)
000112345	55 /65% BY VOL	Ethanol, 2-(2-butoxyethoxy)-

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS# LISTS

064742490 = 04, 46.
000112345 = 23, 46, 47.

- REGULATORY LIST KEY -

04 - GM-Spec Chem; 23 - MD Class II ; 46 - GM SP SARA ; 47 - SARA TOXCHEM.

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: 246-437 F
2 -->Specific Gravity: 0.8639
3 -->Vapor Pressure: 10.8 MM HG @ 68 F
4 -->% Volatile by Volume: 100% V
5 -->% Solid by Weight: 0% W
6 -->Vapor Density: 4.92
7 -->Evaporation Rate: SLOWER THAN ETHER
8 -->Solubility in H2O: 59%
9 -->pH: N/A
10 -->Appearance & Odor: WATER WHITE LIQUID
11 -->State: LIQUID

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: 0.9%
2 -->Flammable Limits - UEL: 6%
3 -->Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL, FOAM.
4 -->Special Fire Fighting Procedures: USE NIOSH APPROVED SELF CONTAINED BREATHING APPARATUS. COOL EXPOSED CONTAINERS WITH WATER TO PREVENT PRESSURE BUILDUP AND/OR RUPTURE.
5 -->Unusual Fire & Explosion Hazards: VAPORS HEAVIER THAN AIR AND MAY TRAVEL TO A SOURCE OF IGNITION AND CASE FLASHBACK. VAPORES MAY SPREAD. PREVENT BUILDUP OFVAPORS. EXTINGUISH ALL PILOT LIGHTS, TURN OFF HEATERS, NON-EXPLOSION PROOF ELECTRICAL EQUIPMENT AND OTHER SOURCES OF IGNITION DURING USE AND UNTIL ALL VAPORS ARE GONE.

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: INHALATION - IRRITATION OF THE RESPIRATORY TRACT; HEADACHE, NAUSEA, DIZZINESS, WEAKNESS AND FATIGUE. EXTREME EXPOSURE CAN RESULT IN UNCONSCIOUSNESS AND EVEN RESPIRATORY ARREST. EYE CONTACT - SEVERE IRRITANT. SKIN CONTACT - PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF SKIN, WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS. CHRONIC: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.
2 -->Threshold Limit Value: 50 PPM (ACGIH)
3 -->Permissible Exposure Limit: 50 PPM
4 -->Other limit: Not Provided
5 -->Primary routes of entry: INHALATION, SKIN CONTACT, SWALLOWING.
6 -->Emergency First Aid Procedures: INHALATION - REMOVE TO FRESH AIR. IF BREATHING BECOMES DIFFICULT, ADMINISTER OXYGEN. IF BREATHING CEASES, RESTORE USING APPROVED CPR TECHNIQUES AND SUMMON MEDICAL ASSISTANCE IMMEDIATELY. EYE CONTACT - FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. CONSULT A PHYSICIAN FOR MEDICAL TREATMENT. SKIN CONTACT - WASH AFFECTED AREAS WITH SOAP AND WATER. REMOVE SOILED CLOTHING. CONSULT A PHYSICIAN IF IRRITATION PERSISTS. INGESTION - DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN IMMEDIATELY. ASPIRATION OF VOMITUS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL. NOTICE: INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: HEAT, SPARKS, OPEN FLAME.
3 -->Incompatible Materials: STRONG OXIDIZING AGENTS.
4 -->Hazardous Decomposition Products: THERMAL DECOMPOSITION MAY YIELD CARBON MONOXIDE AND CARBON DIOXIDE.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: NOT APPLICABLE

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: REMOVE ALL SOURCES OF IGNITION (FLAMES, HOT SURFACES, AND ELECTRICAL STATIC OR FRICTIONAL SPARKS). AVOID BREATHING VAPORS. VENTILATE AREA. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. DIKE AND CONTAIN SPILLED MATERIAL AND REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS. STORE IN CLOSED CONTAINER UNTIL PROPERLY DISPOSED OF.
2 -->Waste Disposal Method: INCINERATE UNDER SAFE CONDITIONS OR DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
3 -->CERCLA (Superfund) Reportable quantity (lbs): ONE POUND OR REFER TO SECTION 311 CLEAN WATER ACT.
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): D-001 NOTE: NUMBER APPLIES TO THINNER BLEND ONLY.

5 -->Volatile Organic Compound (VOC) Theoretical: 7.271 LB/GAL
6 -->Volatile Organic Compound (VOC) Analytical: 7.193 LB/GAL

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: USE NIOSH/MSHA APPROVED SELF CONTAINED BREATHING APPARATUS FOR CONCENTRATIONS ABOVE TLV LIMITS.
2 -->Local Exhaust: USE ONLY WITH ADEQUATE VENTILATION. USE EITHER LOCAL EXHAUST OR MECHANICAL TO MEET TLV REQUIREMENTS. VENTILATION MUST Be SUFFICIENT TO LIMIT EMPLOYEE EXPOSURE AT, OR BELOW, OSHA TLV LIMIT. HEAVY SOLVENT VAPORS SHOULD BE REMOVED FROM LOWER LEVELS OF WORK AREA.
3 -->Special: Not Provided
4 -->Mechanical: SEE LOCAL EXHAUST
5 -->Other: Not Provided
6 -->Protective Gloves (Specify type): NEOPRENE OR EQUIVALENT.
7 -->Eye Protection (Specify type): SAFETY GLASSES OR GOGGLES.
8 -->Other Protective Equipment: EYE BATH AND SAFETY SHOWER.

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME. USE WITH ADEQUATE VENTILATION. DO NOT BREATHE VAPORS, DO NOT GET IN EYES, ON SKIN OR CLOTHING. DO NOT STORE ABOVE 120F.
2 -->Other Precautions: NEVER USE CUTTING OR WELDING TORCH IN, IR NEAR CONTAINERS, EVEN EMPTY, AS PRODUCT OR RESIDUE MAY IGNITE. DO NOT TRANSFER CONTENTS TO BOTTLES OR OTHER UNLABLED CONTAINERS.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: Not Provided

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GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

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(P) 108778 365 LEAD-FREE TEXACO GASOLINE
LEAD-FREE TEXACO GASOLINE
GASOLINE
LEAD-FREE GASOLINE
CUA95
NF
HM 4897

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 102780
2 -->MSDS signed by: Not Provided
3 -->Title: Not Provided
4 -->Comments: Not Provided
5 -->Safe Use Category: 2 - SOLVENTS - Flash Point: < 100F
6 -->Last Date Updated: 010186

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: Gasoline
2 -->Formula: Not Provided

(*)MID: #503788
TEXACO INC
DUNS Account #: 04-607-5107
Emergency telephone #: 914/831-3400-EXT.406
P O BOX 509
BEACON, NY 12508

Shipping Name: GASOLINE
Hazard Class: Flammable Liquid
U.N. Code: UN1203
Flash Point: -45F CC

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
989952748	< 100% BY WT	GASOLINE (HIGHLY BRANCHED PARAFFINIC HYDROCAR BONS INTERNALLY UNSATURATED CYCLIC OLEFINS, A ND AROMAT
000071432	.2/3.0% BY WT	Benzene

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS# LISTS

000071432 = 01, 03, 04, 05, 06, 07, 08, 09, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 31, 32, 36, 37, 38, 39, 40, 43, 46, 47, 48, 49.

