DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

SPDES INVESTIGATION REPORT
TENNECO PACKAGING
MACEDON, NEW YORK

SPDES Permit #NY0245992

Prepared for:

TENNECO PACKAGING
MACEDON, NEW YORK

August 31, 1999

DAMES & MOORE
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August 31, 1999

Mr. Dick St. James
Tenneco Packaging
100 North Street
Canandaigua, New York 14424

Re: SPDES Investigation Report
Tenneco Packaging
Macedon, New York
SPDES Permit No. NY0245992

Dear Mr. St. James:

Dames & Moore is pleased to submit the attached *SPDES Investigation Report* for the Tenneco Packaging facility in Macedon, New York. This report has been prepared in partial fulfillment of the Schedule of Compliance contained in SPDES Permit No. NY0245992, which was issued to Tenneco Packaging's Macedon, New York facility on September 26,1997 by the New York State Department of Environmental Conservation.

It has been our pleasure to assist you with this project. Please contact us if you have any questions regarding this report.

Very truly yours,

DAMES & MOORE

Don Porterfield, P.E.
Senior Engineer

Scott Sklenar, P.G.
Managing Associate, New York

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1.0 INTRODUCTION

This report presents a summary of Tenneco Packaging's (Tenneco's) investigation of the potential sources of elevated levels of contaminants in the outfalls at the Tenneco' s facility in Macedon, New York. This investigation was conducted in response to the September 26, 1997 letter from Mr. David Bimber of the New York State Department of Environmental Conservation (NYSDEC) to Mr. Richard St. James of Tenneco. In their letter, NYSDEC requested that Tenneco investigate the source of elevated levels of contaminants in the outfalls at Tenneco's Macedon site and to provide recommendations and a schedule to reduce the discharge levels.

This report has seven sections. After this introductory section, Section 2.0 provides background information on the facility, Tenneco's discharge permits, the permitted outfalls, and the results of Tenneco' s discharge monitoring program. The objectives of the investigation of the outfalls and this report are presented in Section 3.0. Section 4.0 provides a summary of Tenneco's investigative approach. The investigative activities and results are presented in Section 5.0. Section 6.0 presents our conclusions and recommendations. A schedule for implementation of the recommended corrective measures is in Section 7.0.

2.0 BACKGROUND

This section provides background information for the Tenneco Macedon facility. This information includes the site location and history. A brief history of the discharge permits issued to Tenneco by the NYSDEC under the State Pollutant Discharge Elimination System (SPDES) is provided along with a description of Tenneco's monitoring program and the analytical results.

2.1 FACILITY SETTING AND HISTORY

Tenneco Packaging is located in Macedon, New York in a formerly unified facility that now includes separately owned manufacturing facilities for Tenneco, Mobil's Commercial Films Division, and Huntsman Design Products. The total facility is approximately 23.6 acres in area. The plant buildings that Tenneco occupies, which were purchased from Mobil in November 1995, encompass approximately 92,000 square feet. The facility is bounded by Route 31 to the south, Route 350 to the west, Quaker Road and a truck trailer parking area to the east, and the New York State Barge Canal (Canal) and a Pennsylvania Central Railroad Spur to the north. The location of the Tenneco facility is shown in Figure 1. The layout of Tenneco's portion of the property is shown in Figure 2. This report only pertains to Tenneco's portion of the property.

Tenneco manufactures a variety of plastic bags at their Macedon facility. Polyethylene pellets are the principal raw material in the manufacturing process. The pellets usually arrive by rail and are unloaded at a facility on the north side of the canal. The pellets are pneumatically conveyed to the storage silos in the northeast portion of the area operated by Tenneco. As raw materials are needed, the pellets are withdrawn from the silos and pneumatically conveyed to extrusion manufacturing equipment throughout the plant. After dye pellets are added (if needed), the pellets are heated and extruded through a circular die at each machine. The extruded material is cooled by blowing air through the center of the die. Non-contact cooling water is used to cool the air before the air enters the die area.

The extruded bags are printed (if required), cut to size, and packaged for shipment. Scrap pellets and extruded material that is not suitable for shipment are ground and repelletized in Buildings 16 and 16A.

2.2 DISCHARGE PERMITS

Tenneco currently holds SPDES Permit Number NY0245992 for the Macedon facility. After Tenneco purchased the site from Mobil, the NYSDEC transferred responsibility for the six outfalls that discharged from Tenneco's portion of the site from Mobil to Tenneco in March 1996. The NYSDEC revised the terms of the permit in October 1997 and March 1999. The terms of the original and revised SPDES permits are discussed briefly below.

2.2.1 Original Permit

The NYSDEC issued SPDES Permit Number NY0245992 to Tenneco in March 1996. The effective date for the permit was March 1, 1996 and permit's expiration date was May 1, 1998. The permit covered six outfalls (001,002, 003,004, 005, and 008), which are described in the Section 2.3. The permit included monitoring requirements, which are discussed in Section 2.4.1. The permit also included discharge limitations for certain parameters and action levels for other parameters. The original permit included discharge limitations and action levels for more constituents than the current SPDES permit. The discharge limitations and action levels listed in the original permit for the parameters in the current permit are summarized in Table 1.

2.2.2 October 1997 Permit Modification

On September 26, 1997, NYSDEC issued a revised SPDES permit to Tenneco for the Macedon facility. The effective date of the revised permit was October 1, 1997 and the expiration date of the permit remained May 1, 1998. The revisions to the permit included consolidation of three outfalls

(003, 004, and 005) into one outfall (003), changing the list of parameters monitored at the outfalls, applying the same monitoring frequency to all outfalls, and modification of some of the discharge limitations and action levels. The modified discharge limitations and action levels for the current permit are summarized in Table 2.

The revised permit also required Tenneco to investigate the source of elevated levels of contaminants in outfalls and report the results of the investigation to NYSDEC. This report is the deliverable for investigation required by NYSDEC.

2.2.3 March 1999 Permit Modification

On March 24, 1999, NYSDEC approved a request from Tenneco to remove Outfall 001 from the SPDES permit. The basis for Tenneco's request is described in Section 2.3.1. The effective date of Tenneco's modified permit was March 24, 1999. The expiration date of the modified permit is May 1, 2003.

2.3 PERMITTED OUTFALLS

Tenneco currently maintains and is responsible for three outfalls (002, 003, and 008). Tenneco recently operated a fourth outfall (001), which was removed from the SPDES permit in March 1999 and will be removed from service in the fall of 1999. All three of the current outfalls and former Outfall 001 discharge to the Barge Canal on the north side of the site. The discharge points and the piping connected to each outfall are shown in Figure 2. Each of the outfalls and the sources of water that can be discharged through each outfall are described briefly below.

2.3.1 Outfall 001

As shown in Figure 2, Outfall 001 was formerly located at the northwest comer of the facility. The only structure connected to Outfall 001 was a catch basin, which received only surface water runoff. Most of them-off that entered the catch basin came from Route 350, which is not part of Tenneco's site.

On September 1, 1998 Tenneco requested that NYSDEC remove Outfall 001 from Tenneco's SPDES permit because most of the water that entered Outfall 001 is run-off from areas not controlled by Tenneco. On March 24, 1999, the NYSDEC approved Tenneco's request. In the fall of 1999, Tenneco plans to remove the catch basin and construct other improvements near the former catch basin to direct run-off from Route 350 past Tenneco 's property.

2.3.2 Outfall 002

As shown in Figure 2, Outfall 002 is north of Building 21 along the Barge Canal. Outfall 002 receives flows from: roof drains on Buildings 21, 21A, 22, 6, and 6A; and catch basins outside Buildings 21, 22, 6, and 6A. The floor drains in the buildings that are connected to the piping leading to Outfall 002 were closed prior to 1995 with either concrete or steel covers.

2.3.3 Outfall 003

As shown in Figure 2, Outfall 003 is north of Building 7N. Prior to March 28, 1997, Outfall 003 was split into three separate outfalls (003, 004, and 005). Tenneco was responsible for all three of these outfalls. The sources of water for each of the former outfalls are described below. Currently all the sources described below for the former outfalls 003, 004, and 005 discharge through Outfall 003.

Outfall 003

Former Outfall 003 received flow from: roof drains on Buildings 1, 2, 4, 5, 6, 6A, 10, and 11; a mezzanine drain in Building 6A; and catch basins outside Buildings 10 and 11. All of the floor drains in the buildings that are connected to the piping that leads to Outfall 003 have been covered with steel plates. Some of the floor drains connected to Outfall 003 receive small amounts of condensate from roof-mounted air conditioning units and had received condensate from extrusion cooling coils during hot weather. The cooling coil condensate was rerouted to the sanitary sewer (with local POTW approval) in July 1999.

Outfall 004

Former Outfall 004 received flow from the roof drains on Buildings 10, 10C, 3, 11, and 5.

Outfall 005

Former Outfall 005 received flow from: a roof drain on Building 6; floor drains in Buildings 10A and 10C; and overflow from a cistern beneath Building 13. The floor drains in Buildings 10A and 10C had received small amounts of condensate from extrusion cooling coils during hot weather. The cistern beneath Building 13 is no longer used.

2.3.4 Outfall 008

As shown in Figure 2, Outfall 008 is north of Tenneco's silos. The only structure connected to Outfall 008 is a catch basin, which receives surface water runoff from the silo area and the roadway along the canal.

2.4 DISCHARGE MONITORING PROGRAM

Tenneco monitors the discharge from the permitted outfalls in accordance with their SPDES permit. The sampling and analysis program and the monitoring results are described below.

2.4.1 Sampling and Analysis Program

Tenneco has collected samples from the outfalls at the site in accordance with the sampling schedules summarized in Tables 1 and 2. Tenneco has reported the analytical results for outfalls to the NYSDEC in Discharge Monitoring Reports (DMRs).

As shown in Tables 1 and 2, Tenneco's SPDES permits include discharge limitations or action levels for the parameters in the monitoring program. If the monitoring results for a parameter exceeds its action level, Tenneco is required to conduct a short-term, high-intensity monitoring program for three consecutive flow days. Although the results for the additional sampling are reported to NYSDEC, these additional results have not been considered in this report.

2.4.2 Analytical Results

Tenneco has collected and analyzed water samples from the outfalls and has reported the analytical results to NYSDEC in accordance with the requirements of their SPDES permits. The analytical results from March 1996 through June 1999 for the parameters in the current permit are summarized in Tables A-1 through A-10 in Appendix A. These tables do not include the results of Tenneco's short-term, high-intensity monitoring programs. Table 3 summarizes the discharge limitation and action level exceedences from March 1996 through June 1999.

The analytical results for the outfalls are also presented graphically in Appendix B. The analytical results for the outfalls are shown as open diamonds on the graphs and the discharge limitations or

action levels are depicted by solid horizonal lines. The graphs in Appendix B also include the daily precipitation reported by the National Weather Service station in Macedon, New York for March 1996 through October 1998.

Based on review of the data presented in Table 5, Appendix A, and Appendix B, Dames & Moore and Tenneco have made several observations about the analytical results. These observations are summarized below for each of the parameters in Tenneco's SPDES permit.

pH

The pH of the outfalls generally fluctuates from approximately 6.5 to 8.5. However, there have been two occasions when the pH exceeded the upper discharge limit of 9.0. Both of these exceedances occurred during the winter. Review of the graphs of the monitoring results in Appendix B shows that pH levels in the outfalls generally rise in the winter.

Settleable Solids

Outfall 008 is the only location at which the discharge limit for settleable solids (0.1 mL/L) has been exceeded at the site. There have only been three times that detectable levels of settleable solids were present in Outfall 008. These three occurrences are also the only times that the discharge limit was exceeded.

Oil & Grease

The concentration of oil & grease in Tenneco's outfalls is usually non-detectable (<5.0 mg/L). However, there have been two occasions on which the discharge limit (15 mg/L) was exceeded at the site. Both of these occurrences were in the fall of 1997.

Total Suspended Solids

The concentration of total suspended solids (TSS) is usually less than 25 mg/L at all the outfalls except for Outfall 008 where the TSS concentration is more variable. Six of the ten TSS exceedances at the site occurred at Outfall 008. Two of the other exceedances occurred at Outfall 003 and the other two were at Outfall 002. The highest concentrations of TSS detected in the outfalls generally occur in March of each year.

Total Dissolved Solids

There have been eight exceedances of the action level (1,000 mg/L) for total dissolved solids (TDS) in Tenneco's outfalls. Three of the exceedances occurred at Outfall 001. Another two of the exceedances occurred at Outfall 008. The other three TDS exceedances occurred at Outfall 005 before outfalls 003, 004, and 005 were combined in the spring of 1997.

Copper

There have been two exceedances of the 210 μg/L action level for copper at Tenneco's outfalls. Both of these exceedances occurred at Outfall 003 during late summer. The graphs in Appendix B show that the copper concentrations in the outfalls 002 and 003 are usually higher during the summer than during the remainder of the year.

Iron

There have been nine exceedances of the action level for iron at Tenneco's outfalls. Three of the exceedances occurred at Outfall 002. In March 1997, the iron concentration at Outfall 002 was 1,310 μg/L, which was above the action level in effect at the time (1,200 μg/L), but is below the current action level for iron (2,000 μg/L). The iron concentrations for the other two exceedances at

Outfall 002 were above the current action level. The other six iron action level exceedances occurred at Outfall 008 and the iron concentrations were above the current action level. The highest iron concentrations in outfalls 002 and 008 generally occur in March of each year.

Lead

Outfall 003 is the only outfall at the site at which concentrations of lead in the discharge have exceeded the action level. Of the 10 lead exceedances at Outfall 003, only four are above the current action level of 100 μg/L. All the lead exceedances at Outfall 003 occurred in warm weather months.

Surfactants

Surfactants have never been detected in Tenneco' s outfalls at concentrations that exceed the action level (1,000 μg/L). In fact, the surfactant concentrations are usually less than 100 μg/L.

Zinc

On 22 occasions, the concentration of zinc detected in Tenneco's outfalls has exceeded the action level. However, only one of these occurrences had a concentration above the current action level of 1,000 μg/L. All the other action levels occurred before October 1, 1997, when the action level was 400 μg/L. Ten of the exceedances were at Outfall 002. Seven of the exceedances were at Outfall 003. Three exceedances were at Outfall 004 and the other two exceedances were at Outfall 008.

3.0 OBJECTIVES

The objectives for the investigation of the SPDES outfalls at Tenneco's Macedon facility were developed to fulfill the NYSDEC's requirements, which were contained in the September 26, 1997 letter from NYSDEC to Tenneco. Specifically, the objectives for this project are to:

- Investigate the SPDES outfalls at the Macedon plant to identify the sources of elevated levels of parameters that are monitored in the SPDES outfalls.

- Identify corrective measures that will reduce the levels of parameters (to the extent feasible) in the surface water discharges to the Barge Canal.

- Establish a schedule to implement the recommended corrective actions.

4.0 INVESTIGATIVE APPROACH

This section describes the approach used by Tenneco to investigate and develop corrective measures to address the sources of elevated parameters in the SPDES outfalls at their Macedon facility. On April 9, 1998 Tenneco formed a team to investigate plant operations and site conditions that could adversely impact the levels of permitted parameters being discharged through Tenneco's four outfalls. This team consisted of environmental specialists and plant technicians familiar with Tenneco' s operations and specific knowledge of the outfalls. The team has been meeting at intervals of approximately six weeks to discuss and plan investigation and mitigation activities.

The remainder of this section presents an overview of the methods used by Tenneco during the project. The investigation, results, and corrective measures are described in detail in Section 5.0 for each parameter in Tenneco's SPDES permit.

4.1 IDENTIFY PARAMETERS OF CONCERNS

Tenneco personnel reviewed the analytical results to identify parameters of concern. As described in Section 2.4.2, nine of the ten parameters that are monitored by Tenneco had exceeded either a discharge limitation or an action level.

4.2 IDENTIFY POTENTIAL SOURCES

Facility drawings were examined with process engineers to identify sources of liquid that enter the piping connected to the outfalls. Building processes and associated Material Safety Data Sheets (MSDS) were reviewed to evaluate whether the constituents of concern could be introduced from the manufacturing processes. In addition, surfaces that storm water could come into contact with were examined to assess whether there were accumulations of materials that might affect water quality at the SPDES outfalls.

4.3 INVESTIGATE POTENTIAL SOURCES

After potential sources were identified, they were investigated. These investigations included the collection and analysis of samples and additional assessment of conditions.

