# SUBSURFACE INVESTIGATION AND REMEDIAL ACTION CHRYSLER CORPORATION KENOSHA ENGINE PLANT KENOSHA, WISCONSIN

PREPARED FOR:

CHRYSLER CORPORATION
FEATHERSTONE ROAD ENGINEERING CENTER
2301 FEATHERSTONE ROAD, CIMS 429-02-04
AUBURN HILLS, MICHIGAN 48326

TRIAD ENGINEERING PROJECT NO. W943163.005

JANUARY 1994

TRIAD ENGINEERING INCORPORATED

325 East Chicago Street
Milwaukee, Wisconsin 53202
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Fort Wayne, Indiana 46808
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325 EAST CHICAGO STREET
MILWAUKEE, WISCONSIN 53202

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JANUARY 1994

WISCONSIN THOMAS L. MEINHOLZ E-16538 MUSKEGO, WI PROFESSIONAL ENGINEER

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS CERTIFICATE NUMBER 7879 AIPG

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Richard J. Binder, P.G.
Project Manager

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Hydrogeologist

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## EXECUTIVE SUMMARY

Triad Engineering Incorporated (Triad) was contracted by Chrysler Corporation (Chrysler) to conduct a limited subsurface investigation at Chrysler's, Kenosha Engine Plant, located at 5555 30th Avenue, Kenosha, Wisconsin. The purpose of the investigation was to evaluate the extent of an apparent release from a machining coolant tank (Coolant System #1). Based on conversations with the Wisconsin Department of Natural Resources (WDNR), the investigation was conducted in conjunction with remedial actions performed by Chrysler, which included tank replacement (complete with secondary containment) and recovery of coolant from an isolated storm sewer.

Field observations and laboratory analytical results indicate that the release of machining coolant is confined to the immediate vicinity of the coolant tank and the nearby storm sewer. The concentration of coolant observed in water samples collected from the storm sewer has decreased to below detectable levels following the installation of the new tank system indicating that the remedial action undertaken by Chrysler has been effective. Current conditions suggest further action is not warranted.

## 1.0 INTRODUCTION.

### 1.1 Introduction.

Triad Engineering Incorporated (Triad) was contracted by Chrysler Corporation (Chrysler) to conduct a subsurface investigation in the area of a subgrade machining coolant tank (Coolant System #1) at Chrysler's, Kenosha Engine Plant, located at 5555 30th Avenue, Kenosha, Wisconsin. The purpose of the investigation was to evaluate the extent of an apparent release of machining coolant from the tank. Based on conversations with the Wisconsin Department of Natural Resources (WDNR), the investigation was conducted in conjunction with remedial actions undertaken by Chrysler which included tank replacement (complete with secondary containment) and recovery of coolant from an isolated storm sewer.

### 1.2 Background and Scope of Work.

An apparent release of machining coolant to a storm sewer at Chrysler's Kenosha Engine Plant was discovered on July 19, 1993. A section of the storm sewer was plugged and pumps were installed in both the storm sewer, and within the concrete containment surrounding the coolant tank. These actions facilitated the capture of the release. Notification was also made to the WDNR's Industrial Waste Water Section - Emergency Response Coordinator (Appendix A).

Information provided by the manufacturer concerning the nature of the coolant (Bencyn Lubricants Inc., Articool 51) is provided in Material Safety Data Sheet (MSDS) included in Appendix A. This information indicates that the coolant is nonhazardous.

A television camera was inserted in the storm sewer to assess their condition on July 21, 1993. Coolant was observed entering the line at a piping joint near the coolant system, approximately 10 feet east of the coolant tank. On August 23, 1993, a dye was added to the coolant tank to trace the release. The dye tracing confirmed the coolant source.

Triad performed a limited subsurface investigation on December 4, 1993, to assess local soil and groundwater conditions, and to evaluate the potential for coolant to occur hydraulically downgradient of the coolant tank. On December 9 and 10, 1993, the coolant tank was drained and removed. A new tank, complete with secondary containment (and allowing for visual observation of the interstitial space), was installed during the latter half of December 1993.

The results of the investigation and remedial actions are documented in the following sections of this report.

## 2.0 SUBSURFACE INVESTIGATION.

### 2.1 Investigation Procedures.

On December 4, 1993, soil boring EP-1 was installed approximately 80 feet east of the coolant tank (Figure 1). This boring was placed hydraulically downgradient of the source area (Figure 1). The boring was advanced by using standard penetration test drilling methods to a depth of 9 feet. Soil samples were collected continuously at the boring location by using standard penetration test drilling methods. Visual and olfactory observations were made by the on-site geologist during drilling and sampling activities. One soil sample collected from just above the apparent water table depth was submitted for laboratory analysis. As discussed with the WDNR, this sample was submitted under chain-of-custody to Chrysler's laboratory for analysis of coolant concentration, using an alkaline titration method.

Representative groundwater samples were collected from the water table depth from EP-1 using a HydroPunch II™ sampler. These samples were also submitted to Chrysler's laboratory for analysis of coolant concentration (alkaline titration method). Further discussion of the investigation methods used are provided in Appendix B. The completed borehole log and abandonment form for EP-1 are contained in Appendix C.

### 2.2 Investigation Results.

#### 2.2.1 Site Geology.

Subsurface boring information indicates that the investigation area is generally paved by one foot of concrete. The concrete is underlain by approximately four feet of fine to medium grained sand, which is in turn underlain by silty clay. Saturated conditions were observed within a silty sand seam at a depth of approximately 8 to 9 feet. The depth to groundwater measured in the HydroPunch II™ sampler approximately 20 minutes after sampling was 9.35 feet below surface grade.

A cross section depicting the depth of the coolant tank and storm sewer relative to groundwater is provided (Figure 3). As shown, the base of the coolant tank is at or just above the water table. The release point into the sewer appears to be below the water table.

#### 2.2.2 Field Observations and Analytical Results.

Laboratory analytical reports and summary of results are contained in Appendix D. Field and laboratory results for soil, groundwater and storm sewer samples are discussed below:

- Soil. No staining or coolant-like odor was observed in soil samples collected at boring EP-1. No coolant was detected in the soil sample submitted for laboratory analysis.

- Groundwater. The groundwater sample collected for analysis was clear and exhibited no odor. No coolant was detected in the groundwater sample submitted for laboratory analysis.

Investigation results, indicate that there has been no occurrence of a release of machining coolant into the soil and groundwater at the location of boring EP-1.