- REGULATORY LIST KEY -

01 - OSHA-PEL ;	03 - ACGIH-TLV ;	04 - GM-Spec Chem;	05 - Susp Carcin ;
06 - EPA HW261.33;	07 - EPA HW-App 8;	08 - MCMR ;	09 - FWPC-Sec 311;
10 - EPA PriorPol;	11 - NY Subs Conc;	14 - MI Air Pollu;	15 - Sup Tax Chem;
16 - MI HW-Act 64;	17 - CA Haz Subst;	18 - NY San 22.8 ;	19 - MA Subst ;
20 - NJ Env Subst;	21 - Tot Tox Org ;	22 - MD Class I ;	31 - Allghny Cty ;
32 - IL-RTK ;	36 - Pro EP Tox ;	37 - MO Species ;	38 - MO-RTK ;
39 - ONT 654/86 ;	40 - ONT DES SUB ;	43 - WI TABLE 2 ;	46 - GM SP SARA ;
47 - SARA TOXCHEM;	48 - SARA HAZ SUB;	49 - P-65 Carcino.	

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: Not determined
2 -->Specific Gravity: 0.8
3 -->Vapor Pressure: 11.5-14.5P Reid Vapor Press, @ 100F
4 -->% Volatile by Volume: 100V
5 -->% Solid by Weight: Not Provided
6 -->Vapor Density: Not determined
7 -->Evaporation Rate: Not determined
8 -->Solubility in H2O: Negligible in water.
9 -->pH: Not determined
0 -->Appearance & Odor: Copper colored liquid with characteristic odor.
1 -->State: Not Provided

ECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: 1.4
2 -->Flammable Limits - UEL: 7.6
3 -->Extinguishing Media: According to the National Fire Protection Association Guide 325M, use chemical, foam or carbon dioxide. Water may be ineffective on the fla water should be used to keep fire-exposed containers cool. If a leak has not ignited, use water spray to disperse the vapors and to provide protection for the men attempting to stop the leak.
4 -->Special Fire Fighting Procedures: Not Provided
5 -->Unusual Fire & Explosion Hazards: Not Provided

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: Believed to cause minimal eye irritation. Transient minor irritation noted following initial eye contact. Effects of dermal contact believ slight, if any; may cause dermatitis on prolonged or repeated contact. inhalation of vapors at low concentrations not harmful. Above 500 ppm exposure can cause dizziness, irritation of eyes, nose and throat. CN such as coma or seizures possible at extremely high concentrations. H "sniffing" of gasoline is dangerous.
2 -->Threshold Limit Value: Not established
3 -->Permissible Exposure Limit: Not Provided
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: As with most foreign materials, should eye contact occur, flush eyes w plenty of water. If ingested, do NOT induce vomiting. May cause chem pneumonitis. Should symptoms noted under physiological effects occur, fresh air. If unconscious, apply artificial respiration.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: Not Provided
3 -->Incompatible Materials: Material reacts violently with heat and strong oxidizers.
4 -->Hazardous Decomposition Products: Carbon monoxide and carbon dioxide may be formed on burning in limited supply.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: Not Provided

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: Eliminate all ignition sources. Contain spill, if possible. Ventilat Avoid breathing vapor. Use self-contained breathing apparatus, or sup air masks for large spills in confined area. Remove with inert absorb non-sparking tools.
2 -->Waste Disposal Method: Dispose in accordance with local laws and regulations governing disposoily wastes. A waste oil contractor or disposal specialist is suggest
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): Not Provided
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: Supplied air respiratory protection for cleaning large spills or upon into large tanks, vessels or other confined spaces.
2 -->Local Exhaust: Local exhaust ventilation recommended.
3 -->Special: Not Provided
4 -->Mechanical: Not Provided
5 -->Other: Not Provided
6 -->Protective Gloves (Specify type): Impervious gloves recommended.
7 -->Eye Protection (Specify type): Chemical goggles or face shield optional.
8 -->Other Protective Equipment: Exposed employees should exercise reasonable personal cleanliness; thi cleansing exposed skin areas several times daily with soap and water, laundering or dry cleaning soiled work clothing at least weekly.

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: Transport, handle, and store in accordance with OSHA Regulations 1910.
2 -->Other Precautions: DANGER. EXTREMELY FLAMMABLE. Harmful or fatal if swallowed; vapor HA Keep away from heat, sparks and flame. Keep container closed. Use wi adequate ventilation. Keep out of reach of children.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: Not Provided

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GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

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(P) 193269 TEXACO DIESEL 2
456
DIESEL 2

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 112785
2 -->MSDS signed by: R.T. RICHARDS
3 -->Title: MANAGER OF ENVIRONMENTAL CONSERVATION AND TOXICOLOGY
4 -->Comments: NONE
5 -->Safe Use Category: 4 - METALWORKING FLUIDS AND LUBRICANTS - FLASH POINT > 200F
6 -->Last Date Updated: 090286

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: DIESEL FUEL
2 -->Formula: MIXTURE

(*)MID: #532477
TEXACO INC
Emergency telephone #: 914-831-3400
PO BOX 509
BEACON, NY 12508

Shipping Name: FUEL OIL
Hazard Class: Combustible Liquid
U.N. Code: NA1993
Flash Point: 160F

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
989902454	= 100% BY WT	HYDROCARBONS

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: 650F
2 -->Specific Gravity: .8521
3 -->Vapor Pressure: LOW
4 -->% Volatile by Volume: ND
5 -->% Solid by Weight: ND
6 -->Vapor Density: ND
7 -->Evaporation Rate: ND
8 -->Solubility in H2O: NIL
9 -->pH: NA
10 -->Appearance & Odor: CLEAR AND BRIGHT LIQUID
11 -->State: LIQUID

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: .52
2 -->Flammable Limits - UEL: 4.10
3 -->Extinguishing Media: WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE.'Y.
4 -->Special Fire Fighting Procedures: USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF LEAK OR SPILL HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROVIDE PROTECTION FOR PERSONS ATTEMPTING TO STOP THE LEAK.
5 -->Unusual Fire & Explosion Hazards: NONE