4.4 DEVELOP AND IMPLEMENT CORRECTIVE MEASURES

If investigation of a potential source indicated that the source might contribute to exceedance of a discharge limitation or action level, Tenneco developed corrective measures. These corrective measures were developed and discussed by the project team. In most cases, these corrective measures have already been implemented.

4.5 ASSESS EFFECTIVENESS OF CORRECTIVE MEASURES

Because some of the corrective measures were implemented in 1998 and 1999, Tenneco has been able to assess their effectiveness.

5.0 INVESTIGATION ACTIVITIES AND RESULTS

This section summarizes the methods that Tenneco used to investigate the potential sources of elevated constituents in the SPDES outfalls and describes the results of the investigations. The sampling locations described below are depicted in Figure 3 and the sampling results are summarized in Tables 4 and 5.

In addition, Tenneco's proposed corrective measures are described as well as their results if the remedies have been implemented. The locations of the proposed corrective measures are also shown in Figure 3.

5.1 pH

Based on the monitoring results for the outfalls at the Tenneco' s Macedon facility, pH is a parameter of minor concern for outfalls 001 and 003. The pH of the discharges from Tenneco' s outfalls has been outside the range of the discharge limitations (6.0 to 9.0) on two occasions. As described in Section 2.4.2, both of the pH exceedances occurred in the winter. One exceedance occurred at Outfall 001 (pH of 9.6) in November 1996 and the other exceedance occurred at Outfall 003 (pH of 9.07) in February 1998.

Based on review of conditions at the site and timing of the pH exceedances, Tenneco believes that the salt and sand/salt mixtures that were used in several areas at and near the facility to reduce ice and snow buildup on roads and walkways during the winter were potential sources of the pH exceedances. From April through July 1998, Tenneco collected samples of the Macedon town sanding material (used on Route 350), Hey's road sanding material (used on on-site roads), and Tempco walkway materials (used at various locations on-site). These samples were placed in separate containers with demineralized water and allowed to sit for approximately one week. The

pH of the liquid was then measured. Tenneco also analyzed several of the other samples collected during this investigation for pH. The results of the pH analyses are summarized in Tables 4 and 5.

As shown in Table 4, the pH measured for the Tempco walkway materials was greater than Tenneco's upper SPDES discharge limit of 9.0. The pH measured for samples of Tenneco's (Hey's road sanding material) and Macedon's (Macedon town sanding material) road sanding material did not exceed 9.0. However, both mixtures exhibited pHs that were close to 9.0 (8.97 and 8.79 respectively).

After review of the pH data for the road and walkway materials, Tenneco elected to use alterative road and walkway sanding materials as a corrective measure for the pH exceedances at outfalls 001 and 003. Tenneco removed all of the Tempco walkway material from the site and procured a different formulation of walkway material from Tempco. Tenneco measured the pH of the new Tempco material and found the pH to be 7.0. In the winter of 1998-1999, Tenneco switched suppliers for their on-site roadway sanding materials. The pH of the new material, Frye's Winter Sand/Salt Mixture, was 7.92.

There have been no pH exceedances at Tenneco's outfalls since Tenneco has changed road and walkway sanding materials. Based on a review of the pH results for outfalls 001 and 003 in Appendices A and B, it appears that the pH levels at outfalls 001 and 003 were generally lower than previous years.

In addition to the measures described above, because most of the run-off that entered the catch basin connected to Outfall 001 came from off-site along Route 350, on September 1, 1998 Tenneco requested that NYSDEC remove Outfall 001 from Tenneco's SPDES permit. On March 24, 1999, the NYSDEC approved Tenneco's request. In the fall of 1999, Tenneco will remove the catch basin and construct other improvements near the catch basin to direct run-off from Route 350 past Tenneco's property.

5.2 SETTLEABLE SOLIDS

Based on the monitoring results for outfalls at the Macedon Facility, settleable solids (SS) are only a parameter of concern at Outfall 008. Them have been three exceedances of the discharge limit for settleable solids (0.1 mL/L) at Outfall 008.

Based on review of conditions at the site and the timing of the SS exceedances, Tenneco believes that potential sources for the SS exceedances include these five areas:

- *Housekeeping Practices at Silo Area Near Outfall 008* - Based on visual observations, Tenneco identified several housekeeping issues in the silo area near Outfall 008 that might contribute to SS exceedances. These issues include: accumulations of polyethylene dust and angel hair (fibers that are formed during handling of the polyethylene beads) near the silo area; and an unenclosed gaylord box under the reclaim blender dust collector near Building 8.

- *Dike Around Silos* - The position and construction of the gate in the dike that surrounds the silos does not lend itself to containing materials within the dike.

- *Roadway Along Canal* - The roadway along the canal was often covered with typical roadway debris (salt and sand from deicing operations, flakes of rust from vehicles and dirt and stones). During rain events, this material is washed into catch basins connected to Tenneco's outfalls.

- *Degraded Roadway Near Outfall 008* - The road near Outfall 008 was observed to be in poor condition. The degraded road may be adding additional solids to Outfall 008.

- *Tow Motor Aisle Catch Basin* - The catch basin in the tow motor aisle, which is south of Building 16B, discharges to Mobil's Outfall 007. This catch basin had a large amount of residue/debris in it. An overflow from this catch basin would probably flow to Outfall 008.

Tenneco did not collect samples to investigate whether these potential sources were contributing to SS exceedances at Outfall 008. Instead, Tenneco has implemented, or plans to implement, these seven corrective measures:

- *Improve Housekeeping Practices at Silo Area* - In May 1998, Tenneco removed the accumulations of dust and angel hair from the silo area and began monitoring this area daily. Tenneco has also modified the dust collection operation to reduce housekeeping problems. The gaylord box, which is below the dust collector, will be enclosed in the fall of 1999.

- *Dike Around Silos* - Tenneco has prepared plans for modifying the dike around the silo area to improve pellet retention, access for housekeeping, and cleaning of screen in gate. This area will be modified in the fall of 1999.

- *Reduce Sanding and Increase Cleaning* - As described Section 5.1, Tenneco has changed suppliers for the road sanding material used at the site. In addition Tenneco has reduced the amount of material that is applied and has begun cleaning the roadway along the canal monthly or more frequently as required.

- *Repair Road at Outfall 008* - In June 1998, Tenneco repaired the damaged roadway near Outfall 008.

- *Decrease Catch Basin Depth at Outfall 008* - In May 1998, Tenneco reduced the depth of the catch basin connected to Outfall 008 in an attempt to reduce SS and TSS levels at Outfall 008.

- *Clean Tow Motor Aisle Catch Basin* - In June 1998, Tenneco cleaned the catch basin in the tow motor aisle south of Building 16B. Tenneco currently inspects this catch basin periodically and cleans the basin as needed, such as during large storm events.

- *Install New Catch Basin at Outfall 008* - Tenneco plans to construct a new catch basin at Outfall 008. The new catch basin will be similar in design to the existing catch basin at Outfall 003. The new catch basin will have a large removable screen to filter SS and TSS from the discharge. Construction is planned to begin in September 1999.

Based on the monitoring results since June 1998 at Outfall 008, the corrective measures that have been implemented appear to have resolved the SS exceedances at Outfall 008. After Tenneco implements the other proposed measures (new dike at the silo area, enclosed gaylord box below reclaim blender, and new catch basin at Outfall 008), the likelihood of settleable solids exceedences should be reduced.

5.3 OIL & GREASE

Based on the monitoring results for outfalls at the Macedon Facility, oil & grease is a parameter of minor concern for outfalls 001 and 003. The discharge limit for oil & grease (15 mg/L) was exceeded twice. As described in Section 2.4.2, both of the oil & grease occurrences occurred in the fall of 1997. One exceedance occurred at Outfall 003 (16.4 mg/L) in September 1997 and the other exceedance occurred at Outfall 001 (16.1 mg/L) in December 1997.

Tenneco inspected the site to evaluate whether there were potential sources for oil & grease to enter the piping connected to the SPDES outfalls. Tenneco identified these four potential sources:

- Runoff from Route 350 onto Tenneco's facility
- Spills and leaks from vehicles on the back roadway on the north side of the site

- Leaks from the trash compactor at Building 11
- Leaks from equipment on building roofs

Tenneco's investigation of the potential oil & grease sources relied on visual inspections. During the visual inspection, a leak was discovered at the trash compactor at Building 11, which is located over a catch basin that is connected to Outfall 003. In addition, Tenneco's visual inspection found that were small amounts of oil & grease on the roof near lubrication points of the roof mounted equipment. Although the visual inspection of the equipment on the roofs did not identify significant sources, one water sample was collected from a roof drain in Building 6 in May 1998 and analyzed for oil & grease. As shown in Table 4, this sample contained 12 mg/L of oil & grease.

To address the potential sources of oil & grease exceedance, Tenneco has taken these four corrective measures:

- *Remove Outfall 001* - This corrective measure was described in Section 5.1

- *Repair Trash Compactor Oil Leak* - In April 1998, Tenneco repaired the oil leaks on the trash compactor at Building 11.

- *Fill Catch Basin Below Trash Compactor* - In May 1999, Tenneco sealed the catch basin below the trash compactor at Building 11. Prior to sealing the catch basin, a false bottom was placed in the basin to maintain an open space in the bottom of the basin. The open space allows flows from other areas of the site, which enter the basin through piping connected to the basin, to enter the pipe that discharges to Outfall 003. After the false bottom was installed, the upper portion of the basin was filled with concrete.

- *Periodic Roof and Roadway Inspections* - Tenneco inspects the roof and roadway along the canal daily for oil & grease spills or leaks. Any leaks or spills are contained and disposed appropriately.

Based on the monitoring results since June 1998, these corrective measures appear to be effective.

5.4 TOTAL SUSPENDED SOLIDS

Based on the monitoring results for outfalls at the Macedon Facility, total suspended solids (TSS) are a parameter of concern. The discharge limits (40 mg/L for outfalls 003, 004, and 005 through September 1997 and 50 mg/L for outfalls 001,002, and 008 through September 1997) and action level (50 mg/L for all outfalls after September 1997) for TSS have been exceeded ten times. As described in Section 2.4.2, the highest levels of TSS generally occur in March of each year. There have been two TSS exceedances at Outfall 002, two TSS exceedances at Outfall 003, and six TSS exceedances at Outfall 008.

Based on review of the facility and the monitoring results, Tenneco identified these five potential sources for the TSS exceedances in the outfalls:

- *Housekeeping Practices at Silo Area Near Outfall 008* - Based on visual observations, Tenneco identified several housekeeping issues in the silo area near Outfall 008 that might contribute to TSS exceedances. These issues include: accumulations of polyethylene dust and angel hair (fibers that are formed during handling of the polyethylene beads) near the silo area; and an unenclosed gaylord box under the reclaim blender dust collector near Building 8;

- *Dike Around Silos* - The position and construction of the gate in the dike that surrounds the silos does not lend itself to containing materials within the dike.

- *Roadway Along Canal* - The roadway along the canal was often covered with typical roadway debris (salt and sand from deicing operations, flakes of rest from vehicles and dirt and stones). During rain events, this material is washed into catch basins connected to Tenneco' s outfalls.

- *Degraded Roadway Near Outfall 008* - The road near Outfall 008 was observed to be in poor condition. The degraded road may be adding additional solids to Outfall 008.

- *Materials on Roofs* - Dust and other material that collects on the roof could contribute to TSS levels observed at outfalls.

Tenneco' s investigation of the potential sources for the TSS exceedances relied primarily on their visual inspections. Although the visual inspection of the roofs did not identify significant sources accumulations of dust and other materials, one water sample was collected from a roof drain in Building 6 in May 1998 and analyzed for TSS. As shown in Table 4, this sample contained only 4.94 mg/L TSS, which is less than 10 percent of the action level for TSS. Thus, the roofs are not considered to be a source for TSS exceedances.

To address the remaining potential sources of TSS exceedances, Tenneco has taken, or will take, these five corrective measures:

- *Improve Housekeeping Practices at Silo Area* - This corrective measure was described in Section 5.2

- *Dike Around Silos* - Tenneco has prepared plans to modify the dike around the silo area. This construction is planned for the fall of 1999.

- *Reduce Sanding and Increase Cleaning* - As described Sections 5.1 and 5.2, Tenneco has changed suppliers for the road sanding material used at the site. In addition Tenneco has reduced the mount of material that is applied and has begun cleaning the roadway along the canal periodically.

- *Repair Road at Outfall 008* - In June 1998, Tenneco repaired the damaged roadway near Outfall 008.

- *Install New Catch Basin at Outfall 008* - As described in Section 5.2, Tenneco plans to begin construction of a new catch basin at Outfall 008 in September 1999. The new catch basin will be similar in design to the existing catch basin at Outfall 003. The new catch basin will have two large removable screens to reduce and filter SS and TSS from the discharge.

The corrective measures that have been implemented have been partially effective in reducing the number and magnitude of TSS exceedances. As shown in the tables in Appendix A and graphs in Appendix B, the frequency and magnitude of TSS exceedances have decreased since June of 1998. Tenneco anticipates that modification of the silo dike system and installation of a new catch basin at Outfall 008 with further reduce TSS levels at Outfall 008.

5.5 TOTAL DISSOLVED SOLIDS

Based on the monitoring results for outfalls at the Macedon Facility, total dissolved solids (TDS) are a parameter of concern. On eight occasions, the action level for TDS (1,000 mg/L) has been exceeded. Three of the exceedances occurred at Outfall 001. Two of the exceedances occurred at Outfall 008. The other three exceedances occurred at Outfall 005 before it was combined with outfalls 003 and 004 in the spring of 1997.

Based on review of the conditions at the site and the monitoring results for the outfalls, Tenneco identified these six potential sources for the TDS exceedances in the outfalls:

- *Run-off From Route 350* - Based on the timing of TDS exceedances at Outfall 001, Tenneco believes that the TDS exceedances are due to run-off from off-site roadways.

- *Housekeeping Practices at Silo Area Near Outfall 008* - Based on visual observations, Tenneco identified several housekeeping issues in the silo area near Outfall 008 that might contribute to TDS exceedances. These issues, which were described in Section 5.4, include: accumulations of polyethylene dust and angel hair near the silo area; and an unenclosed gaylord box under the reclaim blender dust collector near Building 8.

- *Roadway Along Canal* - The roadway along the canal was often covered with typical roadway debris (silt and sand from deicing operations, flakes of rust from vehicles and dirt and stones). During rain events, this material is washed into catch basins connected to Tenneco's outfalls and could contribute to elevated TDS levels at the outfalls..

- *Degraded Roadway Near Outfall 008* - The road near Outfall 008 was in poor condition. The degraded road may be contributing to TDS levels at Outfall 008.

- *Materials on Roofs* - Dust and other material that collects on the roof could contribute to TDS levels observed at outfalls.

Tenneco's investigation of the potential sources for the TDS exceedances relied primarily on the visual inspections described above. Although the visual inspection of the roofs did not identify significant accumulations of dust and other materials, one water sample was collected from a roof drain in Building 6 in May 1998 and analyzed for TDS. As shown in Table 4, this sample contained

only 168 mg/L TDS, which is less than 20 percent of the action level for TDS. Thus, the roofs are not considered to be a source for TDS exceedances.

To address the remaining potential sources of TDS exceedances, Tenneco has taken these four corrective measures:

- *Remove Outfall 001* - This corrective measure was described in Section 5.1

- *Improve Housekeeping Practices at Silo Area* - This corrective measure is described in Section 5.2.

- *Reduce Sanding and Increase Cleaning* - As described in Sections 5.1 and 5.2, Tenneco has changed suppliers for the road sanding material used at the site. In addition Tenneco has reduced the amount of material that is applied and has begun cleaning the roadway along the canal periodically.

- *Repair Road at Outfall 008* - In June 1998, Tenneco repaired the damaged roadway near Outfall 008.

Based on review of the monitoring data since June 1998, these corrective measure appear to have reduced TDS levels in the outfalls below the action level.

5.6 COPPER

Based on the monitoring results for outfalls at Tenneco's Macedon facility, copper is a parameter of minor concern. The action level for copper (210 μg/L) has been exceeded twice at Tenneco's facility. Both of these exceedances occurred at Outfall 003 in late summer. As discussed in Section 2.4.2, the copper concentrations in Outfalls 002 and 003 are higher in warm weather.

The potential sources of copper that were identified and investigated by Tenneco included these six areas:

- *Red Residue on Building 16 Roof* - Tenneco observed an accumulation of a red powder residue on the roof of Building 16.