## 3.0 REMEDIAL ACTION RESULTS.

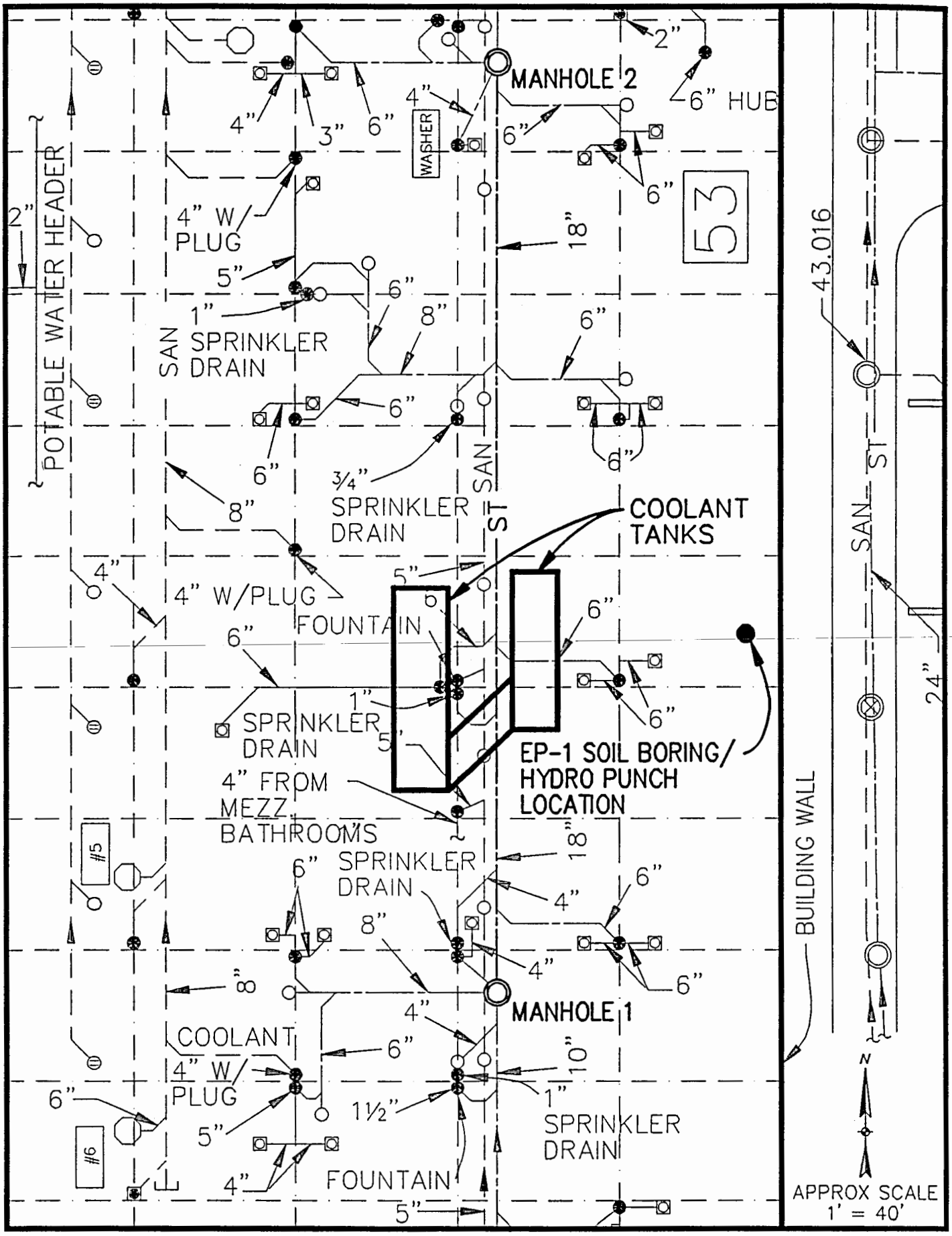
Laboratory results provided by Chrysler indicate that the coolant concentration in sample collected from the storm sewer samples has decreased from approximately 4 percent coolant (typical full strength coolant concentrations are 4 to 5 percent), to below detectable levels following draining of the coolant tank and installation of the new tank (Figure 2; Appendix D). The volume of water/coolant recovered from the storm sewer has also decreased over time (Figure 4; Appendix E). No coolant was observed by Chrysler personnel within the concrete containment structure housing the coolant tank following installation of the new tank.

## 4.0 SUMMARY AND CONCLUSIONS.

Investigation results indicate that the release of machining coolant at Chrysler's Kenosha Engine Plant facility appears to have been confined to the vicinity of the coolant tank and nearby storm sewer. Since the installation of a new tank system, the concentration of coolant observed in water samples collected from the storm sewer collection system has decreased to below detectable levels. Available information indicates that further action is not warranted. Storm sewer sampling at the site will continue per the facility storm water permit.