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: EYE:IRRITANT. SKIN:IRRITANT, BURNS AND BLISTERING POSSIBLE. INHALATION: DROWSINESS OR NARCOSIS FROM HIGH CONCENTRATIONS.
2 -->Threshold Limit Value: ND
3 -->Permissible Exposure Limit: ND
4 -->Other limit: NONE
5 -->Primary routes of entry: SKIN
6 -->Emergency First Aid Procedures: EYE: FLUSH WITH PLENTY OF WATER. SKIN:WASH WITH SOAP AND WATER. INGESTION:DO NOT INDUCE VOMITING. ASPIRATION CAN CAUSE CHEMICAL PNEUMONIA.INHALE:REMOVE TO FRESH AIR.ARTIFICIAL RESPIRATION IF NEEDED.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: STRONG OXIDIZERS
3 -->Incompatible Materials: STRONG OXIDIZERS
4 -->Hazardous Decomposition Products: NO
5 -->Can Hazardous Polymerization Occur: NONE
6 -->Conditions to Avoid: NONE

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: AVOID PERSONAL CONTACT. VENTILATE AREA. AVOID BREATHING VAPOR.USE SELF-CONTAINED BREATHING APPARATUS OR SUPPLIED-AIR MASK FOR LARGE SPILLS.CONTAIN SPILL IF POSSIBLE. WIPE UP OR SHOVEL UP.
2 -->Waste Disposal Method: CHECK PRODUCT USES, TRANSFORMATION, MIXTURES, AND PROCESSES , THEY MAY CHANGE CLASSIFICATION TO NON-HAZARDOUS OR HAZARDOUS FOR REASONS OTHER THAN , OR IN ADDITION TO IGNITABILITY.
3 -->CERCLA (Superfund) Reportable quantity (lbs): NA
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): D001
5 -->Volatile Organic Compound (VOC) Theoretical: NA
6 -->Volatile Organic Compound (VOC) Analytical: NA

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: SUPPLIED AIR RESPIRATORY PROTECTION FOR CLEANING LARGE SPILLS OR UPON ENTRY INTO TANKS, VESSELS, OR OTHER CONFINED SPACES.
2 -->Local Exhaust: NORMAL
3 -->Special: NA
4 -->Mechanical: NORMAL
5 -->Other: NA
6 -->Protective Gloves (Specify type): CHEMICAL RESISTANT AND RESISTANT TO PETROLEUM DISTILLATES.
7 -->Eye Protection (Specify type): CHEMICAL TYPE GOGGLES OR FACE SHIELD OPTIONAL.
8 -->Other Protective Equipment: NONE

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: STORE AWAY FROM HEAT AND OPEN FLAME. PLACARD REQUIRED ONLY WHEN MATERIAL IS CONTAINED IN PACKAGING OR CONTAINER THAT EXCEEDS 110 GALLONS OR IN TANK CAR OR TRUCK.
2 -->Other Precautions: MAY BE HARMFUL IF INHALED OR ABSORBED THROUGH SKIN . COMBUSTIBLE. CAUSES SEVERE SKIN BURNS.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: Not Provided

GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

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(P) 137716 828 2262
9984014
828-2262
CN161
9984009-POR
BLACK SHEET METAL PRIMER
9P61230

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 081783
2 -->MSDS signed by: Not Provided
3 -->Title: Not Provided
4 -->Comments: Not Provided
5 -->Safe Use Category: 2 - SOLVENTS - Flash Point: < 100F
6 -->Last Date Updated: 051986

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: EPOXY PRIMER
2 -->Formula: N/A

(*)MID: #550360
E. I. DU PONT DE NEMOURS & CO, INC
DUNS Account #: 00-132-5704
Emergency telephone #: 800-441-3637
FINISHES & FABRICATED PRODUCTS DEPT.
WILMINGTON, DE 19898

Shipping Name: PAINT
Hazard Class: Flammable Liquid
U.N. Code: UN1263
Flash Point: BETWEEN 73-100F (CC)

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
001333864	< 5% BY WT	Carbon black
989955704	< 5% BY WT	BASIC LEAD SILICO CHROMATE M50
007631869	< 1% BY WT	Silica
001343880	< 5% BY WT	Silicic acid, magnesium salt
001335304	< 10% BY WT	Silicic acid, aluminum salt, hydrate
989923626	< 5% BY WT	RESIN SOLIDS
989902098	< 10% BY WT	EPOXY RESIN
066070619	< 30% BY WT	1,2,3-Propanetriol, 1,3-isobenzofurandione, soybean oil polymer
000090302	< 1% BY WT	1-Naphthalenamine, N-phenyl-
989911600	< 1% BY WT	SILICONE

001338143	<	1%	BY WT	Iron naphthenate
000071363	<	10%	BY WT	1-Butanol
000108941	<	1%	BY WT	Cyclohexanone
008032324	<	10%	BY WT	Mineral spirits
001330207	<	5%	BY WT	Benzene, dimethyl-
064742956	<	20%	BY WT	Light Aromatic Solvent Naphtha (Petroleum)
789915798	<	20%	BY WT	HYDROCARBON
007439921	=	4.15%	BY WT	Lead
789956537	=	.49%	BY WT	CRO3
789911648	=	.08%	BY WT	AMINE

REGULATORY CONSIDERATIONS
Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS#	LISTS
01333864	= 03, 19, 38, 39, 42, 46.
07631869	= 01, 03, 04, 17, 19, 32, 38, 40, 46.
00090302	= 11, 46.
00071363	= 01, 03, 06, 16, 17, 19, 23, 31, 32, 37, 38, 39, 42, 46, 47, 48.
00108941	= 01, 03, 04, 06, 16, 17, 19, 31, 32, 38, 39, 42, 46, 48.
08032324	= 04, 14, 38, 46.
01330207	= 01, 03, 04, 06, 08, 09, 11, 14, 15, 16, 17, 19, 20, 23, 31, 32, 37, 38, 39, 42, 46, 47, 48.
07439921	= 01, 03, 04, 07, 08, 10, 14, 16, 19, 20, 22, 31, 32, 36, 38, 40, 46, 47, 48, 50.

- REGULATORY LIST KEY -

- OSHA-PEL ;	03 - ACGIH-TLV ;	04 - GM-Spec Chem;	06 - EPA HW261.33;
- EPA HW-App 8;	08 - MCMR ;	09 - FWPC-Sec 311;	10 - EPA PriorPol;
- NY Subs Conc;	14 - MI Air Pollu;	15 - Sup Tax Chem;	16 - MI HW-Act 64;
- CA Haz Subst;	19 - MA Subst ;	20 - NJ Env Subst;	22 - MO Class 1 ;
- MD Class II ;	31 - Allghny Cty ;	32 - IL-RTK ;	36 - Pro EP Tox ;
- MO Species ;	38 - MO-RTK ;	39 - ONT 654/86 ;	40 - ONT DES SUB;
- WI TABLE 1 ;	46 - GM SP SARA ;	47 - SARA TOXCHEM;	48 - SARA HAZ SUB;
- P-65 Rep Tox.			