- *Angel Hair and Resin Dust* - Tenneco found accumulations of angel hair and resin dust at various locations throughout the facility. They were uncertain whether this material contained copper, which might contribute to exceedances at Tenneco's outfalls.

- *Dyes for Bags* - The dye pellets that Tenneco uses in the manufacturing process can contain metals.

- *Fire System* - The fire water supply system for the buildings is tested monthly and the water generated during the test is discharged through Tenneco's SPDES outfalls.

- *Condensate From Extrusion Cooling Coils* - The extrusion cooling coils are constructed of copper. Tenneco was unaware whether the condensate from the coils contained copper.

- *Roof Drains and Piping* - Tenneco was unaware of the amount of copper piping in the roof drain systems and whether copper was a significant constituent in the roof water.

Tenneco collected a sample of the red powder residue on the roof of Building 16 on April 14, 1998, mixed the sample with water, and analyzed the liquid sample for copper. As shown in Table 4, the copper concentration in the liquid was 1,540 μg/L, which exceeds copper's action level. However, because the run-off from Building 16 would discharge through Outfall 008, this material is not believed to be the source of the copper exceedances at Outfall 003.

On April 14, 1998, Tenneco collected and analyzed a sample of the angel hair and resin dust accumulations at the site. As shown in Table 5, this material contained only 8.64 mg/kg copper. Another sample of this material was collected in December 1998, placed in demineralized water and allowed to sit for approximately one week. As shown in Table 4, copper was not detected in the liquid. Thus, it is unlikely that the angel hair and resin dust contributes to the copper exceedances at the outfalls.

In December 1998, Tenneco collected a sample of the red color concentrate that is used as a dye and a sample of the red re-pelletized pellets (RPP). These samples were analyzed for metals. As shown in Table 5, copper was not detected in the RPP. Although copper was detected in the red color at a concentration of 4.84 mg/kg, it is unlikely that the red color concentrate contributes to copper exceedances at Tenneco's outfalls.

On April 2, 1998, Tenneco collected samples from the fire system in Buildings 22, 21, 11, and 16. As shown in Table 4, the concentration of copper in the sample collected from Building 11 (337 μg/L) was about the action level for copper. The concentration of copper in the other three samples was below the action level. Because the fire system is tested monthly for short periods, the fire system is not believed to be a significant contributor to copper exceedances at Outfall 003.

In May and August 1998, Tenneco collected samples of the condensate from the air conditioning units in Buildings 10A and extrusion cooling coils in Building 10. The samples were analyzed for metals and the results are summarized in Table 4. The copper concentration in the Building 10A condensate (165 μg/L) was below the action level. However, the copper concentration in the Building 10 condensate (310 μg/L) was above the action level. Although the flow of condensate from the extrusion cooling coils is small (approximately 0.5 gallons per day per unit), the timing of condensate generation coincides with the increased copper concentrations at outfalls 002 and 003.

On May 20, 1998, Tenneco collected a water sample from roof drain number 44 in Building 6. The sample was analyzed for metals and the analytical results are summarized in Table 4. The concentration of copper detected in this sample (28 μg/L) was below the action level. Tenneco also inspected the roof drain piping to identify the portions of the system that were constructed of copper. The locations, lengths, and sizes of copper piping that were identified in the roof drain are:

Copper Piping in Roof Drain System		
Location	**Length (feet)**	**Diameter (inches)**
South side of Building 21A	30	4
Building 21A and 6	50	4
South end of Building 6	160	3
Building 1 and 2	20	4

At this time, Tenneco does not believe that the copper piping in the roof drain system is a significant contributor of copper in the outfalls.

Based on the results of the investigations described above, Tenneco has taken these two corrective measures to address the remaining potential sources of copper exceedances:

- *Remove Red Residue from Roots* - Tenneco removed the red powder residue from the roof of Building 16 and properly disposed the material. Tenneco will periodically inspect the roofs for similar accumulations and remove the material if found.

- *Route Condensate to Sanitary Sewer* - Tenneco has received permission from the Macedon Wastewater Treatment Facility to route the condensate from the extrusion cooling coils to the sanitary sewer that serves the Macedon Facility. Tenneco completed this work in July 1999.

Because the condensate has recently been routed to the sanitary sewer, the effectiveness of this corrective measure is not yet determined.

5.7 IRON

Based on the monitoring results for outfalls at the Macedon Facility, iron is a parameter of concern. There have been nine exceedances of the action levels for iron (1,200 μg/L through September 1997 and 2,000 μg/L thereafter) at the site. Three of the exceedances occurred at Outfall 003. The remaining six exceedances were at Outfall 008. As discussed in Section 2.4.2, the highest concentrations of iron in outfalls 003 and 008 generally occur in March of each year.

The potential sources for iron that were identified by Tenneco included these seven areas:

- *Rusty Grates on Catch Basins* - Tenneco observed that many of the grates on catch basins at the site were constructed of cast iron and that many of the grates were rusting.

- *Rusted Equipment and Structures* - Tenneco observed that the trash compactor box and enclosure at Building 11 were rusted. They also noted a rusted collection tank in Building 7N. Tenneco also observed that some of the surfaces on the silos east of Building 16 showed signs of rust.

- *Red Residue on Building 16 Roof* - Tenneco observed an accumulation of a red powder residue on the roof of Building 16.

- *Angel Hair and Resin Dust* - Tenneco found accumulations of angel hair and resin dust at various locations throughout the facility. They were uncertain whether this material contained concentrations of iron that might contribute to exceedances at Tenneco's outfalls.

- *Dyes for Bags* - The dye pellets that Tenneco uses in their manufacturing process can contain metals.

- *Fire System* - The fire water supply system for the buildings is tested monthly and the water generated during the test is discharged through Tenneco's SPDES outfalls.

- *Condensate From Extrusion Cooling Coils* - Tenneco was unaware whether the condensate from the cooling coils was a potential source of iron in the outfalls.

Tenneco did not collect samples to investigate whether the rusty grates on catch basins or the rusty enclosure at the trash compactor at Building 11 were contributing to iron exceedances. Instead, Tenneco elected to replace the cast iron grates with aluminum grates, repaint the rusted trash compactor box, and replace the rusted enclosure at the trash compactor.

Tenneco collected a sample of the red residue on the roof of Building 16 on April 14, 1998, mixed the sample with water, and analyzed the liquid sample for iron. As shown in Table 4, the iron concentration in the liquid was 82,400 μg/L, which exceeds iron's action level.

On April 14, 1998, Tenneco collected and analyzed a sample of the angel hair and resin dust accumulations that were observed at the site. As shown in Table 5, this material contained only 1,600 mg/kg iron. Another sample of this material was collected in December 1998, placed in demineralized water and allowed to sit for approximately one week. As shown in Table 4, iron was not detected in the liquid. Thus, it is unlikely that the angel hair and resin dust contributes to iron exceedances at the outfalls.

In December 1998, Tenneco collected a sample of the red color concentrate that is used as a dye and a sample of the RPP. These samples were analyzed for metals. As shown in Table 5, iron was detected in the RPP at a concentration of 26.6 mg/kg. Iron was also detected in the red color

concentrate at a concentration of 2,510 mg/kg. Although these materials, contain significant levels of iron, they are not believed to be a significant contributor to iron concentrations in the outfalls because the materials do not come in contact with water that flows to the outfalls.

On April 2, 1998, Tenneco collected samples from the fire system in Buildings 22, 21, 11, and 16. As shown in Table 4, the concentrations of iron in each of the samples was above the action level for iron. However, because the fire system is tested monthly for short periods, the fire system is not believed to be a significant contributor to iron exceedances.

In May and August 1998, Tenneco collected samples of the condensate from air conditioning units in Buildings 10A and extrusion cooling coils in Building 10. The samples were analyzed for metals and the results are summarized in Table 4. The concentration of iron in both samples was below the action level for iron.

Based on the results of the investigations described above, Tenneco has taken these five corrective measures to address the remaining potential sources of iron exceedances:

- *Modify Catch Basin at Outfall 008* - In May 1998, Tenneco reduced the depth of the existing catch basin at Outfall 008 to remove rusted steel supports.

- *Replace Grates* - During the period of April through June 1998, Tenneco replaced the rusted cast iron grates on the catch basins with aluminum grates.

- *Repaint Rusty Trash Compactor Box* - In June 1998, Tenneco repainted the trash compactor box at Building 11.

- *Remove Rusted Collection Tank* - In May 1998, Tenneco removed a rusted collection tank from Building 7N.

- *Repaint Silos* - In April 1999, Tenneco began a project to repaint rusted surfaces on the silos. This project was completed by July 1999.

- *Remove Red Residue from Roofs* - This corrective measure is described in Section 5.6.

Because some of these corrective measures have been completed recently, their effectiveness is not yet known.

5.8 LEAD

Based on the monitoring results for outfalls at the Macedon Facility, lead is a parameter of concern at Outfall 003. The concentration of lead in the discharge at Outfall 003 has exceeded the action level (40 μg/1 through September 1997 and 100 μg/L thereafter) on 10 occasions. Four of the exceedances were above the current action level of 100 μg/L. As described in Section 2.4.2, all the lead exceedances occurred in warm weather months.

The potential sources of copper that were identified and investigated by Tenneco included these six areas:

- *Red Residue on Building 16 Roof* - Tenneco observed an accumulation of a red powder residue on the roof of Building 16.

- *Paint on Silos* - Tenneco did not know whether the paint, some of which was peeling on the silos, contained lead.

- *Angel Hair and Resin Dust* - Tenneco found accumulations of angel hair and resin dust at various locations throughout the facility. They were was uncertain whether this material contained concentrations of lead that might contribute to exceedances at Tenneco's outfalls.

- *Dyes for Bags* - The dye pellets that Tenneco uses in their manufacturing process can contain metals.

- *Fire System* - The fire water supply system for the buildings is tested monthly and the water generated during the test is discharged through the facility's SPDES outfalls.

- *Condensate From Extrusion Cooling Coils* - The heat exchange coils in the cooling coils have soldered joints. Tenneco was unaware whether the condensate from the coils contained lead.

Tenneco collected a sample of the red powder residue on the roof of Building 16 on April 14, 1998, mixed the sample with water, and analyzed the liquid sample for lead. As shown in Table 4, the lead concentration in the liquid was 1,340 μg/L, which exceeds lead's action level. However, because the run-off from Building 16 would discharge through Outfall 008, this material is not believed to be a source for the lead exceedances at Outfall 003.

On May 19, 1998, Tenneco collected a composite sample of the paint on silos H-l, H-3, and H-4. The sample was analyzed for lead. As shown in Table 5, the concentration of lead in paint samples was 759 mg/kg.

On April 14, 1998, Tenneco collected and analyzed a sample of the angel hair and resin dust accumulations that were observed at the site. As shown in Table 5, this material contained only 4.98 mg/kg lead. Another sample of this material was collected in December 1998, placed in demineralized water and allowed to sit for approximately one week. As shown in Table 4, lead was not detected in the liquid. Thus, it is unlikely that the angel hair and resin dust contribute to lead exceedances at the outfalls.

In December 1998, Tenneco collected a sample of the red color concentrate that is used as a dye and a sample of the RPP. These samples were analyzed for metals. As shown in Table 5, lead was not detected in the RPP or the red color concentrate.

On April 2, 1998, Tenneco collected samples from the fire system in Buildings 22, 21, 11, and 16. As shown in Table 4, the concentrations of lead detected in these four samples were below the action level for lead.

In May and August 1998, Tenneco collected samples of the condensate from air conditioning units in Buildings 10A and extrusion cooling coils in Building 10. The samples were analyzed for metals and the results are summarized in Table 4. The lead concentration in the Building 10A condensate (85 μg/L) was below the action level. However, the lead concentration in the Building 10 condensate (574 μg/L) was above the action level. Although the flow of condensate from the extrusion cooling coils is small (approximately 0.5 gallons per day per unit), the timing of condensate generation coincides with the increased lead concentrations at Outfall 003.

Based on the results of the investigations described above, Tenneco has taken, or will take, these three corrective measures to address the remaining potential sources of lead exceedances:

- *Remove Red Residue from Roof* - This corrective measure is described in Section 5.6.

- *Remove Lead Paint From Silos* - In April 1999, Tenneco began a project to remove lead paint from the silos before the rusted surfaces on the silos were repainted. This project was completed by July 1999.

- *Route Condensate to Sanitary Sewer* - This corrective measure is described in Section 5.6.

Because the silo repainting has recently been completed and condensate has recently been routed to the sanitary sewer, the effectiveness of these corrective measures can not yet be assessed.

5.9 SURFACTANTS

Based on the results of the monitoring of the outfalls at the Macedon Facility, surfactants are not a parameter of concern. The concentrations of surfactants in Tenneco's outfalls seldom exceed 100 μg/L, which is 10 percent of the action level (1,000 μg/L) for surfactants.

5.10 ZINC

Based on the monitoring results for outfalls at the Macedon Facility, zinc is a parameter of minor concern for the current action level of 1,000 μg/L. There has only been one occasion when the zinc concentration at an outfall (1,330 μg/L at Outfall 002 in January 1997) exceeded the current action level. However, there were 22 occasions (including the January 1997 exceedance) when the action level that was effective prior to October 1997 (400 μg/L) was exceeded. The outfalls at which these 22 exceedances of the original zinc action level and the single exceedance of the current action level occurred are:

Outfall	Number of times zinc action level (400 μg/L) exceeded prior to October 1997	Number of times current zinc action level (1,000 μg/L) exceeded
002	10	1
003	7	0
004	3	0
008	2	0

The potential sources of zinc that were identified and investigated by Tenneco included these six areas:

- *Red Residue on Building 16 Roof* - Tenneco found an accumulation of a red powder residue on the roof of Building 16.

- *Angel Hair and Resin Dust* - Tenneco found accumulations of angel hair and resin dust at various locations throughout the facility. They were uncertain whether this material contained concentrations of zinc that might contribute to exceedances at Tenneco' s outfalls.

- *Dyes for Bags* - The dye pellets that Tenneco uses in their manufacturing process can contain metals.

- *Fire System* - The fire water supply system for the buildings is tested monthly and the water generated during the test is discharged through the facility's SPDES outfalls.

- *Condensate From Extrusion Cooling Coils* - Tenneco was unaware whether the condensate from the extrusion cooling coils contained zinc.

- *Roof Drains and Piping* - Tenneco was unaware of the amount of galvanized piping in the drain systems connected to the outfalls and whether zinc was a significant constituent in the roof run-off.

Tenneco collected a sample of the red residue on the roof of Building 16 on April 14, 1998, mixed the sample with water, and analyzed the liquid sample for metals. As shown in Table 4, the zinc concentration in the liquid was 29,600 μg/L, which exceeds zinc's action level.

On April 14, 1998, Tenneco collected and analyzed a sample of the angel hair and resin dust accumulations that were observed at the site. As shown in Table 5, this material contained only 21 mg/kg zinc. Another sample of this material was collected in December 1998, placed in demineralized water and allowed to sit for approximately one week. As shown in Table 4, zinc was not detected in the liquid. Thus, it is unlikely that the angel hair and resin dust contributes to zinc exceedances at the outfalls.

In December 1998, Tenneco collected a sample of the red color concentrate that is used as a dye and a sample of the RPP. These samples were analyzed for metals. As shown in Table 5, zinc was not detected in the RPP sample. Although zinc was detected in the red color concentrate at a concentration of 11.1 mg/kg, it is unlikely that the red color concentrate contributes to zinc exceedances at Tenneco's outfalls because this material does not come in contact with water that flows to the outfalls.

On April 2, 1998, Tenneco collected samples from the fire system in Buildings 22, 21, 11, and 16. As shown in Table 4, the concentrations of zinc in the four samples were below the action level.

In May and August 1998, Tenneco collected samples of the condensate from air conditioning units in Buildings 10A and extrusion cooling coils in Building 10. The samples were analyzed for metals and the results are summarized in Table 4. The zinc concentrations in both samples were below the action level.

On May 20, 1998, Tenneco collected a water sample from roof drain number 44 in Building 6. The sample was analyzed for metals and the analytical results are summarized in Table 4. The concentration of zinc detected in this sample (1,140 μg/L) was above the action level. In January 1999, Tenneco collected additional samples from a roof drain and catch basin in Building 21A. These two samples were analyzed for zinc. As shown in Table 4, the Building 21A roof drain sample had a zinc concentration of 1,090 μg/L and the zinc concentration in the catch basin sample

was 439 μg/L. While, the source of the zinc detected in the roof drain samples in not certain, Tenneco believes that it is likely caused by degradation of galvanized metal fixtures on roof mounted equipment, such as cooling towers and air handling units.