# FIGURES

43163-20
1/25/94



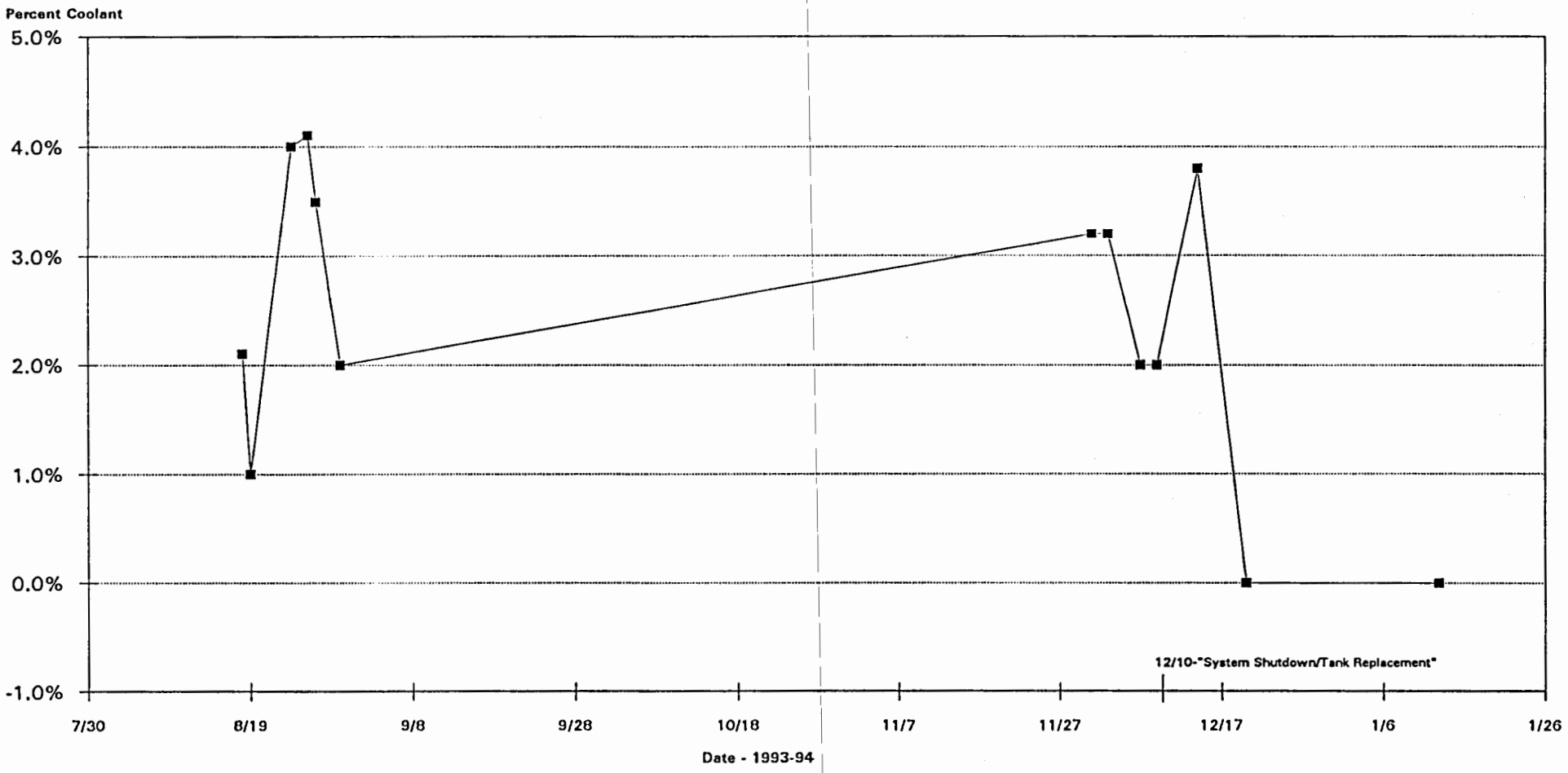

TRIAD ENGINEERING INCORPORATED



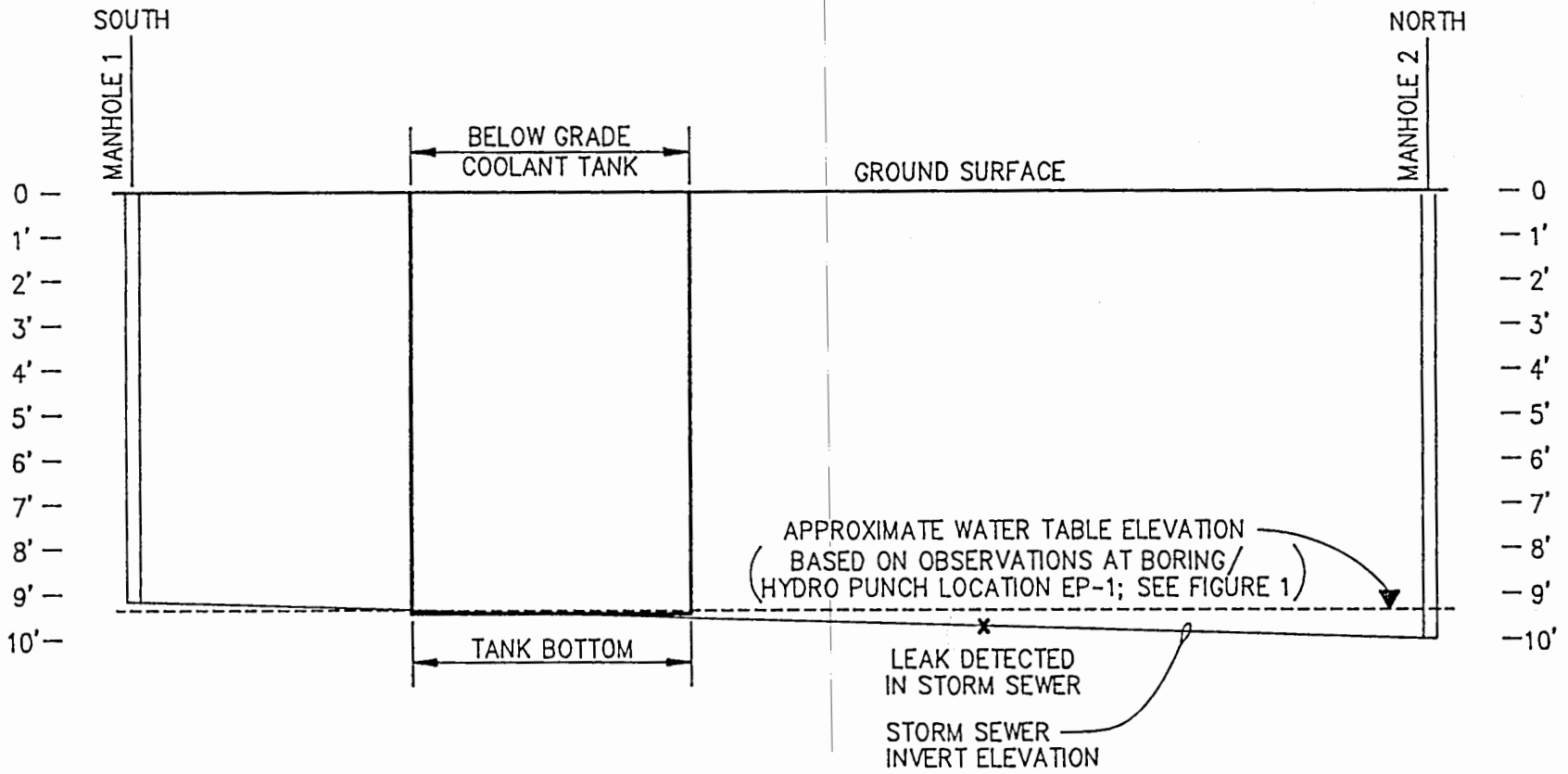
*FIGURE 1*
*CHRYSLER KENOSHA ENGINE PLANT*
*COOLANT TANKS AND BORING LOCATIONS*

# Figure 2

## Coolant Concentration in Storm Sewer Water Samples




Laboratory Documentation Contained in Appendix D




APPROX. SCALE
HORIZONTAL: 1"= 40'
VERTICAL: 1"= 4'