CTION 3 -- PHYSICAL DATA

-->Boiling Point: 235-426F
-->Specific Gravity: 1.08
-->Vapor Pressure: 10 MM HG
-->% Volatile by Volume: 61.27
-->% Solid by Weight: Not Provided
-->Vapor Density: 3.70
-->Evaporation Rate: SLOWER THAN ETHER
-->Solubility in H2O: SLIGHT
-->pH: N/A
-->Appearance & Odor: LIQUID PRIMER / CHARACTERISTIC ODOR
-->State: LIQUID

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: 1.00
2 -->Flammable Limits - UEL: 18.00
3 -->Extinguishing Media: FOAM, CARBON DIOXIDE, DRY CHEMICAL
4 -->Special Fire Fighting Procedures: WATER FROM FOG NOZZLES MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP.
5 -->Unusual Fire & Explosion Hazards: N/A

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: HEADACHES, NAUSEA, IMPAIRMENT OF REACTION TIME AND COORDINATION.
2 -->Threshold Limit Value: SEE SECTION II - INGREDIENTS
3 -->Permissible Exposure Limit: Not Provided
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: INHALATION: MOVE TO FRESH AIR TO IMPROVE BREATHING. SKIN CONTACT: WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. EYE CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES; CALL A PHYSICIAN.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: N/A
3 -->Incompatible Materials: NONE REASONABLY FORESEEABLE
4 -->Hazardous Decomposition Products: CO, CO2, SMOKE, OXIDES OF HEAVY METALS REPORTED IN SECTION II.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: N/A

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: AVOID PROLONGED CONTACT WITH SKIN AND BREATHING OF VAPOR. REMOVE SOURCES OFF IGNITION. REMOVE WITH INERT ABSORBENT. VENTILATE AREA.
2 -->Waste Disposal Method: DISPOSAL METHOD MUST COMPLY WITH LOCAL, STATE AND FEDERAL REGULATIONS.
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): Not Provided
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: IF AIR CONTAMINANTS CONTROL IS NOT FEASIBLE, USE NIOSH/MSHA RESPIRATOR TC-23C.
2 -->Local Exhaust: PROVIDE SUFFICIENT VENTILATION TO KEEP BELOW TLV/LEL.
3 -->Special: REMOVE IGNITION SOURCES.
4 -->Mechanical: Not Provided
5 -->Other: N/A
6 -->Protective Gloves (Specify type): PROLONGED OR REPEATED CONTACT
7 -->Eye Protection (Specify type): USE SAFETY EYEWEAR
8 -->Other Protective Equipment: USE APPROPRIATE INDUSTRIAL HYGIENE PRACTICES.

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. CLOSE CONTAINER AFTER EACH USE. DO NOT STORE ABOVE 120F.
2 -->Other Precautions: WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING OR SMOKING. OBSERVE LABEL PRECAUTIONS. CONTAINERS SHOULD BE GROUNDED WHEN POURING.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: Not Provided

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GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

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(P) 108763 1833 POWER STEERING FLUID 4634
PS FLUID 4634
GM P/N 9985010
9985010
POWER STEERING FLUID
P/S FLUID
1833
4634
1050017
337025
SHV3460
SHV3460 POWER STEERING FLUID, 9985010
POWER STEERING FLUID TEXACO 1833
MILFORD
1052884
DVEL
F-1050017
58001HM103
3411WE
82C425
9985010 POWER STEERING FLUID
0351-0154
TRANSMISSION FLUIDS
ENG01
9001268-BULK
HM 5017
1833 PS FLUID 4634
01833 PS FLUID 4634
HYSTER TRANSMISSION FLUID #336831

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 112486
2 -->MSDS signed by: R.T. RICHARDS
3 -->Title: MGR. ENV. CONSERVATION & TOXICOLOGY
4 -->Comments: STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1986):
.3% TRIARYL PHOSPHATE; 50 PPM ZINC.
5 -->Safe Use Category: 4 - METALWORKING FLUIDS AND LUBRICANTS -
FLASH POINT > 200F
6 -->Last Date Updated: 022688

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: TRANSMISSION FLUIDS
2 -->Formula: Not Provided

(*)MID: #503788
TEXACO INC
DUNS Account #: 04-607-5107
Emergency telephone #: 914/831-3400-EXT.406
P O BOX 509
BEACON, NY 12508

(*)MID: #507002
ACCRA PAC INC
DUNS Account #: 04-208-0614
Emergency telephone #: 219/295-0000 OR 1020
2730 MIDDLEBURY ST
PO BOX 878
ELKHART, IN 46540

Shipping Name: NON-REGULATED MATERIAL
Hazard Class: Not Subject to DOT Regulation
U.N. Code:
Flash Point: 345F COC

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
)64742650	95 /99.9%	Solvent Dewaxed Heavy Paraffinic Distillate (Petroleum)

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS#	LISTS
)64742650	= 46.

- REGULATORY LIST KEY -

6 - GM SP SARA .

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: N/D
2 -->Specific Gravity: 0.8789
3 -->Vapor Pressure: N/D
4 -->% Volatile by Volume: N/D
5 -->% Solid by Weight: Not Provided
6 -->Vapor Density: N/D
7 -->Evaporation Rate: N/D
8 -->Solubility in H2O: N/D
9 -->pH: N/A
10 -->Appearance & Odor: BLUE LIQUID
11 -->State: 51.5 CST @ 40 C

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: N/D
2 -->Flammable Limits - UEL: N/D
3 -->Extinguishing Media: ACCORDING TO THE NATIONAL FIRE PROTECTION ASSOCIATION GUIDE, USE WATER SPRAY, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE.
4 -->Special Fire Fighting Procedures: WATER OR FOAM MAY CAUSE FROTHING. USE WATER TO COOL FIRE-EXPOSED CONTAINERS. IF A LEAK OR SPILL HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROVIDE PROTECTION FOR PERSONS ATTEMPTING TO STOP THE LEAK.
5 -->Unusual Fire & Explosion Hazards: NONE.