Tenneco also inspected the piping in and beneath the buildings that is connected to the outfalls to identify the portions of the system that were constructed of galvanized pipe. The locations, lengths, and sizes of galvanized piping that were identified in the roof drain are:

Galvanized Piping Connected to Outfalls		
Location	**Length (feet)**	**Diameter (inches)**
Buildings 1, 6 and 22	100	4
Buildings 1, 6 and 22	160	3

At this time, Tenneco does not believe that the galvanized piping in the drainage system is a significant contributor of zinc in the outfalls.

Based on the results of the investigations described above, Tenneco has taken, or will take, these two corrective measures to address the remaining potential sources of copper exceedances:

- *Remove Red Residue from Roof* - This corrective measure is described in Section 5.6.

- *Inspect and Repaint Galvanized Metal Structures on Roof* - Tenneco will periodically inspect and evaluate the need to repaint or repair galvanized metal structures on the roofs of the manufacturing buildings.

Although all of the galvanized structures have not yet been inspected and repainted (if needed), based on the recent zinc results for the outfalls, Tenneco anticipates that these measures will keep the zinc concentrations in the outfalls below the current action level.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions and recommendations resulting from Tenneco' s investigation to identify potential sources of elevated constituents in the SPDES outfalls at the Macedon facility.

6.1 CONCLUSIONS

Based on the results of the investigations described in this report, Tenneco and Dames & Moore draw the following conclusions:

- During the period from March 1996 through March 1999, there were exceedances of either discharge limitations or action levels for nine of the ten parameters listed in the current SPDES permit for Tenneco's Macedon facility.

- Tenneco identified 23 potential sources for these exceedances through review of MSDS, manufacturing processes, and conditions at the site. These potential sources are listed in Table 6.

- Tenneco eliminated four of the 23 potential sources through analysis of the samples or examination of site conditions.

- Tenneco has implemented and completed corrective measures to address 15 of the potential sources (see Table 6).

- Tenneco has identified corrective measures for the four remaining potential sources (see Table 6). Corrective measures have been implemented that address some of the issues at three of these four potential sources. Additional corrective measures are planned for fall 1999 that will address all of the outstanding issues at these four remaining potential sources.

6.2 RECOMMENDATIONS

Based on the result of this investigation and the conclusions that were derived from the results, Dames & Moore and Tenneco make these six recommendations:

- Surfactants should be removed from the list of parameters that are monitored at Tenneco's outfalls. Tenneco has never had an action level exceedance for surfactants. The concentration of surfactants in the outfalls is generally less than 100 μg/L, which is 10 percent of the action level (1,000 μg/L).

- Tenneco should continue the periodic inspection, repair, and housekeeping activities that have been initiated for these seven items:

  - Improved housekeeping near silos
  - Periodic cleaning of road along canal
  - Periodic inspection of tow motor aisle catch basin
  - Periodic inspection of the road along the canal for oil leaks and spills
  - Periodic inspection of the roof for oil leaks from equipment
  - Periodic inspection of the roof for powder or other residue and debris
  - Periodic inspection of galvanized surfaces on roof-mounted equipment

- Remove the catch basin connected to Outfall 001 and construct other improvements near the catch basin to direct run-off from Route 350 past Tenneco's property.

- Construct the proposed modifications to the dike that surrounds the silos.

- Construct the proposed modifications to the catch basin at Outfall 008.

- Enclose gaylord box below reclaim blender.

7.0 SCHEDULE

Tenneco has already implemented most of the corrective measures. These four remaining measures are scheduled for construction in Fall of 1999:

- In fall of 1999, Tenneco will remove the catch basin connected to Outfall 001 and construct other improvements near the catch basin to direct run-off from Route 350 past Tenneco's property.

- In fall of 1999, Tenneco will modify the dike around the silo area.

- In fall of 1999, Tenneco will construct a new catch basin at Outfall 008. The new catch basin will have a large removable screen to filter SS and TSS from the discharge.

- In fall of 1999, Tenneco will enclose the gaylord box below the reclaim blender.

As shown in Table 7, Tenneco expects all construction activities to be completed by November 1, 1999.

TABLE 1
SUMMARY OF DISCHARGE LIMITS, ACTION LEVELS, AND MONITORING FREQUENCY
ORIGINAL SPDES PERMIT

TENNECO PACKAGING
MACEDON, NEW YORK

Parameter	Units	Outfalls 001, 002, and 008			Outfall 003			Outfall 004			Outfall 005		
		Value	Type	Frequency	Value	Type	Frequency	Value	Type	Frequency	Value	Type	Frequency
pH	SU	6-9	D	Monthly	6-9	D	Weekly	6-9	D	Weekly	6-9	D	Weekly
Settleable Solids	mL/L	0.1	D	Monthly	0.1	D	Twice per Month	0.1	D	Twice per Month	0.1	D	Twice per Month
Oil and Grease	mg/L	15	D	Quarterly	15	D	Monthly	15	D	Monthly	15	D	Monthly
Total Suspended Solids	mg/L	50	D	Quarterly	40	D	Monthly	40	D	Monthly	40	D	Monthly
Total Dissolved Solids	mg/L	1,000	A	Quarterly	1,000	A	Monthly	1,000	A	Monthly	1,000	A	Monthly
Copper	µg/L	210	A	Quarterly	210	A	Monthly	210	A	Quarterly	210	A	Monthly
Iron	µg/L	1,200	A	Quarterly	1,200	A	Quarterly	1,200	A	Quarterly	1,200	A	Quarterly
Lead	µg/L	40	A	Monthly	40	A	Monthly	-	-	-	-	-	-
Surfacants	µg/L	1,000	A	Quarterly	1,000	A	Quarterly	1,000	A	Quarterly	-	-	-
Zinc	µg/L	400	A	Monthly	400	A	Monthly	400	A	Quarterly	400	A	Monthly

Notes:

D - Discharge Limit

A - Action Level

\- Parameter not monitored

Outfall 001 removed from permit in March 1999.

TABLE 2
SUMMARY OF DISCHARGE LIMITS, ACTION LEVELS, AND MONITORING FREQUENCY
CURRENT SPDES PERMIT

TENNECO PACKAGING
MACEDON, NEW YORK

Parameter	Units	Outfalls 001, 002, 003, and 008		
		Value	Type	Frequency
pH	SU	6-9	D	Twice per Month
Settleable Solids	mL/L	0.1	D	Twice per Month
Oil and Grease	mg/L	15	D	Quarterly
Total Suspended Solids	mg/L	50	A	Quarterly
Total Dissolved Solids	mg/L	1,000	A	Quarterly
Copper	µg/L	210	A	Quarterly
Iron	µg/L	2,000	A	Quarterly
Lead	µg/L	100	A	Quarterly
Surfacants	µg/L	1,000	A	Quarterly
Zinc	µg/L	1,000	A	Monthly

Notes:

D - Discharge Limit

A - Action Level

Outfall 001 removed from permit in March 1999.

TABLE 3
SUMMARY OF EXCEEDANCES
TENNECO PACKAGING
MACEDON, NEW YORK

	OUTFALL					
Date	001	002	003	004	005	008
3/1/96	TDS-2,990	Iron-4,090 TSS-116	-	Zinc-423	-	Iron-8,880 TSS-230
4/1/96	-	Zinc-561	Zinc-477	-	-	-
5/1/96	-	-	-	-	-	-
6/1/96	TDS-1,020	Zinc-546	Lead-56.9	-	-	-
7/1/96	-	-	Lead-70.4	-	-	-
8/1/96	-	Zinc-615	Lead-113	-	-	-
9/1/96	-	Zinc-412	Copper-380 Lead-228 Zinc-444	Zinc-459	-	-
10/1/96	-	-	-	-	-	-
11/1/96	-	-	Lead-41.7	-	-	-
12/1/96	-	Zinc-474	Zinc-476	-	-	-
1/1/97	-	Zinc-1,330	Zinc-815	-	-	SS-2.6
2/1/97	-	Zinc-421	-	-	-	Lead-42.7 Zinc-554
3/1/97	TDS-1,750	Iron-1,310	TSS-138	Zinc-484	-	Iron-18,300 TSS-357
4/1/97	-	-	-	-	-	-
5/1/97	-	Zinc-535	Zinc-410	-	-	SS-0.2 Zinc-437
6/1/97	-	Zinc-633	Lead-133 Zinc-550	-	-	Iron-7,310 TSS-289
7/1/97	-	Zinc-668	Lead-77.9 Zinc-714	-	-	-
8/1/97	-	-	Lead-59.1 TSS-41.6	-	-	-
9/1/97	-	-	Lead-40.3 O&G-16.4	-	-	Iron-2,040 TSS-52.7
10/1/97	-	-	-	-	-	-
11/1/97	-	-	-	-	-	-
12/1/97	O&G-16.1	-	-	-	-	Iron-2,000 TDS-1,800
1/1/98	-	-	-	-	-	-
2/1/98	-	-	-	-	-	SS-0.2
3/1/98	-	Iron-3,260 TSS-90	-	-	-	Iron-9,600 TDS-1,570 TSS-174
4/1/98	-	-	-	-	-	-
5/1/98	-	-	-	-	-	-
6/1/98	-	-	-	-	-	-
7/1/98	-	-	-	-	-	-
8/1/98	-	-	-	-	-	-
9/1/98	-	-	Copper-642 Lead-1,030	-	-	-

TABLE 3
SUMMARY OF EXCEEDANCES
TENNECO PACKAGING
MACEDON, NEW YORK

	OUTFALL					
Date	001	002	003	004	005	008
10/1/98	-	-	-	-	-	-
11/1/98	-	-	-	-	-	-
12/1/98	-	-	-	-	-	-
3/1/99	-	-	-	-	-	Iron-3,780 TSS-90
6/1/99	-	-	-	-	-	-

Units:

Copper-ug/L	Settleable Solids (SS)-mL/L
Iron-ug/L	Oil & Grease (O&G)-mg/L
Lead-ug/L	Total Suspended Solids (TSS)-mg/L
Zinc-ug/L	Total Dissolved Solids (TDS)-mg/L

TABLE 4

SUMMARY OF ANALYTICAL RESULTS FOR LIQUID SAMPLES
SPDES OUTFALL INVESTIGATION
TENNECO PACKAGING
MACEDON, NEW YORK

Sample Location or Material	Sample Date	Parameter										
		pH	Flow	Settleable Solids	Oil and Grease	Total Suspended Solids	Total Dissolved Solids	Copper	Iron	Lead	Surfactants	Zinc
		(SU)	(GPD)	(ml/L)	(mg/L)	(mg/L)	(mg/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Permit Limit	N/A	6.0 - 9.0	Monitor	0.10	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Permit Action Level	N/A	N/A	N/A	N/A	N/A	50	1,000	210	2,000	100	1,000	1,000
Bldg 16 roof - red residue	4/14/98	6.19	NS	NS	NS	NS	NS	*1,540*	*82,400*	*1,340*	NS	*29,600*
Bldg 11 fire system	4/20/98	7.67	NS	NS	NS	NS	NS	*337*	*5,680*	<5	NS	41
Bldg 16 fire system	4/20/98	7.92	NS	NS	NS	NS	NS	142	*19,000*	7	NS	22
Bldg 21 fire system	4/20/98	8.08	NS	NS	NS	NS	NS	< 20	*3,310*	<5	NS	25
Bldg 22 fire system	4/20/98	7.65	NS	NS	NS	NS	NS	37	*3,230*	<5	NS	55
Hey's road sanding material and demineralized water	5/19/98	6.88	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bldg 10A condensate	5/20/98	7.39	0.5	NS	NS	NS	NS	165	577	85	NS	246
Bldg 6 roof drain #44	5/20/98	7.40	360	<0.1	12	4.94	168	28	142	11	404	*1,140*
Tempco walkway material	5/29/98	*9.75*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Hey's road sanding material	7/21/98	8.97	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Macedon town salt material	7/21/98	7.10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Macedon town sanding material (50/50 : sand/salt mixture)	7/21/98	8.79	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Resin dust and angel hair from polyethylene beads	7/21/98	8.28	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tempco walkway material at main lobby	7/21/98	*9.90*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tempco walkway material at scale house	7/21/98	*9.63*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tempco walkway material at truck shop	7/21/98	*9.22*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bldg 10 condensate	8/21/98	6.83	138	NS	NS	NS	NS	*310*	390	*574*	NS	355

TABLE 4

SUMMARY OF ANALYTICAL RESULTS FOR LIQUID SAMPLES
SPDES OUTFALL INVESTIGATION
TENNECO PACKAGING
MACEDON, NEW YORK

Sample Location or Material	Sample Date	Parameter										
		pH	Flow	Settleable Solids	Oil and Grease	Total Suspended Solids	Total Dissolved Solids	Copper	Iron	Lead	Surfactants	Zinc
		(SU)	(GPD)	(ml/L)	(mg/L)	(mg/L)	(mg/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Permit Limit	N/A	6.0 - 9.0	Monitor	0.10	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Permit Action Level	N/A	N/A	N/A	N/A	N/A	50	1,000	210	2,000	100	1,000	1,000
Resin dust and angel hair from polyethylene beads	12/7/98	7.07	NS	NS	NS	NS	NS	ND	ND	ND	NS	ND
Catch basin Bldg 21A, (Groundwater)	1/18/99	6.67	NS	NS	NS	NS	NS	NS	NS	NS	NS	439
Catch basin Bldg 21A, (Roof Drain)	1/18/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	***1,090***
Outfall 002	1/18/99	6.27	41,143	NS	NS	NS	NS	NS	NS	NS	NS	319
Replacement salt for walkways	1/28/99	7.11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Frey, salt for back roadway	2/2/99	7.92	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bldg 6/21A Copper Drain	3/17/99	7.68	174	NS	NS	NS	NS	145	NS	*< 5*	NS	232

Notes:
N/A - Not applicable
NS - Sample not analyzed for this parameter
ND - Parameter not detected above method detection limits.
Analytical results that exceed Permit Limits or Action Levels are bold and italicized.

TABLE 5

SUMMARY OF ANALYTICAL RESULTS FOR SOLID SAMPLES
SPDES OUTFALL INVESTIGATION
TENNECO PACKAGING
MACEDON, NEW YORK

Sample Location or Material	Sample Date	Parameter				
		pH (SU)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
Resin dust and angel hair from polyethylene beads	4/14/98	6.46	8.64	1,600	4.98	21
Paint sample from Silo Farm, Silo H-1, H-3, H-4	5/19/98	NS	NS	NS	759	NS
Red re-pelletized pellets	12/7/98	NS	ND	27	ND	ND
Red color concentrate pellet	12/7/98	NS	4.84	2,510	ND	11.10

Notes:
NS - Sample not analyzed for this parameter
ND - Parameter not detected above method detection limits

TABLE 6
SUMMARY AND STATUS OF POTENTIAL SOURCES
SPDES OUTFALL INVESTIGATION

TENNECO PACKAGING
MACEDON, NEW YORK

Potential Source	Parameter(s) Of Concern	Outfall(s) Affected	Investigation Results	Corrective Measure	Status
Run-off from offsite roads	pH, Oil & Grease, TDS	001	Town of Macedon sanding material has high pH.	Outfall 001 has been removed from SPDES Permit. Remove catch basin and grade area to redirect run-off.	Completed March 24, 1999 Planned for Fall 1999
Road and walkway sanding material used at site	pH	003	Former walkway material had pH greater than 9.0.	Replace material	Completed
Housekeeping near silos	SS, TSS, TDS	008	Accumulations of angel hair and resin dust. Unenclosed gaylord box. Reclaim blender dust collector operation.	Improved housekeeping practices. Enclosed gaylord box. Daily inspection of dust collector.	Implemented Planned for Fall 1999 Implemented
Dike around silos	SS, TSS	008	Screens and gate in dike does not retain materials.	Modify gate and dike around silos.	Planned for Fall 1999
Roadway along canal	SS, TSS, TDS	002, 003, 008	Often covered with debris.	Decrease application of road sanding materials. Clean road periodically.	Implemented Implemented
Damaged road at Outfall 008	SS, TSS, TDS	008	Road is damaged.	Repaired road in June 1998.	Completed June 1998