LINE OF CROSS-SECTION SHOWN ON FIGURE 1

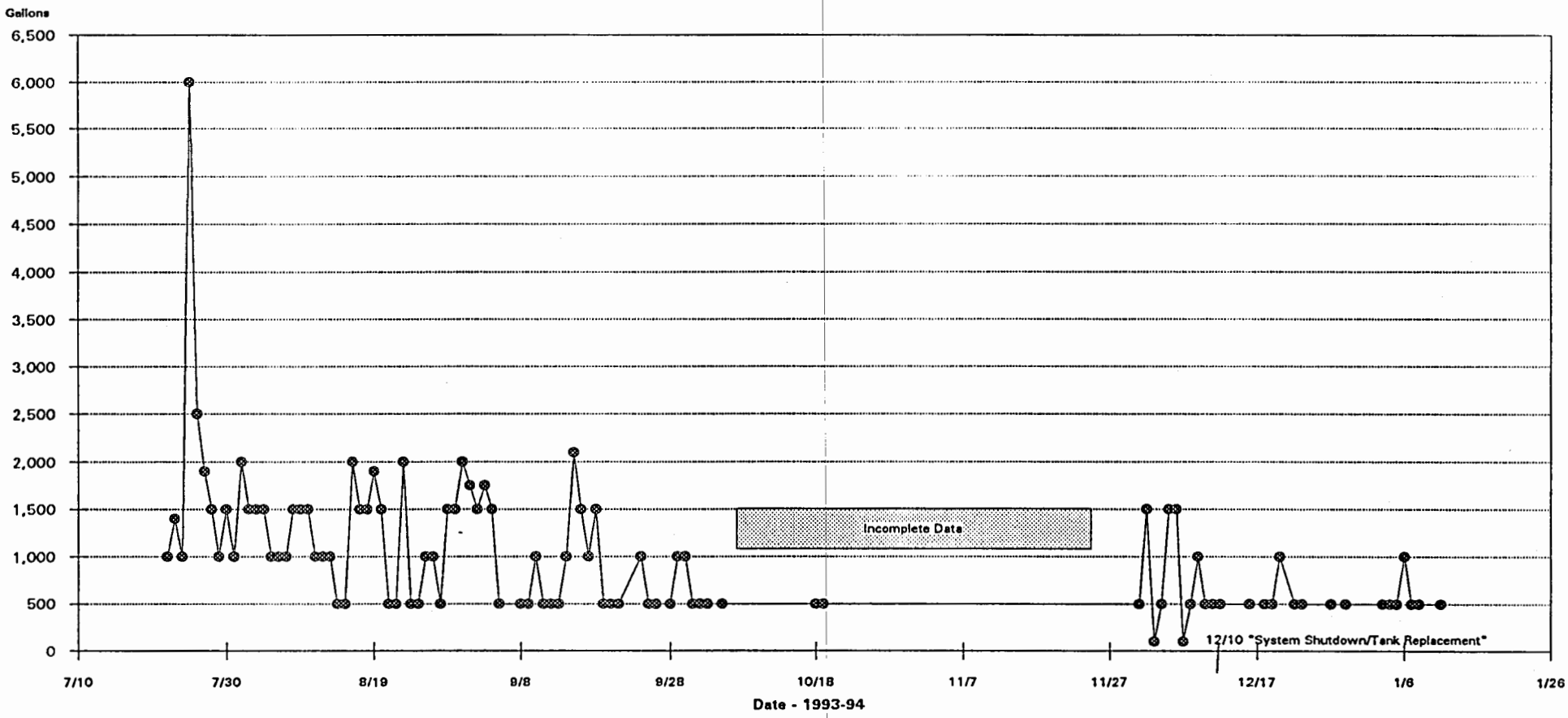
TRIAD
ENGINEERING
INCORPORATED



*FIGURE 3*
*CHRYSLER KENOSHA ENGINE PLANT*
*CROSS-SECTION*

# FIGURE 4

## VOLUME OF LIQUID RECOVERED IN ISOLATED STORM SEWER




Volume Data is Contained in Appendix E.

W943163.c-2/2/94

# APPENDIX A

## RELEASE LETTER REPORT
## MATERIAL SAFETY DATA SHEET

CHRYSLER CORPORATION

Chrysler Corporation
Kenosha Engine Plant

July 23, 1993

Industrial Waste Water Section
Southeast District Office
Department of Natural Resources
4041 North Richard Street
P.O. Box 12436
Milwaukee, Wisconsin 53212
Attn: Mr. J. Williams
Emergency Response Coordinator

Subject: Storm Sewer Event of 7/19/93 - Synthetic Oil Release to Pike Creek. National Response Center Report #187468.

Dear Mr. Williams:

The State of Wisconsin experienced heavy rains the weekend of 7/18/93. On Monday morning, 7/19/93, a tour of the plant revealed no environmental problems. The same morning the Environmental Engineer also inspected the plate separator on 50th Street. The water was clear, but a film was detected and the discharge was milky. Continuing to the floatation basin, a muddy condition was detected coming from the City.

After 12:30 P.M., the plate separator still showed milky and the basin and Pike Creek looked the same. At this time all indications pointed to a plant generated soluble oil release. Initial notification of a problem was given to the writer at 1:30 P.M. At this time, both plate separator and basin were reinspected by Plant Engineering and it was confirmed that a problem existed. Engineering immediately called in assistance from Triad Engineering and Bane Nelson, Inc. to assist in locating the source. At 4:00 P.M. the source generator was found to be located in Bldg. 53 near Hydromation #1 which utilizes synthetic oil. It was estimated, due to the very slow flow, that only a small amount of coolant was released. We estimated approximately 20 to 22 gallons of the diluted 4% material by volume was released. The material identified was ARTICOOL 51.

By 6:00 P.M. the same day, the 18" storm line was bulkheaded downstream to isolate this contamination to the local main.

Further inspection of the system downstream confirmed that the leak had been contained, as the plate separator and basin were clear by 6:00 A.M. Tuesday.

The plant also immediately requested the services of a camera to inspect this 18" line early on 7/20/93.

On 7/21/93, Visu-Sewer Clean & Seal, Inc. was contracted and on site to document, via VCR tape, the underground conditions. They confirmed what was suspected, that a leak in the hydromation tank found its way to the storm sewer below and was bleeding into the storm at a hub connection.

5555 30th Avenue

On 7/20/93, Corporate Environmental was notified of the problem at 8:15 A.M. The Episode Plan "Exhibit B" was put into effect and the following parties were contacted:

Emergency Government (J. Ashmore) 8:55 A.M. 7/20/93
Department of Natural Resources (B. Smith) 10:15 A.M. 7/20/93
City of Kenosha (J. Prijic) 11:50 A.M. 7/20/93
Natural Response Center (Afternoon) 7/20/93

Corrective Actions:

As of 7/19/93 6:00 P.M., the 18" line was isolated from the storm system and it was confirmed no flow is going downstream. The suspect leak area by the hydromation tank is scheduled for repairs on September 4, 5, 6, Labor Day weekend. In the meantime, any oil which is entering the isolated 18" line is being sumped into a mobile tank and returned to the hydromation system on a daily basis. The plant is aware of the seriousness of this repair and is providing daily reports and observations on all activities. You will be advised of when final repairs are completed. When they are completed, the plant will verify by visual observation that these repairs were completed satisfactorily.

Any further questions, please contact the writer, L. Fasano, (414) 658-6061. Thank you.

E. Jensen
Environmental Administrator
Plant Engineering
Kenosha Engine Plant

L. Fasano
Supervisor
Plant Engineering
Kenosha Engine Plant

EJ/jf
0721.EJ

CC: J. Bugno
L. Jurca
D. King
N. McKay
B. Rabe
D. Remboski

76482 HAZARD COMMUNICATION SHEET PART/COMMTY CD: 47-059-T204
PREPARATION DATE: 04/18/90 PAGE 1 STANDARD: N/AV
OSHA HAZARDOUS: YES CONSUMER PRODUCT: ?
HAZWOPER HAZARDOUS: YES

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SECTION I - PRODUCT INFORMATION

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MFG: BENCYN LUBRICANTS, INC. EMERGENCY PHONE: 313-227-5953
185 RAILROAD STREET NORTHVILLE MI 48167 AFTER HOURS: 313-227-5953
DISTRIBUTED BY: BENCYN LUBRICANTS, INC. EMERGENCY PHONE: 313-227-5953
185 RAILROAD STREET NORTHVILLE MI 48167 AFTER HOURS: 313-227-5953
BRAND NAME: SYNTHETIC COOLANT ARTICOOL 51 CHRY IND HYGIEN: 313-956-5478
MFG ID : ARTICOOL 51 AFTER HOURS: 313-956-5557
DESCRIPTION: CUTTING OIL BENCYN LUBRICANTS ARTICOOL 51 SYNTH. FOR FERROUS

---

SECTION II - INGREDIENTS

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| HAZARDOUS INGREDIENTS: COMMON NAME / CAS-NO AND CHEMICAL NAME: | PERCENT BY WEIGHT | | OSHA | ACGIH | CHRYS | UNITS | NOTATIONS |
|---|---|---|---|---|---|---|---|
| CAUSTIC POTASH | 1-5 | W | N/AP | N/AP | N/AP | MG/M3 | |
| 001310-58-3 POTASSIUM HYDROXIDE (2CI9CI) | | C | 2 | 2 | 2 | | |

GENERIC DESCRIPTION: AN AQUEOUS LUBRICANT CONTAINING FATTY ACIDS, SALTS, AMIDES, ACIDS AND CAUSTIC.
FOR EXPLANATION OF 'NOTATIONS', SEE THE HAZARD COMMUNICATION SHEET EXPLANATIONS PAGE.
W = TWA VALUES; L = STEL VALUES; C = CEILING VALUES.