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: ACUTE: EYES: CAUSES MINIMAL EYE IRRITATION. TRANSIENT MINOR IRRITATION MAY BE NOTED FOLLOWING INITAIL CONTACT. SKIN: SLIGHTLY IRRITATING WITH POSSIBLE REDNESS, EDEMA, OR DRYING OF THE SKIN. RESPIRATORY SYSTEM: BELIEVED TO BE MINIMALLY IRRITATING IF NOT IN EXCESS OF PERMISSIBLE CONCENTRATIONS. CHRONIC: N/D.
2 -->Threshold Limit Value: SOLVENT-DEWAXED HEAVY PARAFFINIC PETROLEUM DISTILLATES: 5.0MG/M3 TWA.
3 -->Permissible Exposure Limit: NONE ESTABLISHED FOR PRODUCT.
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: EYES: AS WITH MOST FOREIGN MATERIALS, SHOULD EYE CONTACT OCCUR, FLUSH WITH PLENTY OF WATER. SKIN: WASH EXPOSED AREAS WITH SOAP AND WATER. INGESTION, INHALATION: NONE CONSIDERED NECESSARY.

SECTION 6 -- REACTIVITY DATA

1 -->Stable: Not Provided
2 -->Conditions to Avoid: Not Provided
3 -->Incompatible Materials: STRONG OXIDIZERS
4 -->Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE, ALDEHYDES AND KETONES, COMBUSTION PRODUCTS OF PHOSPHORUS.
5 -->Can Hazardous Polymerization Occur: Not Provided
6 -->Conditions to Avoid: Not Provided

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: CONTAIN SPILL IF POSSIBLE. WIPE UP OR ABSORB ON SUITABLE MATERIAL AND SHOVEL UP.
2 -->Waste Disposal Method: UNDER RCRA, IT IS THE RESPONSIBILITY OF THE USER OF PRODUCTS TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER PRODUCT MEETS RCRA CRITERIA FOR HAZARDOUS WASTE. THIS IS BECAUSE PRODUCT USES, TRANSFORMATIONS, MIXTURE, PROCESSES, ETC. MAY RENDER THE RESULTING MATERIAL HAZARDOUS.
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): WASTE CLASSIFICATION: PRODUCT HAS BEEN EVALUATED FOR RCRA CHARACTERISTICS AND DOES NOT MEET CRITERIA OF A HAZARDOUS WASTE IF DISCARDED IN ITS PURCHASED FORM.
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: NONE REQUIRED IF EXPOSURES ARE WITHIN PERMISSIBLE CONCENTRATIONS;
2 -->Local Exhaust: Not Provided
3 -->Special: Not Provided
4 -->Mechanical: Not Provided
5 -->Other: ADEQUATE TO MEET COMPONENT PERMISSIBLE CONCENTRATONS.
6 -->Protective Gloves (Specify type): Not Provided
7 -->Eye Protection (Specify type): CHEMICAL TYPE GOGGLES OR FACE SHIELD OPTIONAL.
8 -->Other Protective Equipment: EXPOSED EMPLOYES SHOULD EXERCISE REASONABLE PERSONAL CLEANLINESS; THIS INCLUDES CLEANSING EXPOSED SKIN AREAS SEVERAL TIMES DAILY WITH SOAP AND WATER, AND LAUNDERING OR DRY CLEANING SOILED WORK CLOTHING AT LEAST WEEKLY.

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: MINIMUM FEASIBLE HANDLING TEMPERATURES SHOULD BE MAINTAINED. PERIODS OF EXPOSURE TO HIGH TEMPERATURES SHOULD BE MINIMIZED. WATER CONTAMINATION SHOULD BE AVOIDED.

2 -->Other Precautions: CAUTION: MISUSE OF EMPTY CONTAINERS CAN BE HAZARDOUS. EMPTY CONTAINERS CAN BE HAZARDOUS IF USED TO STORE TOXIC, FLAMMABLE, OR REACTIVE MATERIALS. CUTTING OR WELDING OF EMPTY CONTAINERS MIGHT CAUSE FIRE, EXPLOSION OR TOXIC FUMES FROM RESIDUES. DO NOT PRESSURIZE OR EXPOSE TO OPEN FLAME OR HEAT. KEEP CONTAINER CLOSED AND DRUM BUNGS IN PLACE.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: ORAL: >20.0 G/KG (RAT); PRACTICALLY NON-TOXIC. INHALATION: N/D. DERMAL: >20.0 G/KG (RABBIT); PRACTICALLY NON-TOXIC. OTHER: N/D. IRRITATION INDEX: SKIN: 2.96/8.0 (RABBIT); SLIGHTLY IRRITATING. EYES: 9.0/110 (RABBIT); NO APPRECIABLE EFFECT.

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GENERAL MOTORS CORPORATION
MATERIAL SAFETY DATA SHEET

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(P) 108142 1933 AUTOMATIC TRANSMISSION FLUID
9985252
337653
1933 ATF EXXON
1933 ATF
887
2851
3402
GM#6032-M
ATF
F106.1
SHV0330
SHV0330 AUTOMATIC TRANSMISSION FLUID, 1933, 9985252
9985252 1933 AUTOMATIC TRANSMISSION FLUID
9F02201
9F02203
42017-HMC446
213933-01933

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 062386
2 -->MSDS signed by: Not Provided
3 -->Title: Not Provided
4 -->Comments: Not Provided
5 -->Safe Use Category: 4 - METALWORKING FLUIDS AND LUBRICANTS - FLASH POINT > 200F
6 -->Last Date Updated: 032188

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: PETROLEUM LUBRICATING OIL.
2 -->Formula: COMPLEX MIXTURE.

(*)MID: #533724
EXXON CHEMICAL AMERICAS
Emergency telephone #: 713/870-6000
PO BOX 3272
HOUSTON, TX 77001

Shipping Name:
Hazard Class:
U.N. Code:
Flash Point: MIN 63C/145F ASTMD56 TCC

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
064742547	< 90%	Hydrotreated Heavy Paraffinic Distillate (Petroleum)
064742650	< 90%	Solvent Dewaxed Heavy Paraffinic Distillate (Petroleum)
064741975	< 90%	Solvent Refined Light Naphthenic Distillate (Petroleum)
989926815	= 10%	PROPRIETARY ADDITIVES

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS#	LISTS
064742650	= 46.

- REGULATORY LIST KEY -

46 - GM SP SARA .

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: IBP APPROXIMATELY 246 C (473 F).
2 -->Specific Gravity: 0.88
3 -->Vapor Pressure: LESS THAN 0.01 MM HG @ 20 C.
4 -->% Volatile by Volume: NEGLIGIBLE FROM OPEN CONTAINER IN 4 HOURS @ 38 C (100 F).
5 -->% Solid by Weight: Not Provided
6 -->Vapor Density: GREATER THAN 5.
7 -->Evaporation Rate: LESS THAN 0.01 (N-BUTYL ACETATE=1).
8 -->Solubility in H2O: NEGLIGIBLE; LESS THAN 0.1%.
9 -->pH: ESSENTIALLY NEUTRAL.
10 -->Appearance & Odor: CLEAR RED LIQUID, MILD, BLAND PETROLEUM ODOR.
11 -->State: POUR, CONGEALING OR MELTING POINT: -40 C (-40 F). POUR POINT BY ASTM D 97. VISCOSITY 7.4 CST @ 98.9 C.