TABLE 6
SUMMARY AND STATUS OF POTENTIAL SOURCES
SPDES OUTFALL INVESTIGATION

TENNECO PACKAGING
MACEDON, NEW YORK

Potential Source	Parameter(s) Of Concern	Outfall(s) Affected	Investigation Results	Corrective Measure	Status
Tow Motor Aisle Catch Basin	SS	008	Overflow from catch basin could affect Outfall 008.	Tenneco periodically inspects catch basin and cleans if needed.	Implemented
Existing Catch Basin at Outfall 008	SS, TSS, Iron	008	Run-off from large storms can bypass existing catch basin.	Depth of catch basin was reduced in order to remove rusted steel supports and to attempt to reduce SS and TSS levels. Tenneco plans to modify catch basin in 1999.	Completed May 1998 Planned for Fall 1999
Spills and leaks from vehicles on road along canal	Oil & Grease	002, 003, 008	Spills could reach outfalls.	Daily inspection of roadway along canal.	Implemented
Leaks from trash compactor at Building 11	Oil & Grease	003	Found oil leaks on compactor. Compactor overlies a catch basin.	Repaired leaks. Modified and capped catch basin.	Completed April 1998 Completed May 1999
Leaks from roof mounted equipment	Oil & Grease	002, 003	Leaks could reach outfalls.	Daily inspection of roofs.	Implemented

TABLE 6
SUMMARY AND STATUS OF POTENTIAL SOURCES
SPDES OUTFALL INVESTIGATION

TENNECO PACKAGING
MACEDON, NEW YORK

Potential Source	Parameter(s) Of Concern	Outfall(s) Affected	Investigation Results	Corrective Measure	Status
Red powder residue on Building 16 Roof	Copper, Iron, Lead, Zinc	008	Powder contained elevated levels of metals.	Powder residue was removed and disposed. Tenneco inspects roof daily and cleans if needed.	Completed Implemented
Angel hair and Resin Dust	Copper, Iron, Lead, Zinc	002, 003, 008	Analytical results indicate that material is not likely a source of metals.	None required for metals.	None for metals
Dyes for Bags and Repelletized Pellets	Copper, Iron, Lead, Zinc	002, 003	Repelletized pellets do not contain significant levels of metals. Dyes contain elevated levels of metals.	None required for metals. No action required because dye pellets do not come in contact with water that flows to outfalls.	None for metals None for metals
Water from Fire System Testing	Copper, Iron, Lead, Zinc	002, 003	All four test locations contained elevated iron concentrations. One test location contained an elevated copper concentration.	No action recommended because fire system tests are of short duration and not believed to be a significant contributor to outfalls.	None
Cooling Coil Condensate	Copper, Iron, Lead	002, 003	Copper and lead detected above SPDES permit action levels.	Condensate routed to sanitary sewer.	Completed July 1999

TABLE 6
SUMMARY AND STATUS OF POTENTIAL SOURCES
SPDES OUTFALL INVESTIGATION

TENNECO PACKAGING
MACEDON, NEW YORK

Potential Source	Parameter(s) Of Concern	Outfall(s) Affected	Investigation Results	Corrective Measure	Status
Roof Drains and Piping	Copper, Zinc	002, 003	Some copper and galvanized piping in buildings. Copper not detected above action level in piping. Zinc present in some piping above action level.	No action recommended for piping. Zinc levels attributed to galvanized equipment on roof (see page 5)	None
Rusty Grates on Catch Basins	Iron	002, 003	Cast iron grates on catch basins were rusty.	Installed 12 aluminum grates in catch basins.	Completed June 1998
Rusted Box and enclosure at Trash Compactor at Building 11	Iron	003	Believed to contribute to iron exceedence.	Repainted box. Replaced enclosure.	Completed June 1998 Completed
Rusted Collection Tank at Building 7N	Iron	003	Believed to contribute to iron exceedence.	Removed tank.	Completed May 1998
Rusted Surfaces on Silos	Iron	008	Believed to contribute to iron exceedence	Repainted rusted surfaces on silos.	Completed June 1999
Paint on Silos	Lead	008	Paint contained elevated levels of lead.	Tenneco removed paint prior to repainting rusted surfaces of silos.	Completed June 1999

TABLE 6
SUMMARY AND STATUS OF POTENTIAL SOURCES
SPDES OUTFALL INVESTIGATION

TENNECO PACKAGING
MACEDON, NEW YORK

Potential Source	Parameter(s) Of Concern	Outfall(s) Affected	Investigation Results	Corrective Measure	Status
Galvanized Surfaces on Roof Mounted Equipment	Zinc	002, 003	Elevated zinc levels detected in a roof drain sample attributed to degradation of galvanized surfaces on roof.	Inspect galvanized surfaces on roof annually and evaluate the need to repaint or repair degraded surfaces.	Implemented

TABLE 7
SCHEDULE

TENNECO PACKAGING
MACEDON, NEW YORK

Outfall Effected	Task	Begin Work	Complete Work By
001	Remove catch basin and grade area to redirect run-off	September 1999	November 1, 1999
008	Modify dike around silo area	September 1999	November 1, 1999
008	Construct new catch basin	September 1999	November 1, 1999
008	Enclose gaylord box under relaim blender	September 1999	November 1, 1999

0 2,000 4,000

GRAPHIC SCALE

N

CONTOUR INTERVAL = 10 FEET

REFERENCE:

7.5 MINUTE TOPOGRAPHIC MAP
MACEDON, N.Y., QUADRANGLE
1951 (PHOTO REVISED 1969)

85849-18

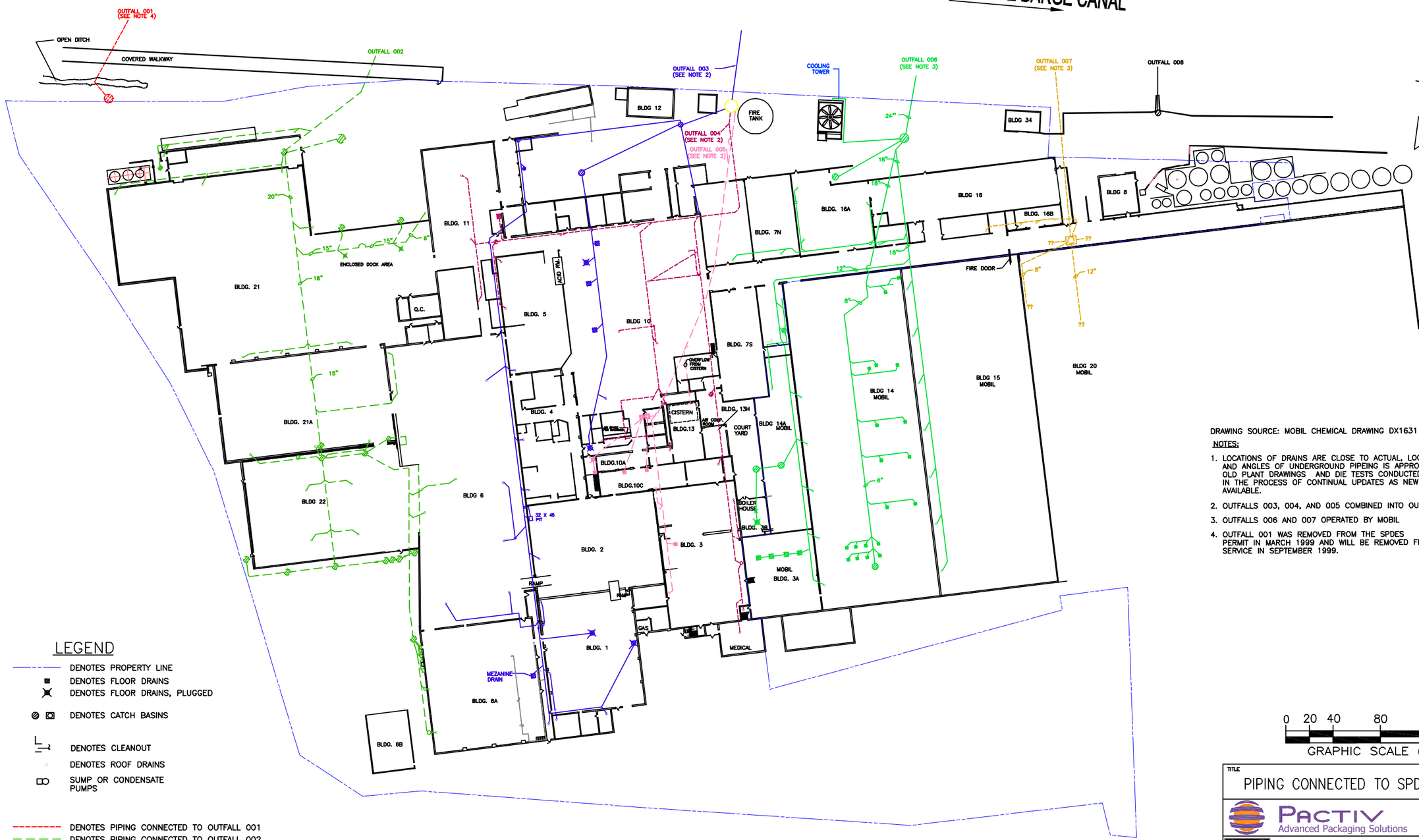
TITLE

SITE LOCATION

TENNECO PACKAGING
MACEDON, NEW YORK

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY
LATHAM, NEW YORK

SCALE	DWN. BY	JOB NO.
AS SHOWN	AEC	32324-155
DATE	APPR. BY	REC. NO.
5/28/99		1



DRAWING SOURCE: MOBIL CHEMICAL DRAWING DX1631 (SPCC DRAWING) 3/94

NOTES:

1. LOCATIONS OF DRAINS ARE CLOSE TO ACTUAL LOCATIONS, DIRECTIONS AND ANGLES OF UNDERGROUND PIPEING IS APPROXIMATE AS TAKEN FROM OLD PLANT DRAWINGS AND DIE TESTS CONDUCTED SINCE 1984 AND ARE IN THE PROCESS OF CONTINUAL UPDATES AS NEW INFORMATION IS MADE AVAILABLE.
2. OUTFALLS 003, 004, AND 005 COMBINED INTO OUTFALL 003 IN APRIL 1997
3. OUTFALLS 006 AND 007 OPERATED BY MOBIL
4. OUTFALL 001 WAS REMOVED FROM THE SPDES PERMIT IN MARCH 1999 AND WILL BE REMOVED FROM SERVICE IN SEPTEMBER 1999.

LEGEND

- DENOTES PROPERTY LINE
- DENOTES FLOOR DRAINS
- DENOTES FLOOR DRAINS, PLUGGED
- DENOTES CATCH BASINS
- DENOTES CLEANOUT
- DENOTES ROOF DRAINS
- SUMP OR CONDENSATE PUMPS

- DENOTES PIPING CONNECTED TO OUTFALL 001
- DENOTES PIPING CONNECTED TO OUTFALL 002
- DENOTES PIPING CONNECTED TO OUTFALL 003
- DENOTES PIPING CONNECTED TO OUTFALL 004
- DENOTES PIPING CONNECTED TO OUTFALL 005
- DENOTES PIPING CONNECTED TO OUTFALL 006
- DENOTES PIPING CONNECTED TO OUTFALL 007
- DENOTES PIPING CONNECTED TO OUTFALL 008

0 20 40 80 160

GRAPHIC SCALE (FEET)

TITLE

PIPING CONNECTED TO SPDES OUTFALLS

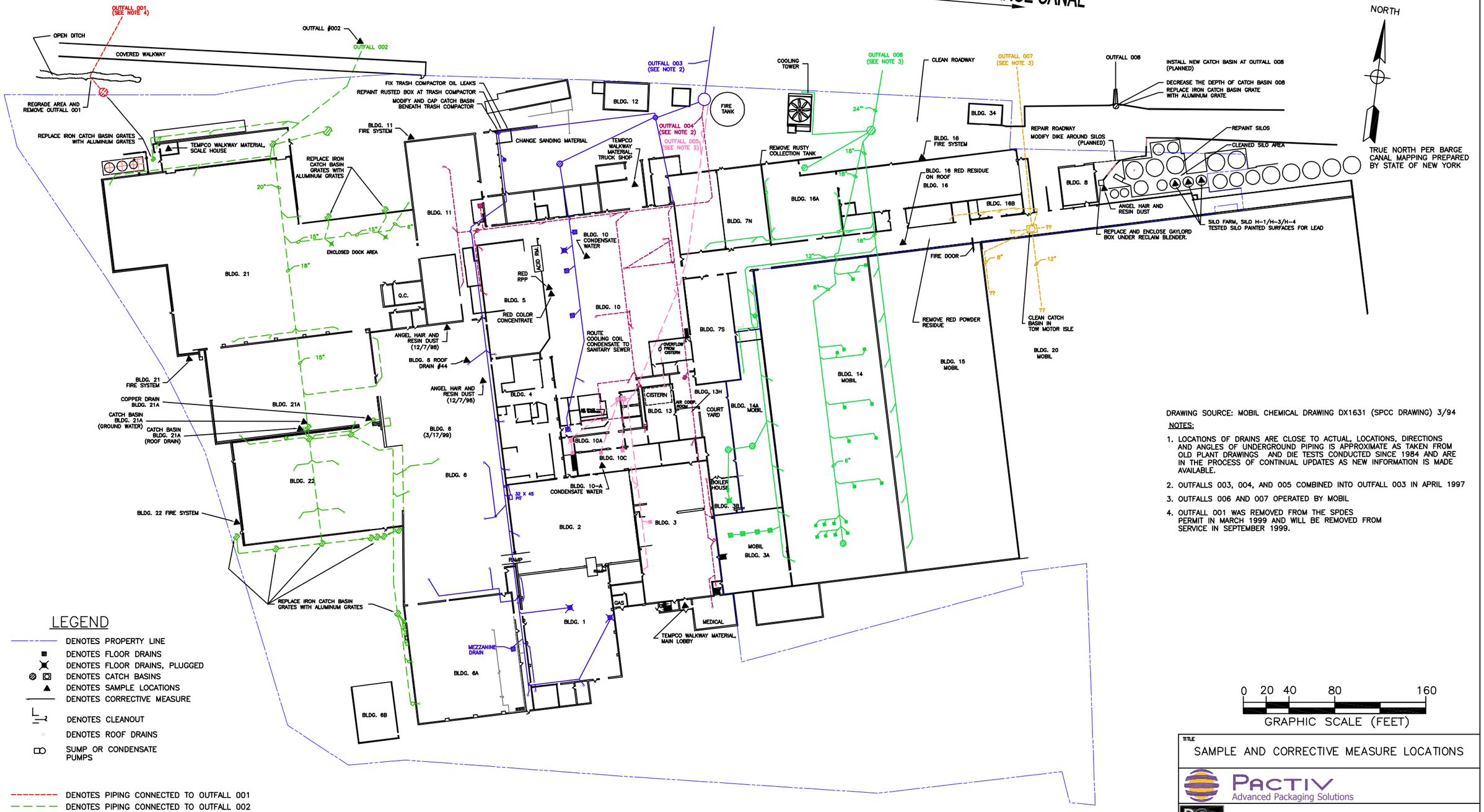
PACTIV Advanced Packaging Solutions

DCM GROUP

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY
LATHAM, NEW YORK

SCALE	DWN. BY	JOB NO.
1"=80'	RRC	32324-131
DATE	APPR. BY	FIG. NO.
12/20/99	EF	FIG_#

85040-06



LEGEND

- DENOTES PROPERTY LINE
- DENOTES FLOOR DRAINS
- DENOTES FLOOR DRAINS, PLUGGED
- DENOTES CATCH BASINS
- DENOTES SAMPLE LOCATIONS
- DENOTES CORRECTIVE MEASURE
- DENOTES CLEANOUT
- DENOTES ROOF DRAINS
- SUMP OR CONDENSATE PUMPS

- DENOTES PIPING CONNECTED TO OUTFALL 001
- DENOTES PIPING CONNECTED TO OUTFALL 002
- DENOTES PIPING CONNECTED TO OUTFALL 003
- DENOTES PIPING CONNECTED TO OUTFALL 004
- DENOTES PIPING CONNECTED TO OUTFALL 005
- DENOTES PIPING CONNECTED TO OUTFALL 006
- DENOTES PIPING CONNECTED TO OUTFALL 007
- DENOTES PIPING CONNECTED TO OUTFALL 008

DRAWING SOURCE: MOBIL CHEMICAL DRAWING DX1631 (SPCC DRAWING) 3/94

NOTES:

1. LOCATIONS OF DRAINS ARE CLOSE TO ACTUAL, LOCATIONS, DIRECTIONS AND ANGLES OF UNDERGROUND PIPING IS APPROXIMATE AS TAKEN FROM OLD PLANT DRAWINGS AND DIE TESTS CONDUCTED SINCE 1984 AND ARE IN THE PROCESS OF CONTINUAL UPDATES AS NEW INFORMATION IS MADE AVAILABLE.
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0 20 40 80 160