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SECTION III - PHYSICAL DATA

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BOILING POINT : N/AV SOLUBILITY IN WATER: COMPLETE ( IN ALL PROPORTIONS )
VAPOR PRESSURE: N/AV EVAPORATION RATE : 1.000 REF=: WATER = 1
VAPOR DENSITY : N/AV SPECIFIC GRAVITY : N/AV
PH AT FULL STRENGTH: 9.8 PH AT REC. DILUTION: 9.5
%VOLATILE BY VOL: N/AV VOLATILE ORGANIC COMPOUNDS: N/AV N/AV
ODOR THRESHOLD: N/AV PPM FOR % POPULATION
FREEZING POINT: 32.0 F COEFFICIENT OF WATER/OIL DISTRIBUTION: N/AV
APPEARANCE & ODOR: AMBER LIQUID. SOAP ODOR.

---

SECTION IV - FIRE AND EXPLOSION DATA

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FLASH POINT: N/AP N/AP IGNITION TEMP: N/AP LEL: N/AP UEL: N/AP
SPECIAL FIRE & EXPLOSION HAZARDS: MATERIAL DOES NOT BURN. MAY PRODUCE TOXIC THERMAL DECOMPOSITION PRODUCTS. REACTS VIOLENTLY WITH OXIDIZERS. REACTS VIOLENTLY WITH STRONG ACIDS. SPONTANEOUS HEATING MAY OCCUR IN RAGS, INSULATION, OR TRASH SOAKED WITH THIS MATERIAL AND EXPOSED TO AIR.
EXTINGUISHING MEDIA: NON-FLAMMABLE. USE MEDIA APPROPRIATE FOR MATERIALS ACTUALLY INVOLVED IN FIRE.
SPECIAL FIREFIGHTING PROCEDURES: USE SELF-CONTAINED BREATHING APPARATUS. USE WATER TO COOL FIRE EXPOSED CONTAINERS. REMOVE CONTAINERS FROM FIRE AREA IF POSSIBLE.
SENSITIVE TO MECHANICAL IMPACT?: NO SENSITIVE TO STATIC DISCHARGE?: NO
HAZARDOUS COMBUSTION PRODS: CARBON DIOXIDE, CARBON MONOXIDE, OXIDES OF NITROGEN.

FLAME PROJECTION: N/AP

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SECTION V - HEALTH HAZARD DATA

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EFFECTS OF OVEREXPOSURE-ACUTE & CHRONIC: ((---INHALATION---)) MIST MAY PRODUCE IRRITATION OF UPPER RESPIRATORY TRACT. ((---SKIN CONTACT---)) PROLONGED CONTACT MAY PRODUCE IRRITATION. ((---EYE CONTACT---)) DIRECT CONTACT MAY PRODUCE DAMAGE TO EYE TISSUE AND SEVERE IRRITATIO ((---INGESTION---)) MAY BE HARMFUL IF SWALLOWED.

EMERGENCY FIRST AID PROCEDURES: ((---INHALATION---)) REMOVE TO FRESH AIR AT ONCE. IF CONDITION PERSISTS, CONSULT A PHYSICIAN. ((---SKIN CONTACT---)) IMMEDIATELY FLUSH CONTAMINATED AREA WITH LARGE AMOUNTS OF WATER. IF CONDITION PERSISTS, CONSULT A PHYSICIAN. ((---EYE CONTACT---)) RINSE EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING BOTH UPPER AND LOWER LIDS. CONTINUE FOR 15 MINUTES. CONTACT A PHYSICIAN. ((---INGESTION---)) DO NOT INDUCE VOMITING-CALL PHYSICIAN IMMEDIATELY.

## SECTION VI - REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: FREEZING.
MATERIALS TO AVOID : STRONG OXIDIZING AGENTS, STRONG ACID.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
POLYMERIZATION CONDITIONS TO AVOID: POLYMERIZATION WILL NOT OCCUR.
HAZARDOUS DECOMPOSITION PRODUCTS: THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE AND OXIDES OF NITROGEN.

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: WEAR PROTECTIVE CLOTHING. STOP SPILL AT SOURCE. CONTAIN WITH DIKE. ABSORB ON AN INERT MATERIAL. DISCARD INTO SEALED CONTAINERS FOR DISPOSAL. FLUSH AREA WITH WATER.
WASTE DISPOSAL METHODS: DISPOSE OF IN A MANNER CONSISTENT WITH STATE, PROVINCIAL, LOCAL, AND FEDERAL DISPOSAL REGULATIONS. FOR FURTHER INFORMATION CALL CORPORATE PURCHASING AT TIE LINE 859-7969 (OUTSIDE OF CHRYSLER CALL 313/855-7969). FLUSH WITH WATER TO WASTE TREATMENT.

## SECTION VIII - SPECIAL PROTECTION

RESPIRATORY PROTECTION: NO SPECIAL PROTECTION NEEDED UNDER NORMAL CONDITIONS.
VENTILATION TYPE . GENERAL VENTILATION IS USUALLY ADEQUATE.
PROTECTIVE GLOVES : RECOMMENDED. RUBBER GLOVES OR NEOPRENE GLOVES.
EYE PROTECTION : RECOMMENDED. CHEMICAL GOGGLES.
OTHER PROTECTIVE EQUIP: APRON-SAME MATERIAL AS GLOVES IF NEEDED.

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORAGE: DO NOT FREEZE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.
OTHER PRECAUTIONARY MEASURES: AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID EYE CONTACT. AVOID INGESTION. DO NOT SMOKE OR EAT WHEN HANDLING THIS SUBSTANCE; WASH THOROUGHLY AFTER USING. MAINTAIN GOOD HOUSEKEEPING AND HYGIENIC PRACTICES.

## SECTION X - WASTE LABELING INFORMATION

DOT LABELING INFORMATION (49 CFR 100-199) EMERGENCY RESPONSE GUIDE NO =
NOT HAZARDOUS PER DOT REGULATIONS
RCRA INFORMATION (40 CFR 122-124, 260-265)
HAZARDOUS WASTE NUMBERS: N/AP
HAZARD CODES: N/AP
MICHIGAN WASTE NUMBERS: N/AP
THE ABOVE INFORMATION IS BASED ON DATA PROVIDED BY SUPPLIERS. TESTING IS NOT NEEDED.

## SECTION XI - PREPARATION INFORMATION

PREPARATION DATE: 04/18/90 DATA EFFECTIVE DATE: 02/28/90

PART/COMMTY CD: 47-050-T204
STANDARD: N/AV
CONSUMER PRODUCT: ?

PREPARATION DATE: 04/18/90
OSHA HAZARDOUS: YES
HAZWOPER HAZARDOUS. YES

DATA SHEET PREPARED BY: INDUSTRIAL HYGIENE DEPARTMENT
CHRYSLER CORPORATION
PHONE: 313/956-5478

PREPARED BY: STAFF
REVIEWED BY: STAFF
REVISED BY:

HAZARD COMMUNICATION LABEL

---

PART/COMMODITY CD: 47050T204 SUPPLIER: 64781 MFGR:
BRANDNAME: SYNTHETIC COOLANT ARTICOOL 51 MATL ID-NO: ARTICOOL 51
MFG: N/AV EMERGENCY PHONE: 313-227-5953
N/AV AFTER HOURS: 313-227-5953
CHRY IND HYGIEN. 313-956-5478
AFTER HOURS: 313-956-5557

---

HAZARDOUS INGREDIENTS: CAUSTIC POTASH
PHYSICAL HAZARD WARNING: N/AP
STABILITY: STABLE

---

HEALTH HAZARD DATA-EFFECTS OF OVEREXPOSURE: ((---INHALATION---)) MIST MAY PRODUCE IRRITATION OF UPPER RESPIRATORY TRACT. ((---SKIN CONTACT---)) PROLONGED CONTACT MAY PRODUCE IRRITATION. ((---EYE CONTACT---)) DIRECT CONTACT MAY PRODUCE DAMAGE TO EYE TISSUE AND SEVERE IRRITATION. ((---INGESTION---)) MAY BE HARMFUL IF SWALLOWED.