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: 0.9%
2 -->Flammable Limits - UEL: 7%
3 -->Extinguishing Media: FOAM, WATER SPRAY (FOG), DRY CHEMICAL, CARBON DIOXIDE AND VAPORIZING LIQUID TYPE EXTINGUISHING AGENTS MAY ALL BE SUITABLE FOR EXTINGUISHING FIRES INVOLVING THIS TYPE OF PRODUCT, DEPENDING ON SIZE OR POTENTIAL SIZE OF FIRE AND CIRCUMSTANCES RELATED TO THE SITUATION. PLAN FIRE PROTECTION AND RESPONSE STRATEGY THROUGH CONSULTATION WITH LOCAL FIRE PROTECTION AUTHORITIES OR APPROPRIATE SPECIALTISTS.
4 -->Special Fire Fighting Procedures: USE WATER SPRAY, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE. WATER OR FOAM MAY CAUSE FROTHING. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURES. MINIMIZE BREATHING GASES, VAPOR, FUMES OR DECOMPOSITION PRODUCTS. USE SUPPLIED-AIR BREATHING EQUIPMENT FOR ENCLOSED OR CONFINED SPACES OR AS OTHERWISE NEEDED.
5 -->Unusual Fire & Explosion Hazards: Not Provided

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: VARIABILITY AMONG INDIVIDUALS: HEALTH STUDIES HAVE SHOWN THAT MANY PETROLEUM HYDROCARBONS AND SYNTHETIC LUBRICANTS POSE POTENTIAL HUMAN HEALTH RISKS WHICH MAY VARY FROM PERSON TO PERSON. AS A PRECAUTION, EXPOSURE TO LIQUIDS, VAPORS, MISTS OR FUMES SHOULD BE MINIMIZED. EFFECTS OF OVEREXPOSURE: (SIGN AND SYMPTOMS OF EXPOSURE) PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE SKIN IRRITATION. NATURE OF HAZARD AND TOXICITY INFORMATION: PROLONGED OR REPEATED SKIN CONTACT WITH THIS PRODUCT TENDS TO REMOVE SKIN OILS POSSIBLY LEADING TO IRRITATION AND DERMATITIS; HOWEVER, BASED ON HUMAN EXPERIENCE AND AVAILABLE TOXICOLOGICAL DATA, THIS PRODUCT IS JUDGED TO BE NEITHER A "CORROSIVE" NOR AN "IRRITANT" BY OSHA CRITERIA. PRODUCT CONTAINING THE EYES MAY CAUSE EYE IRRITATION. PRODUCT HAS A LOW ORDER OR ACUTE ORAL AND DERMAL TOXICITY, BUT MINUTE AMOUNTS ASPIRATED INTO THE LUNGS DURING INGESTION MAY CAUSE MILD TO SEVERE PULMONARY INJURY AND POSSIBLY DEATH. THIS PRODUCT IS JUDGED TO HAVE AN ACUTE ORAL LD50 (RAT) GREATER THAN 5 G/KG OF BODY WEIGHT, AND AN ACUTE DERMAL LD50 (RABBIT) GREATER THAN 3.16 G/KG OF BODY WEIGHT.
2 -->Threshold Limit Value: EXPOSURE LIMIT FOR TOTAL PRODUCT: 5 MG/M3 FOR OIL MIST IN AIR.
3 -->Permissible Exposure Limit: Not Provided
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: EYE CONTACT: IF SPLASHED INTO THE EYES, FLUSH WITH CLEAR WATER FOR 15 MINUTES OR UNTIL IRRITATION SUBSIDES. IF IRRITATION PERSISTS, CALL A PHYSICIAN. SKIN CONTACT: IN CASE OF SKIN CONTACT, REMOVE ANY CONTAMINATED CLOTHING AND WASH SKIN THOROUGHLY WITH SOAP AND WATER. INHALATION: VAPOR PRESSURE IS VERY LOW. VAPOR INHALATION UNDER AMBIENT CONDITIONS IS NORMALLY NOT A PROBLEM. IF OVERCOME BY VAPOR FROM HOT PRODUCT, IMMEDIATELY REMOVE FROM EXPOSURE AND CALL A PHYSICIAN. IF BREATHING IS IRREGULAR OR HAS STOPPED, START RESUSCITATION; ADMINISTER OXYGEN, IF AVAILABLE. IF OVEREXPOSED TO OIL MIST, REMOVE FROM FURTHER EXPOSURE UNTIL EXCESSIVE OIL MIST CONDITION SUBSIDES. INGESTION: IF INGESTED, DO NOT INDUCE VOMITING; CALL A PHYSICIAN IMMEDITELY.

LEEDS005826

SECTION 6 -- REACTIVITY DATA

1 -->Stable: YES
2 -->Conditions to Avoid: THIS PRODUCT IS STABLE AND WILL NOT REACT VIOLENTLY WITH WATER.
3 -->Incompatible Materials: AVOID CONTACT WITH STRONG OXIDANTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE OR CALCIUM HYPOCHLORITE.
4 -->Hazardous Decomposition Products: FUMES, SMOKE, CARBON MONOXIDE, SULFUR OXIDES, ALDEHYDES AND OTHER DECOMPOSITION PRODUCTS IN THE CASE OF INCOMPLETE COMBUSTION.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: Not Provided