GRAPHIC SCALE (FEET)

TITLE: SAMPLE AND CORRECTIVE MEASURE LOCATIONS

PACTIV Advanced Packaging Solutions

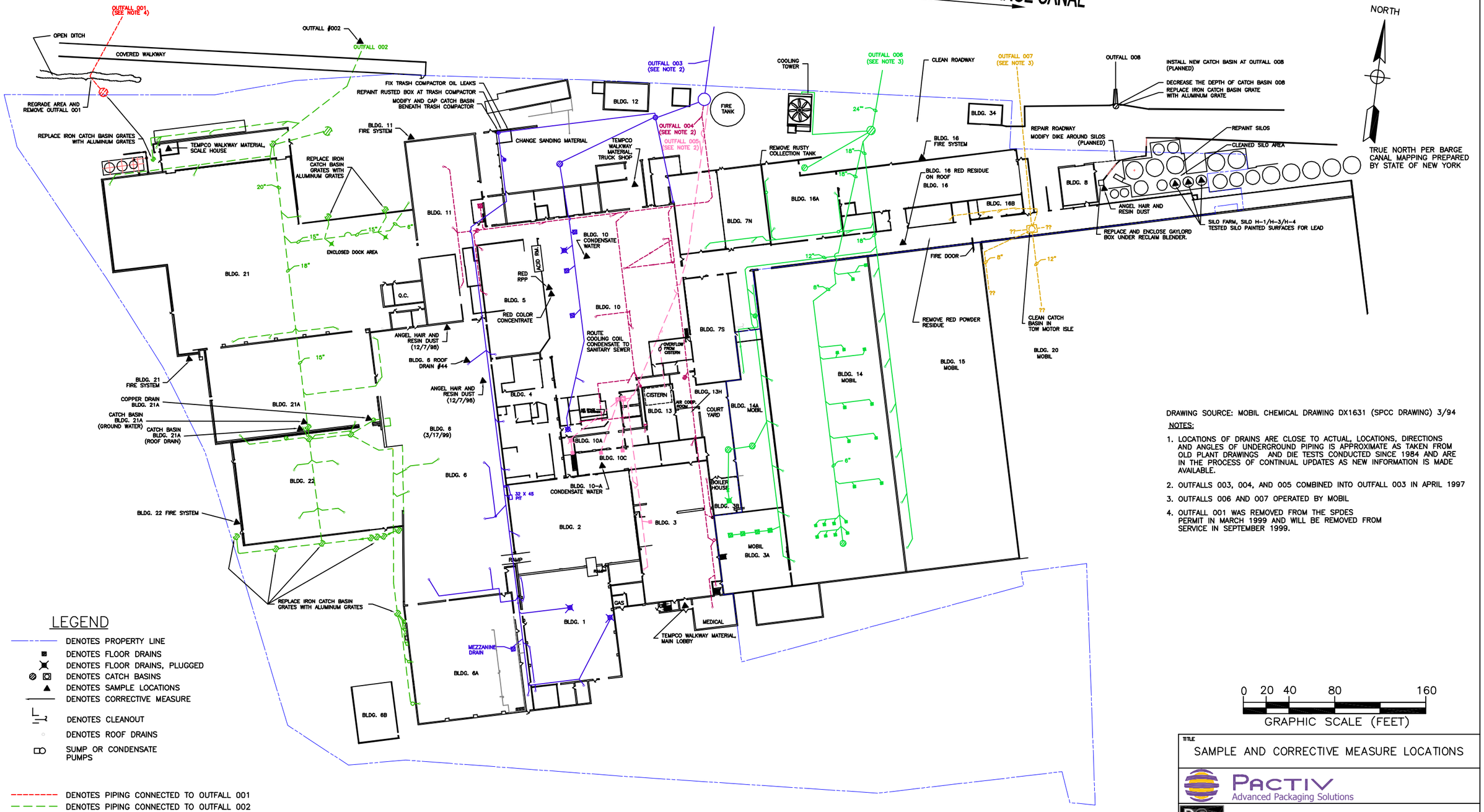
DAMES & MOORE
A DAMES & MOORE GROUP COMPANY
LATHAM, NEW YORK

SCALE	DWN. BY	JOB NO.
AS SHOWN	RRC	32324-155
DATE	APPR. BY	FIG. NO.
12/20/99	EF	3

85040-06

TABLE A-1
SUMMARY OF pH RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in SU)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	7.69	8.29	7.84	8.03	7.64	8
3/15/96	7.85	8.44	8.23	8.44	8.23	8.5
4/1/96	7.47	7.85	6.53	6.94	6.58	7.72
4/15/96	7.79	7.88	8.11	7.81	7.89	8.32
5/1/96	6.99	7.2	6.81	7.69	7.44	8.2
5/15/96	7.5	7.78	8.31	-	7.88	-
6/1/96	7.53	7.5	7.26	7.22	7.67	7.93
6/15/96	-	-	7.5	8.14	7.92	-
7/1/96	7.18	7.26	7.24	7.41	7.45	7.94
7/15/96	7.83	7.6	7.46	7.47	8.08	-
8/1/96	7.7	7.29	7.25	-	7.88	-
8/15/96	7.88	7.53	8.24	-	8.21	-
9/1/96	7.6	6.95	7.01	6.82	7.14	6.82
9/15/96	-	-	7.66	7.91	7.81	-
10/1/96	7.5	7.47	6.98	7.01	7.2	7.64
10/15/96	8.2	7.66	8.3	7.94	8.33	-
11/1/96	7.76	7.62	7.18	7.32	7.67	7.89
11/15/96	9.6	-	8.94	8.84	8.2	-
12/1/96	7.64	7.42	7	6.7	6.85	7.13
12/15/96	8.12	7.94	8.25	8.23	8.28	8.34
1/1/97	7.77	6.67	7.14	7.44	7.18	7.3
1/15/97	7.82	7.58	8	8.68	7.75	8.4
2/1/97	7.53	7.84	7.48	8.05	7.76	8.04
2/15/97	8.47	8.61	8.85	8.73	8.85	8.34
3/1/97	7.87	7.02	7.75	7.8	7.7	8.04
3/15/97	8.4	-	8.58	8.62	8.42	-
4/1/97	7.11	7.12	7.74	-	-	7.9
4/15/97	8.3	8.42	7.94	-	-	8.02
5/1/97	7.01	7.55	7.13	-	-	7.73
5/15/97	8.13	8.63	8.61	-	-	8.9
6/1/97	7.58	7.15	6.92	-	-	7.13
6/15/97	8.2	8.64	8.48	-	-	8.07
7/1/97	7.83	8.21	6.4	-	-	7.96
7/15/97	-	-	7.65	-	-	-
8/1/97	8	8.3	6.88	-	-	8.05
8/15/97	-	8.34	8.37	-	-	8.3
9/1/97	7.69	8.42	7.26	-	-	7.91
9/15/97	8.54	8.59	8.27	-	-	8.47
10/1/97	7.26	7.32	6.34	-	-	7.54
10/15/97	7.77	7.67	7.39	-	-	7.97
11/1/97	7.43	7.39	7.03	-	-	7.41
11/15/97	8.21	8.31	8.65	-	-	7.78
12/1/97	7.6	6.61	7.47	-	-	7.53



LEGEND

- DENOTES PROPERTY LINE
- DENOTES FLOOR DRAINS
- DENOTES FLOOR DRAINS, PLUGGED
- DENOTES CATCH BASINS
- DENOTES SAMPLE LOCATIONS
- DENOTES CORRECTIVE MEASURE
- DENOTES CLEANOUT
- DENOTES ROOF DRAINS
- SUMP OR CONDENSATE PUMPS

- DENOTES PIPING CONNECTED TO OUTFALL 001
- DENOTES PIPING CONNECTED TO OUTFALL 002
- DENOTES PIPING CONNECTED TO OUTFALL 003
- DENOTES PIPING CONNECTED TO OUTFALL 004
- DENOTES PIPING CONNECTED TO OUTFALL 005
- DENOTES PIPING CONNECTED TO OUTFALL 006
- DENOTES PIPING CONNECTED TO OUTFALL 007
- DENOTES PIPING CONNECTED TO OUTFALL 008

DRAWING SOURCE: MOBIL CHEMICAL DRAWING DX1631 (SPCC DRAWING) 3/94

NOTES:

1. LOCATIONS OF DRAINS ARE CLOSE TO ACTUAL, LOCATIONS, DIRECTIONS AND ANGLES OF UNDERGROUND PIPING IS APPROXIMATE AS TAKEN FROM OLD PLANT DRAWINGS AND DIE TESTS CONDUCTED SINCE 1984 AND ARE IN THE PROCESS OF CONTINUAL UPDATES AS NEW INFORMATION IS MADE AVAILABLE.
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0 20 40 80 160

GRAPHIC SCALE (FEET)

TITLE: SAMPLE AND CORRECTIVE MEASURE LOCATIONS

PACTIV Advanced Packaging Solutions

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY
LATHAM, NEW YORK

SCALE	DWN. BY	JOB NO.
AS SHOWN	RRC	32324-155
DATE	APPR. BY	FIG. NO.
12/20/99	EF	3

85040-06

TABLE A-1
SUMMARY OF pH RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in SU)

	OUTFALL					
DATE	001	002	003	004	005	008
12/15/97	7.88	8.19	7.53	-	-	8.2
1/1/98	7.8	7.16	7.38	-	-	7.69
1/15/98	7.89	8.15	8.09	-	-	8.64
2/1/98	8.02	7.65	7.93	-	-	8.13
2/15/98	8.89	7.84	9.07	-	-	8.46
3/1/98	7.47	6.67	7.62	-	-	8.4
3/15/98	7.85	7.74	8.71	-	-	8.8
4/1/98	7.85	7.95	6.85	-	-	7.86
4/15/98	7.85	8.18	8.27	-	-	8.5
5/1/98	7.62	7.56	7.37	-	-	8.19
5/15/98	8.2	7.94	8	-	-	8.72
6/1/98	7.81	6.99	6.67	-	-	7.93
6/15/98	7.9	7.48	7.4	-	-	8.4
7/1/98	7.45	7.38	6.9	-	-	7.95
7/15/98	7.8	7.67	7.39	-	-	8.01
8/1/98	7.69	6.8	6.53	-	-	7.92
8/15/98	7.86	7.27	6.92	-	-	7.94
9/1/98	7.61	6.76	6.95	-	-	7.7
9/15/98	7.96	6.76	7.45	-	-	8.13
10/1/98	7.75	8	6.88	-	-	7.36
10/15/98	7.82	8.18	7.11	-	-	7.46
11/1/98	-	7.26	7.49	-	-	7.79
11/15/98	-	7.26	7.49	-	-	7.79
12/1/98	7.66	7.55	7.44	-	-	7.4
12/15/98	7.88	7.55	7.44	-	-	7.61
1/1/99	6.62	6.26	6.27	-	-	6.51
1/15/99	6.9	6.56	6.75	-	-	6.96
2/1/99	7.5	8.1	7.54	-	-	8
2/15/99	7.92	8.16	7.54	-	-	8
3/1/99	7.3	7.59	7.4	-	-	7.29
3/15/99	7.53	8.04	7.97	-	-	7.71
4/1/99	-	7.24	7.44	-	-	7.56
4/15/99	-	7.61	7.84	-	-	7.94
5/1/99	-	7.28	6.92	-	-	7.17
5/15/99	-	7.76	7.15	-	-	8.05
6/1/99	-	6.96	6.79	-	-	7.11
6/15/99	-	7.38	7.11	-	-	7.56

Notes:
SPDES Limits are between 6 and 9 SU effective 3/1/96 to present.

TABLE A-2
SUMMARY OF SETTLEABLE SOLIDS RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in mL/L)

	OUTFALL					
DATE	001	002	003	004	005	008
3/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8/1/96	<0.1	<0.1	<0.1	-	<0.1	-
9/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
11/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
12/1/96	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1/1/97	<0.1	<0.1	<0.1	<0.1	<0.1	2.6
2/1/97	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3/1/97	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4/1/97	<0.1	<0.1	<0.1	-	-	<0.1
5/1/97	<0.1	<0.1	<0.1	-	-	0.2
6/1/97	<0.1	<0.1	<0.1	-	-	<0.1
7/1/97	<0.1	<0.1	<0.1	-	-	<0.1
8/1/97	<0.1	<0.1	<0.1	-	-	<0.1
9/1/97	<0.1	<0.1	<0.1	-	-	<0.1
10/1/97	<0.1	<0.1	<0.1	-	-	<0.1
11/1/97	<0.1	<0.1	<0.1	-	-	<0.1
12/1/97	<0.1	<0.1	<0.1	-	-	<0.1
1/1/98	<0.1	<0.1	<0.1	-	-	<0.1
2/1/98	<0.1	<0.1	<0.1	-	-	0.2
3/1/98	<0.1	<0.1	<0.1	-	-	<0.1
4/1/98	<0.1	<0.1	<0.1	-	-	<0.1
5/1/98	<0.1	<0.1	<0.1	-	-	<0.1
6/1/98	<0.1	<0.1	<0.1	-	-	<0.1
7/1/98	<0.1	<0.1	<0.1	-	-	<0.1
8/1/98	<0.1	<0.1	<0.1	-	-	<0.1
9/1/98	<0.1	<0.1	<0.1	-	-	<0.1
10/1/98	<0.1	<0.1	<0.1	-	-	<0.1
11/1/98	-	<0.1	<0.1	-	-	<0.1
12/1/98	<0.1	<0.1	<0.1	-	-	<0.1
1/1/99	<0.1	<0.1	<0.1	-	-	<0.1
2/1/99	<0.1	<0.1	<0.1	-	-	<0.1
3/1/99	<0.1	<0.1	<0.1	-	-	<0.1
4/1/99	-	<0.1	<0.1	-	-	<0.1
5/1/99	-	<0.1	<0.1	-	-	<0.1
6/1/99	-	<0.1	<0.1	-	-	<0.1

Notes:
SPDES Limit of 0.1 mL/L effective 3/1/96 to present.
Detection Limit is 0.1 mL/L.

TABLE A-3
SUMMARY OF OIL & GREASE RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in mg/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	<5	11	<5	<5	<5	10.7
4/1/96	-	-	<5	<5	<5	-
5/1/96	-	-	<5	-	<5	-
6/1/96	<5	<5	<5	<5	<5	<5
7/1/96	-	-	<5	<5	<5	-
8/1/96	-	-	<5	-	<5	-
9/1/96	6.33	<5	<5	<5	<5	-
10/1/96	-	-	<5	<5	<5	-
11/1/96	-	-	<5	9	10.5	-
12/1/96	<5	<5	<5	<5	<5	<5
1/1/97	-	-	<5	<5	<5	-
2/1/97	-	-	<5	<5	<5	-
3/1/97	<5	<5	5.2	<5	<5	<5
4/1/97	-	-	<5	-	-	-
5/1/97	-	-	<5	-	-	-
6/1/97	<5	<5	<5	-	-	<5
7/1/97	-	-	<5	-	-	-
8/1/97	-	-	7.14	-	-	-
9/1/97	11.1	8.25	16.4	-	-	13.2
12/1/97	16.1	9.89	<5	-	-	<5
3/1/98	<5	7.63	<5	-	-	5.39
6/1/98	<5	5.03	5.6	-	-	5.36
9/1/98	<5	<5	<5	-	-	<5
12/1/98	<5	<5	<5	-	-	<5
3/1/99	<5	<5	<5	-	-	<5
6/1/99	-	<5	<5	-	-	<5

Notes:
SPDES Limit of 15 mg/L effective 3/1/96 to present.
Detection Limit is 5 mg/L.