---

SPECIAL FIRE & EXPLOSION HAZARDS: MATERIAL DOES NOT BURN. MAY PRODUCE TOXIC THERMAL DECOMPOSITION PRODUCTS. REACTS VIOLENTLY WITH OXIDIZERS. REACTS VIOLENTLY WITH STRONG ACIDS. SPONTANEOUS HEATING MAY OCCUR IN RAGS, INSULATION, OR TRASH SOAKED WITH THIS MATERIAL AND EXPOSED TO AIR.

---

CONSULT CORRESPONDING HCS (MSDS)
FOR FURTHER INFORMATION

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# APPENDIX B

# METHODS OF INVESTIGATION

## METHODS OF INVESTIGATION

The boring was installed using hollow stem auger techniques. Utility clearances and access to the drilling site was confirmed with Chrysler Corporation prior to any site activities. All boring tools were steam cleaned off site prior to site drilling. All soil cuttings were drummed and labeled in the field

Soil samples were collected continuously using split-spoon sampling in accordance with ASTM Method D1586-84 in order to characterize subsurface conditions. The boring was logged and soil described in the field via ASTM Method D-2488-90.

One groundwater sample was collected from laboratory analysis using Hydropunch II techniques. The Hydropunch was driven to the estimated depth of groundwater (9 feet). Groundwater was then pumped using a penstaltic pump and tubing.

Soil and groundwater samples collected for laboratory analysis were submitted to Chrysler laboratory. All samples collected for laboratory analysis were placed in laboratory-supplied sample containers, preserved with laboratory-supplied preservative, as appropriate, and immediately placed on ice for delivery under chain-of-custody to the laboratory.

# APPENDIX C

# BOREHOLE LOG AND ABANDONMENT FORM
# EP-1

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Chrysler Corporation | | EP-1 |

| Boring Drilled By (Firm name and name of crew chief) | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| Midwest Engineering Services, Inc. Ed Weiberg, Jeff Turczyn | 12/4/93 | 12/4/93 | HSA 3.25" ID |

| DNR Facility Well No. | WI Unique Well No. | Common Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | Feet MSL | 7.0 Inches |

Boring Location
State Plane N, E
SW 1/4 of SE 1/4 of Section 36 T 2 N,R 22 E
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

| County | DNR County Code | Civil Town/City/ or Village |
|---|---|---|
| Kenosha | 30 | City of Kenosha |

| Sample Number | Sample Length (in) Recovered | Blow Counts | Depth In Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Standard Penetration | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.5 | 0-1.0 feet CONCRETE. | | | | | | | | | | |
| 1 | 20 | 11<br>14<br>9<br>15 | 1.0<br>1.5<br>2.0<br>2.5 | 1.0-5.0 feet SAND, trace gravel, fine to medium grained, dark yellowish brown (10 YR 3/6), to very dark brown (10 YR 2/2), to black (10 YR 2/1), loose, no odor, dry. | SW | | | | 23 | | | | | |
| 2 | 20 | 13<br>10<br>8<br>6 | 3.0<br>3.5<br>4.0<br>4.5 | | | | | | 18 | | | | | |
| 3 | 18 | 3<br>3<br>4<br>4 | 5.0<br>5.5<br>6.0 | 5.0-7.0 feet CLAYEY SILT, grading to SILTY CLAY, medium plastic, very dark grayish brown (2.5 YR 3/2), to grayish brown (2.5 YR 5/2), loose, slight sulfuric odor, damp to | CL<br>ML | | | | 7 | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Jean M. Rapai

Firm: TRIAD ENGINEERING INCORPORATED
Milwaukee, Wisconsin
Tel: 414 291 8840, Fax: 414 291 8841

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Soil Boring Log Information Supplement
Form 4400-122A 7-91

Boring Number **EP-1** Use only as an attachment to Form 4400-122. Page 2 of 2

| Sample Number | Sample Length (in) Recovered | Blow Counts | Depth In Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Standard Penetration | Soil Properties: Moisture Content | Soil Properties: Liquid Limit | Soil Properties: Plastic Limit | Soil Properties: P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 6.5 | wet. | | | | | | | | | | |
| 4 | 12 | 1<br>1<br>2<br>2 | 7.0<br>7.5 | 7.0-8.0 feet SILTY CLAY, gray (10 YR 6/1), very loose, no odor, wet. | CL | | | | 3 | | | | | |
| | | | 8.0<br>8.5 | 8.0-9.0 feet SILTY SAND, fine to medium grained, gray (10 YR 6/1), very loose, no odor, saturated. | SM | | | | | | | | | |
| | | | 9.0 | EOB 9.0 feet<br>Push Hydropunch 2 to approximately 10 feet. Expose the screen, purge and sample. Water level measured at 9.35 feet, approximately twenty minutes after sampling. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B
Rev. 12-9

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

## (1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: KENOSHA

SW 1/4 of SE 1/4 of Sec. 36 ; T. 2 N; R. 22 ■ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 5555 30th Avenue

City, Village: Kenosha

## (2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Chrysler Corporation

Street or Route: 5555 30th Avenue

City, State, Zip Code: Kenosha, Wisconsin, 53144

Facility Well No. and/or Name (If Applicable): EP-1

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: completed sampling.

Date of Abandonment: 12/4/93

## WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/4/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
Borehole

Construction Report Available? ■ Yes ☐ No

Construction Type:
Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 10 Casing Diameter (ins.) NA
(From groundsurface)

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) 9.35

| | | | |
|---|---|---|---|
| Pump & Piping Removed? | ☐ Yes | ☐ No | ■ Not Applicable |
| Liner(s) Removed? | ☐ Yes | ☐ No | ■ Not Applicable |
| Screen Removed? | ☐ Yes | ☐ No | ■ Not Applicable |
| Casing Left in Place? | ☐ Yes | ☐ No | |

If No, Explain _____

| | | |
|---|---|---|
| Was Casing Cut Off Below Surface? | ☐ Yes | ☐ No |
| Did Sealing Material Rise to Surface? | ☐ Yes | ☐ No |
| Did Material Settle After 24 Hours? | ☐ Yes | ☐ No |
| If Yes, Was Hole Retopped? | ☐ Yes | ☐ No |

(5) Required Method of Placing Sealing Material
■ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
■ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

| (7) Sealing Material Used | From (Ft.) | To (Ft.) | No. Yards, (Sacks) Sealant or Volume (Circle One) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| QUICK SET CONCRETE | Surface | 0.67 | 0.25 | |
| BENTONITE CHIPS | 0.67 | 10. | 3.0 | |
| | | | | |
| | | | | |

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Ed Weiberg, Midwest Engineering Services, Inc.