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: RECOVER FREE PRODUCT. ADD SAND, EARTH, OR OTHER SUITABLE ABSORBENT TO SPILL AREA. MINIMIZE SKIN CONTACT. KEEP PRODUCT OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS, WATERCOURSES, OR EXTENSIVE LAND AREAS. ASSURE CONFORMITY WITH APPLICABLE GOVERNMENTAL REGULATIONS.
2 -->Waste Disposal Method: Not Provided
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): Not Provided
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: USE SUPPLIED-AIR RESPIRATORY PROTECTION IN CONFINED OR ENCLOSED SPACES, IF NEEDED.
2 -->Local Exhaust: Not Provided
3 -->Special: Not Provided
4 -->Mechanical: Not Provided
5 -->Other: USE LOCAL EXHAUST TO CAPTURE VAPORS, MISTS OR FUMES, IF NECESSARY. PROVIDE VENTILATION SUFFICIENT TO PREVENT EXCEEDING RECOMMENDED EXPOSURE LIMIT OR BUILDUP OF EXPLOSION CONCENTRATIONS OF VAPOR IN AIR. USE EXPLOSION-PROOF EQUIPMENT. NO SMOKING OR OPEN LIGHTS.
6 -->Protective Gloves (Specify type): USE CHEMICAL-RESISTANT GLOVES, IF NEEDED, TO AVOID PROLONGED OR REPEATED SKIN CONTACT.
7 -->Eye Protection (Specify type): USE SPLASH GOGGLES OR FACE SHIELD WHEN EYE CONTACT MAY OCCUR.
8 -->Other Protective Equipment: USE CHEMICAL-RESISTANT APRON OR OTHER IMPERVIOUS CLOTHING, IF NEEDED, TO AVOID CONTAMINATING REGULAR CLOTHING WHICH COULD RESULT IN PROLONGED OR REPEATED SKIN CONTACT. WORK PRACTICES/ENGINEERING CONTROLS: KEEP CONTAINERS AND STORAGE COTNAINERS CLOSED WHEN NOT IN USE. DO NOT STORE NEAR HEAT, SPARKS, FLAME OR STRONG OXIDANTS. PERSONAL HYGIENE: MINIMIZE BREATHING VAPOR, MIST OR FUMES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. REMOVE CONTAMINATED CLOTHING; LAUNDER OR DRY-CLEAN BEFORE REUSE. REMOVE CONTAMINATED SHOES AND THOROUGHLY CLEAN BEFORE REUSE; DISCARD IF OIL-SOAKED. CLEANSE SKIN THOROUGHLY AFTER CONTACT, BEFORE BREAKS AND MEALS, AND AT END OF WORK PERIOD. PRODUCT IS READILY REMOVED FROM SKIN BY WATERLESS HAND CLEANERS FOLLOWED BY WASHING THOROUGHLY WITH SOAP AND WATER.

LEEDS005827

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: USE PRODUCT WITH CAUTION AROUND HEAT, SPARKS, PILOT LIGHTS, STATIC ELECTRICITY, AND OPEN FLAME.

2 -->Other Precautions: EMPTY CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. DO NOT ATTEMPT TO CLEAN SINCE RESIDUE IS DIFFICULT TO REMOVE. EMPTY DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY RETURNED TO A DRUM RECONDITIONER. ALL OTHER CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS. FOR WORK ON TANKS REFER TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ANSI Z49.1, AND OTHER GOVERNMENTAL AND INDUSTRIAL REFERENCES PERTAINING TO CLEANING, REPAIRING, WELDING, OR OTHER CONTEMPLATED OPERATIONS.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: TRANSPORTATION INCIDENT INFORMATION: FOR FURTHER INFORMATION RELATIVE TO SPILLS RESULTING FROM TRANSPORTATION INCIDENTS, REFER TO LATEST DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDEBOOK FOR HAZARDOUS MATERIALS INCIDENTS, DOT P 5800.3.

[illegible]
MATERIAL SAFETY DATA SHEET

(P) 207173 453 TEXACO DIESEL 1
00433
TEXACO DIESEL 1
DIESEL 1
FORMERLY 00453 DIESEL FUEL 1

SECTION 0 -- EFFECTIVE & LAST UPDATE DATES, COMMENTS

1 -->Effective Date: 030587
2 -->MSDS signed by: R. T. RICHARDS
3 -->Title: MGR. ENV. CONSERVATION & TOXICOLOGY
4 -->Comments: Not Provided
5 -->Safe Use Category: 3 - SOLVENTS - Flash Point: > 100F
6 -->Last Date Updated: 033088

SECTION 1 -- SHIPPING INFORMATION

1 -->Chemical Family: DIESEL FUEL
2 -->Formula: Not Provided

(*)MID: #S03788
TEXACO INC
DUNS Account #: 04-607-5107
Emergency telephone #: 914/831-3400-EXT.406
P O BOX 509
BEACON, NY 12508

Shipping Name: FUEL OIL,NO.1,2,4,5,OR 6
Hazard Class: Combustible Liquid
U.N. Code: NA1993
Flash Point: 125 F. TCC.

SECTION 2 -- INGREDIENTS

CAS#	Formulation	Chemical Name
008008206	= 100%	Kerosine

REGULATORY CONSIDERATIONS
(Information compiled by TMCA. See bulletin board file 'CRITLIST' for expanded key.)

CAS# LISTS

008008206 = 19, 46.

- REGULATORY LIST KEY -

19 - MA Subst ; 46 - GM SP SARA .

SECTION 3 -- PHYSICAL DATA

1 -->Boiling Point: 515 F.
2 -->Specific Gravity: 0.816
3 -->Vapor Pressure: <7 MM HG
4 -->% Volatile by Volume: N/D
5 -->% Solid by Weight: Not Provided
6 -->Vapor Density: N/D
7 -->Evaporation Rate: N/D
8 -->Solubility in H2O: N/D
9 -->pH: N/A
10 -->Appearance & Odor: CLEAR AND BRIGHT.
11 -->State: VISCOSITY: 1.20 CST @ 100 F.

SECTION 4 -- FIRE AND EXPLOSION DATA

1 -->Flammable Limits - LEL: .58
2 -->Flammable Limits - UEL: 4.45
3 -->Extinguishing Media: Not Provided
4 -->Special Fire Fighting Procedures: ACCORDING TO THE NATIONAL FIRE PROTECTION ASSOCIATION GUIDE 49, COMBUSTIBLE LIQUID FIRES MAY BE EXTINGUISHED BY WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A LEAK OR SPILL HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROVIDE PROTECTION FOR PERSONS ATTEMPTING TO STOP THE LEAK.
5 -->Unusual Fire & Explosion Hazards: NONE.

SECTION 5 -- HEALTH HAZARD DATA

1 -->Effects of Overexposure: ACUTE: EYES: CAUSES SLIGHT-MODERATE EYE IRRITATION. SKIN: BELIEVED TO BE SLIGHTLY IRRITATING WITH POSSIBLE REDNESS, EDEMA OR DRYING OF THE SKIN. MAY CAUSE DERMATITIS ON PROLONGED OR REPEATED CONTACT. RESPIRATORY SYSTEM: MAY CAUSE SYMPTOMS OF DROWSINESS OR NARVOSIS FROM INHALATION OF HIGH VAPOR CONCENTRATIONS.
2 -->Threshold Limit Value: NONE ESTABLISHED.
3 -->Permissible Exposure Limit: AIR: NONE ESTABLISHED.
4 -->Other limit: Not Provided
5 -->Primary routes of entry: Not Provided
6 -->Emergency First Aid Procedures: EYES: FLUSH WITH WATER FOR FIFTEEN MINUTES. SKIN: WASH EXPOSED AREAS WITH SOAP AND WATER. INGESTION: DO NOT INDUCE VOMITING. ASPIRATION MAY CAUSE CHEMICAL PNEUMONIA. INHALATION: SHOULD SYMPTOMS NOTED UNDER PHYSIOLOGICAL EFFECTS OCCUR, REMOVE TO FRESH AIR. IF NOT BREATHING, APPLY ARTIFICIAL RESPIRATION.