TABLE A-4
SUMMARY OF TOTAL SUSPENDED SOLIDS RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in mg/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	18.9	116	<1	1.8	<1	230
4/1/96	-	-	1	1.8	<1	-
5/1/96	-	-	1.1	-	<1	-
6/1/96	<1	1.3	31.1	1.5	2.1	11.2
7/1/96	-	-	38.6	14	<1	-
8/1/96	-	-	1.4	-	1.6	-
9/1/96	4.2	2.2	2.7	2.5	6.9	-
10/1/96	-	-	1.3	<1	<1	-
11/1/96	-	-	3.5	<1	<1	-
12/1/96	1.3	<1	1.6	6.3	<1	<1
1/1/97	-	-	1.7	4.3	15.1	-
2/1/97	-	-	3.2	<1	5.2	-
3/1/97	4	27.8	138	<1	6.1	357
4/1/97	-	-	1.6	-	-	-
5/1/97	-	-	9.11	-	-	-
6/1/97	24.1	7.6	3.08	-	-	289
7/1/97	-	-	1.89	-	-	-
8/1/97	-	-	41.6	-	-	-
9/1/97	11.8	22.8	8.4	-	-	52.7
12/1/97	<1	<1	2.17	-	-	39.2
3/1/98	1.7	90	4.7	-	-	174
6/1/98	5.6	5.5	39.1	-	-	30.5
9/1/98	24.8	6.4	6.53	-	-	23.8
12/1/98	3	14.2	10.4	-	-	2.2
3/1/99	<1	3.3	42.1	-	-	90
6/1/99	-	1.2	4.5	-	-	22.3

Notes:
SPDES Limit of 40 mg/L effective 3/1/96 through 9/30/97 for Outfalls 003, 004, and 005.
SPDES Limit of 50 mg/L effective 3/1/96 through 9/30/97 for Outfalls 001, 002, and 008.
SPDES Limit of 50 mg/L effective 10/1/97 to present for all Outfalls.
Detection Limit is 1 mg/L.

TABLE A-5
SUMMARY OF TOTAL DISSOLVED SOLIDS RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in mg/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	2,990	915	240	44	87	943
4/1/96	-	-	369	133	148	-
5/1/96	-	-	634	-	74	-
6/1/96	1,020	92	473	58	1,150	43
7/1/96	-	-	664	815	375	-
8/1/96	-	-	798	-	458	-
9/1/96	469	64	481	18	50	-
10/1/96	-	-	971	27	265	-
11/1/96	-	-	51	75	133	-
12/1/96	790	981	22	84	68	67
1/1/97	-	-	600	185	1,420	-
2/1/97	-	-	80	302	391	-
3/1/97	1,750	138	225	41	1,810	554
4/1/97	-	-	38	-	-	-
5/1/97	-	-	80.2	-	-	-
6/1/97	460	43.6	84	-	-	88
7/1/97	-	-	56	-	-	-
8/1/97	-	-	53	-	-	-
9/1/97	318	27	67	-	-	73
12/1/97	729	442	37	-	-	1,800
3/1/98	940	264	112	-	-	1,570
6/1/98	760	51	140	-	-	76
9/1/98	96	126	37	-	-	51
12/1/98	602	53	35	-	-	84
3/1/99	915	486	104	-	-	181
6/1/99	-	26	42	-	-	50

Notes:
SPDES Limit of 1,000 mg/L effective 3/1/96 to present for
Outfalls 001, 002, 003, and 008 only.

TABLE A-6
SUMMARY OF COPPER RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in ug/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	<20	65.4	33.5	<20	20.1	41.9
4/1/96	-	-	63.8	-	33.3	-
5/1/96	-	-	78.5	-	<20	-
6/1/96	<20	84.2	106	36	47.6	<20
7/1/96	-	-	167	-	<20	-
8/1/96	-	-	203	-	<20	-
9/1/96	20	116	380	<20	20	135
10/1/96	-	-	118	-	<20	-
11/1/96	-	-	54.1	-	24.7	-
12/1/96	<20	29.4	36.5	26.4	<20	<20
1/1/97	-	-	101	-	<20	-
2/1/97	-	-	<20	-	<20	-
3/1/97	<20	54.9	26.5	<20	<20	59
4/1/97	-	-	21.6	-	-	-
5/1/97	-	-	27.7	-	-	-
6/1/97	<20	49.7	179	-	-	43.6
7/1/97	-	-	129	-	-	-
8/1/97	-	-	75.5	-	-	-
9/1/97	28.5	30.7	96	-	-	31.8
12/1/97	-	35.2	60	-	-	28.5
3/1/98	-	67.1	27.1	-	-	41.4
6/1/98	<20	76.3	54.6	-	-	20
9/1/98	21.7	203	642	-	-	25.4
12/1/98	-	50	49.9	-	-	<20
3/1/99	<20	115	45.2	-	-	58.7
6/1/99	-	72	47.8	-	-	21.5

Notes:
SPDES Action Level of 210 ug/L effective for the period 3/1/96 to the present.
Detection Limit is 20 ug/L.

TABLE A-7
SUMMARY OF IRON RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in ug/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	1,110	4,090	838	226	252	8,880
6/1/96	<100	155	336	364	<100	256
9/1/96	331	166	594	198	164	302
12/1/96	<100	284	<100	125	128	<100
3/1/97	228	1,310	220	176	104	18,300
6/1/97	1,110	274	342	-	-	7,310
9/1/97	426	510	1,180	-	-	2,040
12/1/97	<100	161	349	-	-	2,000
3/1/98	<100	3,260	180	-	-	9,600
6/1/98	175	240	1,390	-	-	1,370
9/1/98	1,060	301	1,580	-	-	1,060
12/1/98	242	579	528	-	-	258
3/1/99	<100	270	1,490	-	-	3,780
6/1/99	-	217	243	-	-	868

Notes:
SPDES Action Level of 1,200 ug/L effective for the period 3/1/96 thru 9/30/97, and 2,000 ug/L effective for the period 10/1/97 to present.
Detection Limit is 100 ug/L.

TABLE A-8
SUMMARY OF LEAD RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in ug/L)

	OUTFALL			
DATE	**001**	**002**	**003**	**008**
3/1/96	<5	5.7	7.4	35.1
4/1/96	<5	<5	13	<5
5/1/96	<5	<5	6.4	<5
6/1/96	<5	<5	56.9	21.7
7/1/96	<5	<5	70.4	7.5
8/1/96	<5	<5	113	-
9/1/96	<5	<5	228	6.7
11/1/96	<5	8	41.7	7.6
11/1/96	<5	<5	18.9	<5
12/1/96	<5	<5	10.5	<5
1/1/97	<5	5.4	39	7.9
2/1/97	<5	5.6	10.5	42.7
3/1/97	<5	9.7	18.2	16.7
4/1/97	<5	<5	<5	18
5/1/97	7.8	<5	12.8	33
6/1/97	<5	<5	133	<5
7/1/97	<5	<5	77.9	7
8/1/97	<5	<5	59.1	10.8
9/1/97	<5	<5	40.3	<5
12/1/97	<5	<5	31	11
3/1/98	<5	10.6	5.5	21.3
6/1/98	<5	<5	28	7.7
9/1/98	13.7	<5	1,030	9.99
12/1/98	<5	<5	71.2	<5
3/1/99	<5	<5	27.1	15.8
6/1/99	-	<5	81	5.34

Notes:
SPDES Action Level of 40 ug/L effective 3/1/96 thru 9/30/97, and 100 ug/L effective 10/1/97 to present.
Detection Limit is 5 ug/L.

TABLE A-9
SUMMARY OF SURFACTANT RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in ug/L)

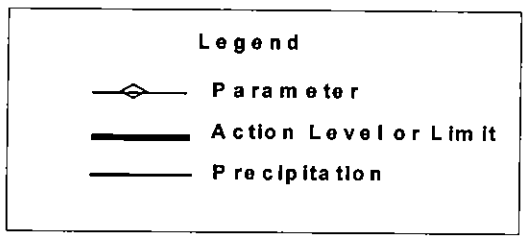
	OUTFALL				
DATE	**001**	**002**	**003**	**004**	**008**
3/1/96	145	131	10	112	148
6/1/96	27.6	104	103	66.3	53
9/1/96	78.1	108	43.5	-	-
12/1/96	30.4	31.1	83.8	230	51
3/1/97	37.7	47.3	46.4	40.9	25.3
6/1/97	48.3	36.3	55.8	-	85.3
9/1/97	84.6	46.8	68	-	74.4
12/1/97	10	26.8	10	-	42.5
3/1/98	21	78	53.2	-	36
6/1/98	28.3	124	66.1	-	141
9/1/98	98.1	255	59	-	77.6
12/1/98	71	53.2	92.3	-	96.8
3/1/99	38	189	227	-	143
6/1/99	-	73.1	87.2	-	34

Notes:
SPDES Action Level of 1,000 ug/L effective 3/1/96 to present.
Detection Limit is 20 ug/L.

TABLE A-10
SUMMARY OF ZINC RESULTS
TENNECO PACKAGING
MACEDON, NEW YORK
(all results in mg/L)

	OUTFALL					
DATE	**001**	**002**	**003**	**004**	**005**	**008**
3/1/96	40.3	398	256	423	87	378
4/1/96	26.2	561	477	-	219	222
5/1/96	39.5	189	276	-	78	289
6/1/96	23.5	546	395	304	162	363
7/1/96	15.7	58.2	207	-	37.2	375
8/1/96	38.7	615	238	-	63.5	-
9/1/96	16.9	412	444	459	70.6	355
10/1/96	24.2	266	271	-	50.3	245
11/1/96	23.6	86.8	290	-	164	383
12/1/96	30.6	474	476	191	105	336
1/1/97	13.2	1,330	815	-	238	111
2/1/97	28.9	421	271	-	100	554
3/1/97	16	396	291	484	96	193
4/1/97	29.1	372	258	-	-	170
5/1/97	44.5	535	410	-	-	437
6/1/97	39.6	633	550	-	-	353
7/1/97	23.4	668	714	-	-	337
8/1/97	69.5	296	387	-	-	379
9/1/97	20	214	362	-	-	203
12/1/97	26.7	199	264	-	-	180
3/1/98	<10	532	455	-	-	283
6/1/98	23.7	271	241	-	-	106
9/1/98	45.5	718	499	-	-	197
12/1/98	24	327	476	-	-	314
3/1/99	28.3	716	778	-	-	323
6/1/99	-	412	311	-	-	228

Notes:
SPDES Action Level of 400 ug/L effective for the period 3/1/96 thru 9/30/97,
and 1,000 ug/L effective for the period 10/1/97 to present.
Detection Limit is 10 ug/L.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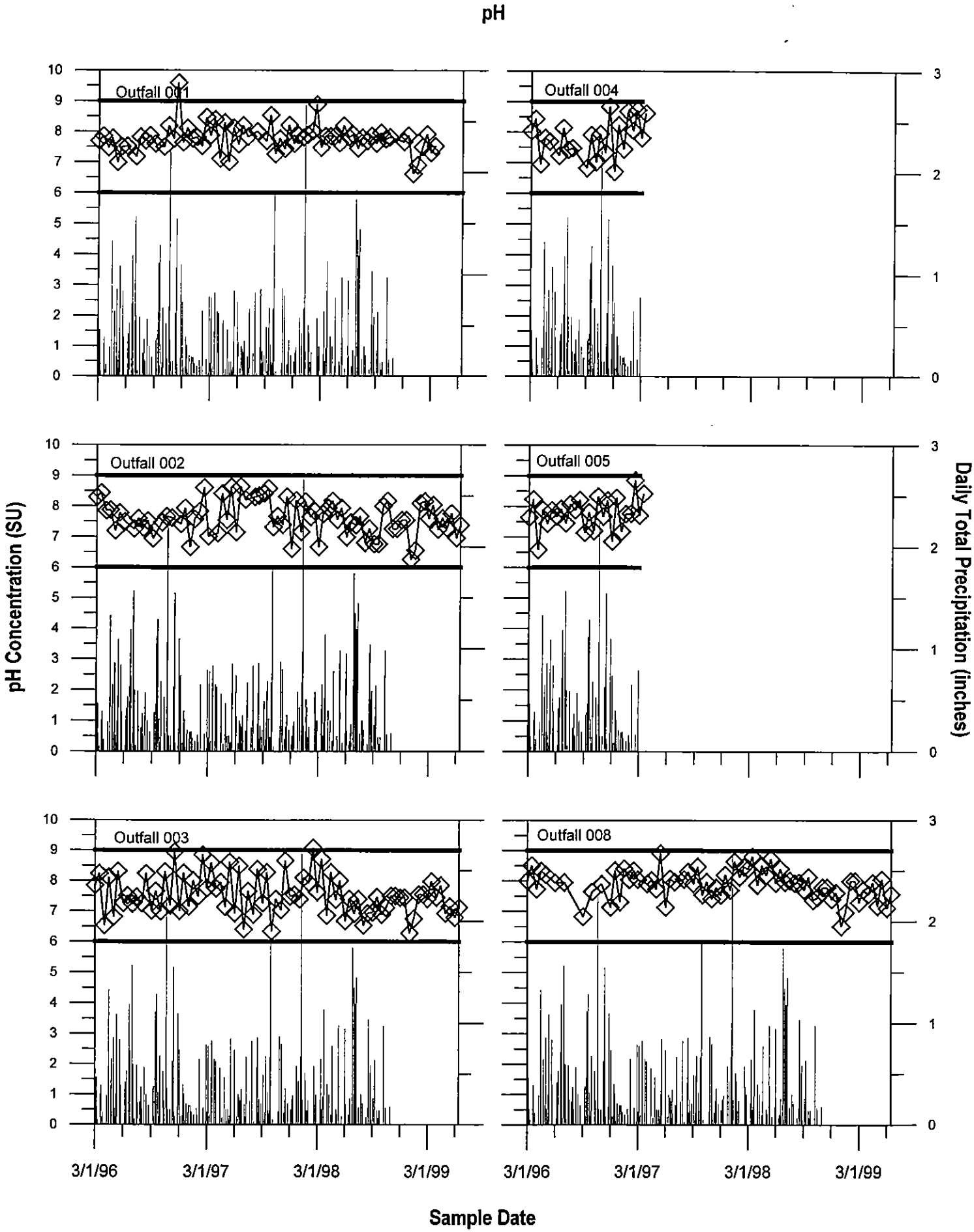
Parameter
Action Level or Limit
Precipitation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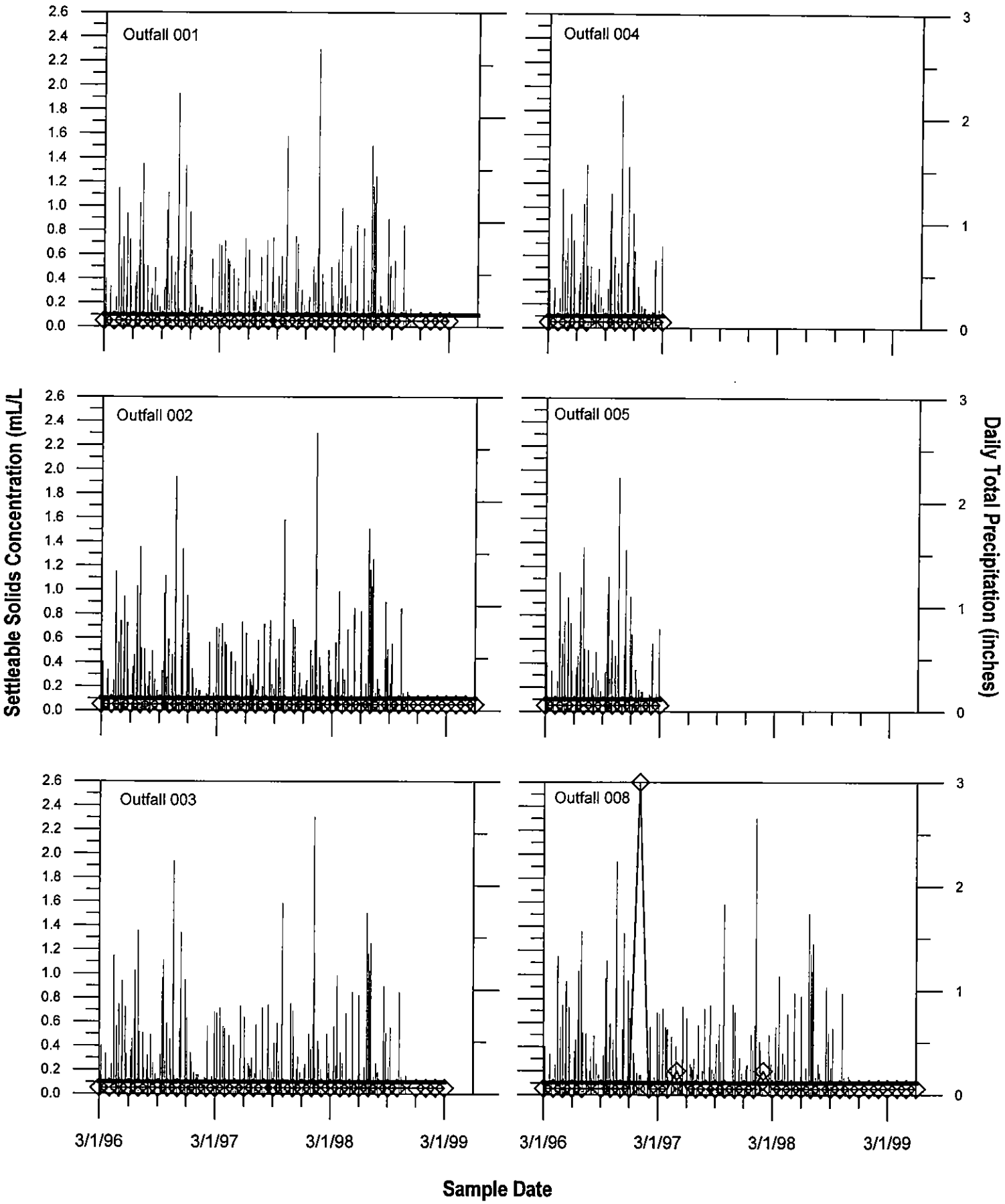
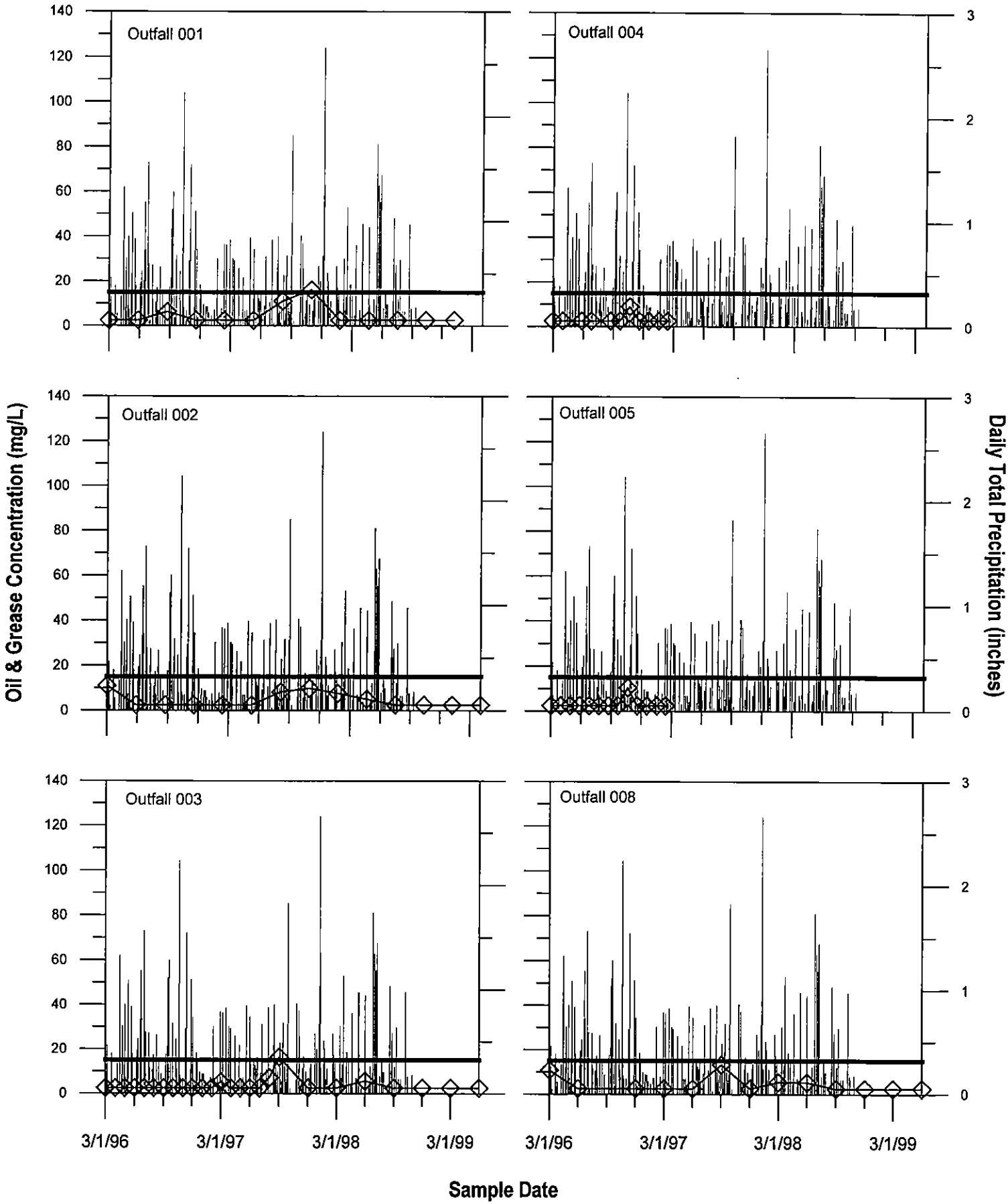
Outfall 001
Outfall 004
Outfall 002
Outfall 005
Outfall 003
Outfall 008
pH Concentration (SU)
Daily Total Precipitation (inches)
3/1/96
3/1/97
3/1/98
3/1/99
Sample Date