Signature of Person Doing Work | Date Signed

Street or Route: 205 Wilmont Drive
Telephone Number: (414) 521-2125

City, State, Zip Code: Wau Kesha, WI 5318[illegible]

(10) FOR DNR OR COUNTY USE ONLY

| | |
|---|---|
| Date Received/Inspected | District/County |
| Reviewer/Inspector | ☐ Complying Work<br>☐ Noncomplying Work |
| Follow-up Necessary | |

# APPENDIX D

# LABORATORY RESULTS

To: L. Fasano January 18 ,1994

From: R.C. Eberhardt Laboratory 6416

Subject: Coolant Concentration Checks
Dept 816 Storm Sewer Samples

Below are the results of BenCyn's coolant concentration checks of the pump discharge from the dead-headed Dept 816 storm sewer.

| Date | Concentration |
|---|---|
| 08/18/93 | 2.1% |
| 08/19/93 | 1 % |
| 08/24/93 | 4.0% |
| 08/26/93 | 4.1% |
| 08/27/93 | 3.5% |
| 08/30/93 | 2.0% |
| 12/01/93 | 3.2% |
| 12/03/93 | 3.2% |
| 12/07/93 | 2.0% |
| 12/09/93 | 2.0% |
| 12/14/93 | 3.8% |

Since 12/20 0 Samples have been "clear," and shown no evidence of coolant.

R. C. Eberhardt

R.C. Eberhardt

To: L. Fasano January 18, 1994

From: R.C. Eberhardt Laboratory 6416

Subject: Dept 816 Storm Sewer
Sample of 01/13/94

Introduction:

At your request, on January 13, 1994, Einar Jensen and I took a sample of the water in the dead-headed storm sewer running through Dept 816. We got the sample out of the hose end of the pump discharge after allowing the pump to run for approximately one minute. (The pump was off when we got there.)

The sample was hazy, but basically transparent, and had a pale, light green color.

Conclusion:

Based on the physical appearance of the sample and the lab tests run, it does not appear that the storm sewer sample taken contains coolant from System #1.

Procedure:

The sample was analyzed by running the following lab coolant concentration type tests :

1. pH
2. Refractive Index
3. Alkaline titration with 0.1N NaOH to a methyl orange end point.

Results:

The test results are summarized below:

| Sample | pH | Refractive Index | Titration ml NaOH |
|---|---|---|---|
| Sewer Sample | 7.8 | 0.2 | 0.4 |
| 0.4% Articool 51, Lab solution* | 9.1 | 0.4 | 1.1 |

* Articool 51 is the coolant in Sys #1 and is normally run at 5%. 0.4% was the reference for the ground water sample

R. C. Eberhardt

R.C. Eberhardt

# WATER SAMPLING FIELD DATA SUMMARY

Project Name: Chrysler Corporation – Engine Plant  Project Number: W943163. 005

Location: Kenosha, Wisconsin

Field Equipment:

| | |
|---|---|
| pH: | Schott Model 819, Serial # 9002–0728 |
| Conductivity: | Hanna Instruments H18733 |
| Temperature: | Thermometer |
| Alkalinity: | – |
| Other: | – |

| Sampling and Field Measurement/Observation | | | | |
|---|---|---|---|---|
| Sample Location Identification: | Outfall 001 | | | |
| Water Type | Storm Water | | | |
| Date | 1/13/94 9:31a.m. | | | |
| Sampled by | L. Stanton | | | |
| Reference Elevation (Top of riser etc.) | – | | | |
| Measured Depth to Water (ft.) | – | | | |
| Measured Well Depth (ft.) | – | | | |
| Purging/Sampling Device(s) | – | | | |
| Well Casing Volumes/Gallons Purged | – | | | |
| Well Purged Dry? (Y/N) | – | | | |
| Time Purging Completed (Military) | – | | | |
| Time Sample Withdrawn (Military) | – | | | |
| Field Temperature (degrees C) | 22° C | | | |
| Field Conductivity: Measured (u mhos/cm) | 319 | | | |
| Field Conductivity @25 degrees C (u mhos/cm) | – | | | |
| pH (std. units) | 7.52 | | | |
| Alkalinity (mg/l) | – | | | |
| Color | Yellowish milky–like color | | | |
| Odor | Same as plant | | | |
| Turbidity | – | | | |
| Other | Small amount of oil floating on top of samples | | | |
| **Sampling Container and Presentation Information** | | | | |
| Sample Parameter(s) | Alkalinity | | | |
| # Of Containers & Volume | – | Note: Sampled | | |
| Container Type (amber glass, clear glass, plastic etc.) | – | off bottom of | | |
| Filtered/Unfiltered | Unfiltered | manhole. | | |
| Preserved/Unpreserved/Type | Unpreserved | Pumped dry | | |
| Refrigerated/on Ice | On ice | when sampled. | | |
| **Shipping Information** | | | | |
| Laboratory | Chrysler Lab | | | |
| Date Submitted | 1/13/94 | | | |
| Chain of Custody Number | – | | | |
| Courier Shipping Number/Hand Delivered etc. | H.D. | | | |

To: J. Bugno December 20, 1993

From: R.C. Eberhardt Laboratory 6416

Subject: Ground Water and Soil Sample Analysis

## Introduction:

On December 6, 1993, Triad Engineering submitted a soil sample and two ground water samples for analysis to determine if either type showed contamination by Articool 51 synthetic coolant. The samples had been taken on December 4, 1993 and were stored in an ice filled insulated container.

The two ground water samples were both clear and colorless with some sediment on the bottom of the bottles; the soil sample was dark in color, had a mostly sandy texture, and contained small, smooth stones.

## Conclusion:

The lab test results do not indicate that either the ground water or soil sample is contaminated with Articool 51 coolant. While the ground water sample showed some response to the methyl orange titration, there are many natural sources that could be responsible.

## Procedure:

Water Extraction of Soil Sample -
A water extraction of the soil sample was performed in the following manner -

1. 110 g of well mixed soil was put into a 600 ml beaker.
2. 400 ml of deionized water was added.
3. Covered beaker placed on hot plate and contents heated, with regular stirring, to 60 - 65 C and held there for 1 1/2 hour.
4. Beaker removed from hot plate and contents allowed to cool to room temperature, stirred occasionally.

Analysis of All Water Samples -

The following standard lab coolant concentration type tests were run on the ground water sample and water extract of the soil sample:

1. pH
2. Refractive index
3. Titration of a 10 ml aliquot with 0.1 N NaOH to a methyl orange end point.

In addition, a standard freon oil and grease gravimetric extraction was also performed on the samples. If there were significant coolant contamination of the samples, the isolated residues could be analyzed by infrared spectroscopy to confirm identity.

Results:

| Sample | pH | Refractive Index | Methyl Orange Titration | Freon Oil & Grease Extraction |
|---|---|---|---|---|
| Ground water | 7.2 | 0.3 | 1.1 ml | 2 mg/l |
| Soil Extract | 7.4 | 0.2 | 0.15 ml | -- |
| Tap Water | 7.5 | 0.2 | 0.25 ml | 0 mg/l |
| 0.4% Articool 51 Solution - lab prepared | 9.1 | 0.4 | 1.1 ml | 40 mg/l |

The freon oil and grease residue isolated from the 0.4% Articool 51 sample was analyzed by infrared spectroscopy. The ground water sample gave a trace response, but there was insufficient for an infrared analysis.