LEEDS005830

SECTION 6 -- REACTIVITY DATA

1 -->Stable: Not Provided
2 -->Conditions to Avoid: Not Provided
3 -->Incompatible Materials: STRONG OXIDIZERS.
4 -->Hazardous Decomposition Products: CARBON MONOXIDE AND CARBON DIOXIDE MAY BE FORMED ON BURNING IN LIMITED AIR SUPPLY.
5 -->Can Hazardous Polymerization Occur: NO
6 -->Conditions to Avoid: Not Provided

SECTION 7 -- SPILL OR LEAK PROCEDURES

1 -->Steps to be taken in case material is released or spilled: VENTILATE AREA. AVOID BREATHING VAPOR. USE SELF-CONTAINED BREATHING APPARATUS OR SUPPLIED-AIR MASK FOR LARGE SPILLS IN CONFINED AREA. CONTAIN SPILL IF POSSIBLE. WIPE UP OR ABSORB ON SUITABLE MATERIAL AND SHOVEL UP.
2 -->Waste Disposal Method: RE-EVALUATION OF THE PRODUCT MAY BE REQUIRED BY THE USER AT THE TIME OF DISPOSAL, SINCE THE PRODUCT USES, TRANSFORMATIONS, MIXTURES AND PROCESSES MAY CHANGE CLASSIFICATION TO NON-HAZARDOUS OR HAZARDOUS FOR REASONS OTHER THAN, OR IN ADDITION TO IGNITABILITY. (SEE REMARKS FOR WASTE CLASSIFICATION.)
3 -->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
4 -->RCRA Hazardous Waste No. (40 CFR 261.33): WASTE CLASSIFICATION: PRODUCT (AS PRESENTLY CONSTITUTED) HAS THE RCRA CHARACTERISTIC OF IGNITABILITY AND IF DISCARDED IN ITS PURCHASED FORM WOULD HAVE THE HAZARDOUS WASTE NUMBER D001.
5 -->Volatile Organic Compound (VOC) Theoretical: Not Provided
6 -->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 -- SPECIAL PROTECTION INFORMATION

1 -->Respiratory Protection: SUPPLIED AIR RESPIRATORY PROTECTION FOR CLEANING LARGE SPILLS OR UPON ENTRY INTO TANKS, VESSELS, OR OTHER CONFINED SPACES.
2 -->Local Exhaust: Not Provided
3 -->Special: Not Provided
4 -->Mechanical: Not Provided
5 -->Other: NORMAL.
6 -->Protective Gloves (Specify type): GLOVES RESISTANT TO CHEMICALS AND PETROLEUM DISTILLATES RECOMMENDED.
7 -->Eye Protection (Specify type): CHEMICAL TYPE GOGGLES OR FACE SHIELD OPTIONAL.
8 -->Other Protective Equipment: EXPOSED EMPLOYEES SHOULD EXERCISE REASONABLE PERSONAL CLEANLINESS; THIS INCLUDES CLEANSING EXPOSED SKIN AREAS SEVERAL TIMES DAILY WITH SOAP AND WATER, AND LAUNDERING OR DRY CLEANING SOILED WORK CLOTHING AT LEAST WEEKLY.

SECTION 9 -- SPECIAL PRECAUTIONS

1 -->Precautions to be taken in Handling & Storage: CAUTION! MAY CAUSE IRRITATION TO EYES. COMBUSTIBLE. USE ONLY AS A FUEL. MIDDLE DISTILLATES HAVE CAUSED SKIN CANCER AND KIDNEY DAMAGE IN LABORATORY ANIMALS. AVOID CONTACT WITH EYES. KEEP AWAY FROM HEAT AND FLAME. USE ONLY IN WELL-VENTILATED LOCATIONS. AVOID PROLONGED BREATHING OF MIST OR VAPOR. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. KEEP HEAD AWAY FROM CONTAINER WHEN OPENING OR DISPENSING. WASH THOROUGHLY AFTER HANDLING. IN CASE OF CONTACT, FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. IF SWALLOWED, DO NOT INDUCE VOMITING. CALL A DOCTOR IMMEDIATELY. IN CASE OF FIRE USE WATER SPRAY, FOAN, DRY CHEMICAL OR CO2.

2 -->Other Precautions: STORE AWAY FROM HEAT AND OPEN FLAME. PLACARD REQUIRED ONLY WHEN MATERIAL IS CONTAINED IN PACKAGING OR CONTAINER' THAT EXCEEDS 110 GALLONS OR IN TANK CAR OR TANK TRUCK. TRANSPORT, HAANDLE AND STORE IN ACCORDANCE WITH OSHA REGULATION 1910.106, AND APPLICABLE D.O.T. REGULATIONS. CAUTION: MISUSE OF EMPTY CONTAINERS CAN BE HAZARDOUS. EMPTY CONTAINERS CAN BE HAZARDOUS IF USED TO STORE TOXIC, FLAMMABLE, OR REACTIVE MATERIALS. CUTTING OR WELDING OF EMPTY CONTAINERS MIGHT CAUSE FIRE, EXPLOSION OR TOXIC FUMES FROM RESIDUES. DO NOT PRESSURIZE OR EXPOSE TO OPEN FLAME OR HEAT. KEEP CONTAINER CLOSED AND DRUM BUNGS IN PLACE.

SECTION 10 -- ADDITIONAL DATA

1 -->Additional Health Hazard Data: ORAL: SIMILAR PRODUCT >25 G/KG (RAT); PRACTICALLY NON-TOXIC. INHALATION: N.D. DERMAL: SIMILAR PRODUCT >3 G/KG (RABBIT); PRACTICALLY NON-TOXIC. OTHER: N.D. IRRITATION INDEX, ESTIMATION OF IRRITATION (SPECIES): SKIN: SIMILAR PRODUCT 0.5-3.0/8.0 (RABBIT); SLIGHTLY IRRITATING. EYES: SIMILAR PRODUCT 15-25/110 (RABBIT); SLIGHTLY IRRITATING. STUDIES WITH LABORATORY ANIMALS HAVE SHOWN THAT MIDDLE DISTILLATES CAUSE SKIN CANCER AND KIDNEY DAMAGE. THIS PRODUCT IS NOT INTENDED FOR SPACE HEATERS. DO NOT USE IN AGRICULTURAL SPRAYS. SINCE MIDDLE DISTILLATES HAVE BEN SHOWN TO BE ANIMAL SKIN CARCINOGENS, APPLICATIONS WHERE THERE IS HIGH POTENTIONAL HUMAN EXPOSURE MAY BE HAZARDOUS AND SHOULD BE AVOIDED.

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LEEDS005832