R. C. Eberhardt

R.C. Eberhardt

Copy to: Triad Engineering
L. Fasano
L. Jurca

# WATER SAMPLING FIELD DATA SUMMARY

Project Name: Chrysler Corporation–Engine Plant  Project Number: W943163. 005

Location: Kenosha, Wisconsin

Field Equipment:

| | |
|---|---|
| pH: | Schott Model 819, Serial # 9002–0728 |
| Conductivity: | Hanna Instruments H18733 |
| Temperature: | Thermometer |
| Alkalinity: | – |
| Other: | – |

| Sampling and Field Measurement/Observation | | | | |
|---|---|---|---|---|
| Sample Location Identification: | EP–1 | EP–1 | | |
| Water Type | Groundwater | Groundwater | | |
| Date | 12/04/93 | 12/04/93 | | |
| Sampled by | R. Binder | R. Binder | | |
| Reference Elevation (Top of riser etc.) | Ground | Ground | | |
| Measured Depth to Water (ft.) | 9.35 | 9.35 | | |
| Measured Well Depth (ft.) | 10.0 | 10.0 | | |
| Purging/Sampling Device(s) | Hydropunch II | Hydropunch II | | |
| Well Casing Volumes/Gallons Purged | – | – | | |
| Well Purged Dry? (Y/N) | N | N | | |
| Time Purging Completed (Military) | – | – | | |
| Time Sample Withdrawn (Military) | 1100 | 1100 | | |
| Field Temperature (degrees C) | 22 degrees | 22 degrees | | |
| Field Conductivity: Measured (u mhos/cm) | 1259 | 1184 | | |
| Field Conductivity @25 degrees C (u mhos/cm) | – | – | | |
| pH (std. units) | 7.07 | 6.86 | | |
| Alkalinity (mg/l) | – | – | | |
| Color | light brown | clear | | |
| Odor | none | none | | |
| Turbidity | Turbid | clear | | |
| Other | Silt/sand sdmt | – | | |
| **Sampling Container and Presentation Information** | | | | |
| Sample Parameter(s) | Alkalinity | Alkalinity | | |
| # Of Containers & Volume | 1–500 mls | 1–500 mls | | |
| Container Type (amber glass, clear glass, plastic etc.) | plastic | plastic | | |
| Filtered/Unfiltered | unfiltered | unfiltered | | |
| Preserved/Unpreserved/Type | unpreserved | unpreserved | | |
| Refrigerated/on Ice | on ice | on ice | | |
| **Shipping Information** | | | | |
| Laboratory | Chrysler Lab | Chrysler Lab | | |
| Date Submitted | 12/06/93 | 12/06/93 | | |
| Chain of Custody Number | – | – | | |
| Courier Shipping Number/Hand Delivered etc. | Hand Delivered | Hand Delivered | | |

TRIAD ENGINEERING INCORPORATED

# CHAIN OF CUSTODY RECORD

NO

Project Name: Triad project no. W943163
Project Manager: Rick Binder
Samplers: Rick Binder
Jeanne Rampini
Date Needed:

| Test Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|
| Field Filtered (y/n) | N | | | | | | |
| Preservative | N | | | | | | |
| Refrigerated (y/n) | Y | | | | | | |
| Analysis For coolant (Alkaline Titration Method) * see below | | | | | | | |

| Sample ID | Date | Time | Comp | Grab | Location/Description | No. of Containers | Sample Type (Soil, Groundwater, Wastewater, Solid Waste) |
|---|---|---|---|---|---|---|---|
| EP-1 | 12/4/93 | 1100 | | ✓ | EP-1 | 2 | groundwater |
| EP1-2 | 12/4/93 | 1002 | | ✓ | EP1-2, 3-5 feet | 1 | soil |

Sample Condition :

* Coolant Manufacture I.D.
Articool 51
description: Cutting oil Berryn
Lubricant Articool 51
synth, For Ferrous - (MSDS)

| RELINQUISHED BY: | Date | Time | RECEIVED BY: | Date | Time |
|---|---|---|---|---|---|
| Jeanne Rampini | 12/6/93 | | R. Eberhardt | 12/6/93 | 2:30p |
| RELINQUISHED BY: | Date | Time | RECEIVED BY: | Date | Time |
| RELINQUISHED BY: | Date | Time | RECEIVED BY: | Date | Time |

Triad Engineering Incorporated
325 E. Chicago Street
Milwaukee, Wisconsin 53202
Telephone: (414) 291-8840
FAX: (414) 291-8841

# APPENDIX E

# VOLUME OF RECOVERED LIQUID DATA, STORM SEWER

# VOLUME OF LIQUID RECOVERED FROM STORM SEWER

| Date | Gallons |
|---|---|
| 7/22 | 1,000 |
| 7/23 | 1,400 |
| 7/24 | 1,000 |
| 7/25 | 6,000 |
| 7/26 | 2,500 |
| 7/27 | 1,900 |
| 7/28 | 1,500 |
| 7/29 | 1,000 |
| 7/30 | 1,500 |
| 7/31 | 1,000 |
| 8/1 | 2,000 |
| 8/2 | 1,500 |
| 8/3 | 1,500 |
| 8/4 | 1,500 |
| 8/5 | 1,000 |
| 8/6 | 1,000 |
| 8/7 | 1,000 |
| 8/8 | 1,500 |
| 8/9 | 1,500 |
| 8/10 | 1,500 |
| 8/11 | 1,000 |
| 8/12 | 1,000 |
| 8/13 | 1,000 |
| 8/14 | 500 |
| 8/15 | 500 |
| 8/16 | 2,000 |
| 8/17 | 1,500 |
| 8/18 | 1,500 |
| 8/19 | 1,900 |
| 8/20 | 1,500 |
| 8/21 | 500 |
| 8/22 | 500 |
| 8/23 | 2,000 |

| Date | Gallons |
|---|---|
| 8/24 | 500 |
| 8/25 | 500 |
| 8/26 | 1,000 |
| 8/27 | 1,000 |
| 8/28 | 500 |
| 8/29 | 1,500 |
| 8/30 | 1,500 |
| 8/31 | 2,000 |
| 9/1 | 1,750 |
| 9/2 | 1,500 |
| 9/3 | 1,750 |
| 9/4 | 1,500 |
| 9/5 | 500 |
| 9/8 | 500 |
| 9/9 | 500 |
| 9/10 | 1,000 |
| 9/11 | 500 |
| 9/12 | 500 |
| 9/13 | 500 |
| 9/14 | 1,000 |
| 9/15 | 2,100 |
| 9/16 | 1,500 |
| 9/17 | 1,000 |
| 9/18 | 1,500 |
| 9/19 | 500 |
| 9/20 | 500 |
| 9/21 | 500 |
| 9/24 | 1,000 |
| 9/25 | 500 |
| 9/26 | 500 |
| 9/28 | 500 |
| 9/29 | 1,000 |
| 9/30 | 1,000 |

| Date | Gallons |
|---|---|
| 10/1 | 500 |
| 10/2 | 500 |
| 10/3 | 500 |
| 10/5 | 500 |
| 10/18 | 500 |
| 10/19 | 500 |
| 12/1 | 500 |
| 12/2 | 1,500 |
| 12/3 | 100 |
| 12/4 | 500 |
| 12/5 | 1,500 |
| 12/6 | 1,500 |
| 12/7 | 100 |
| 12/8 | 500 |
| 12/9 | 1,000 |
| 12/10 | 500 |
| 12/11 | 500 |
| 12/12 | 500 |
| 12/16 | 500 |
| 12/18 | 500 |
| 12/19 | 500 |
| 12/20 | 1,000 |
| 12/22 | 500 |
| 12/23 | 500 |
| 12/27 | 500 |
| 12/29 | 500 |
| 1/3 | 500 |
| 1/4 | 500 |
| 1/5 | 500 |
| 1/6 | 1,000 |
| 1/7 | 500 |
| 1/8 | 500 |
| 1/11 | 500 |