SETTLEABLE SOLIDS



OIL AND GREASE



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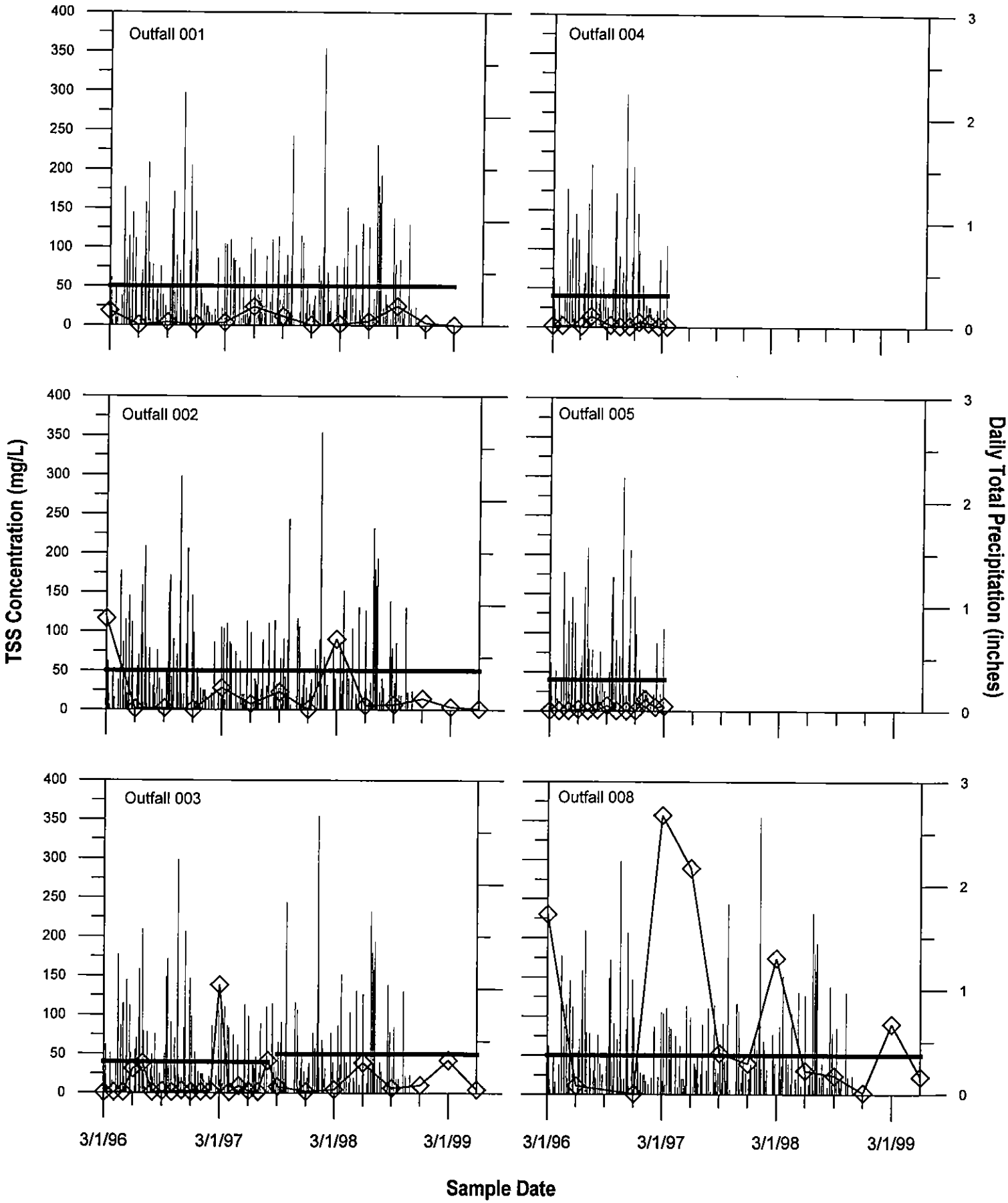
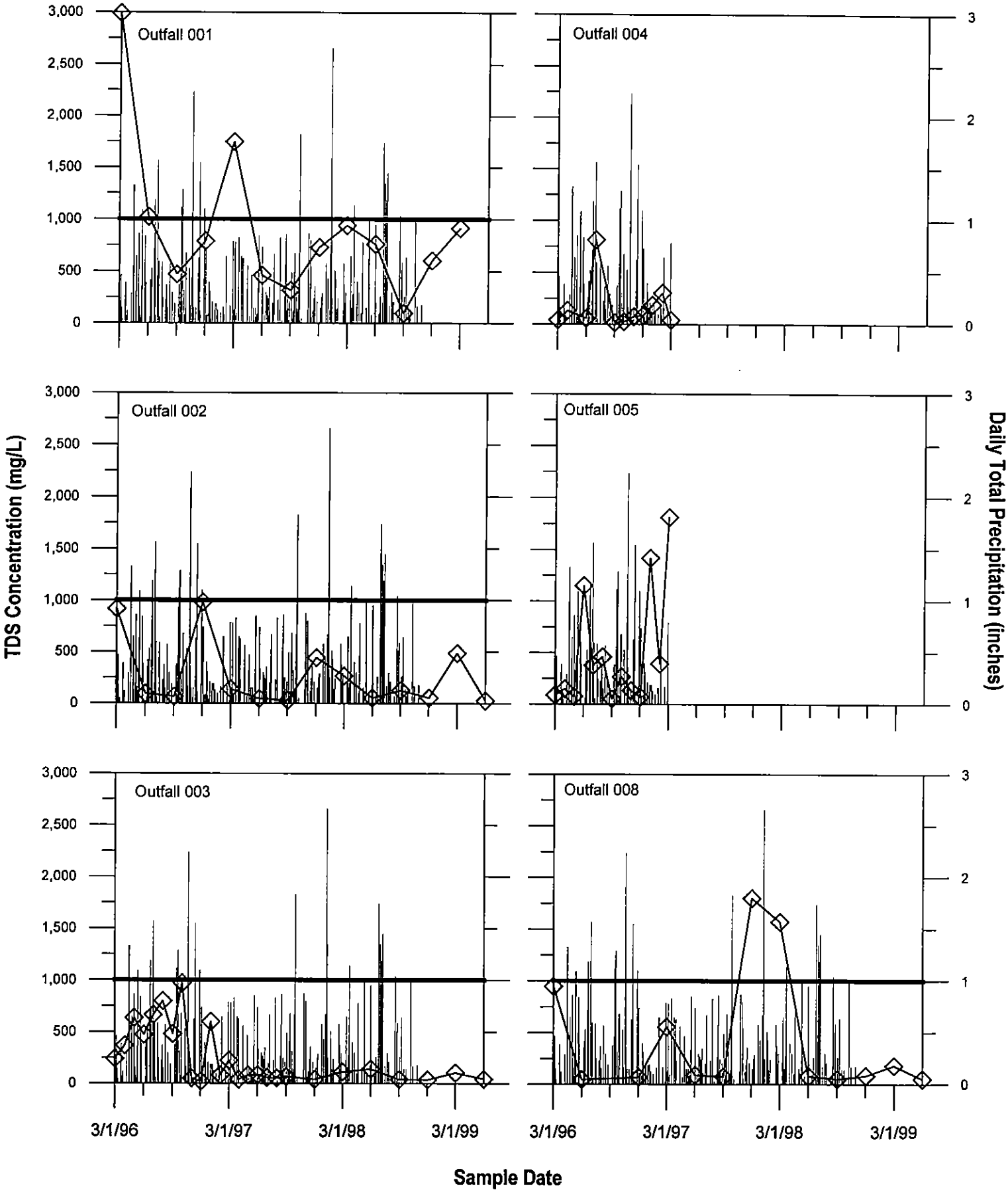
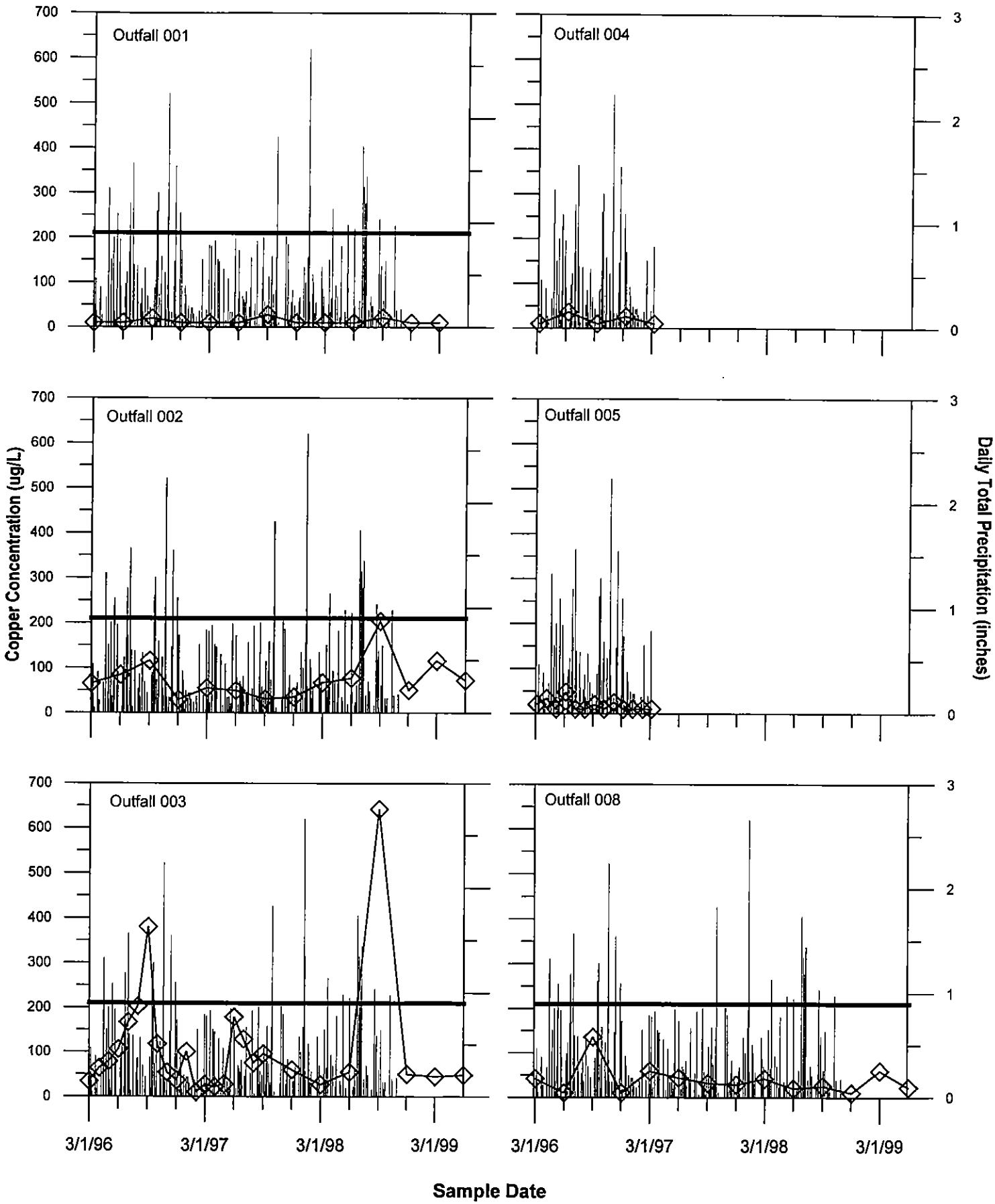


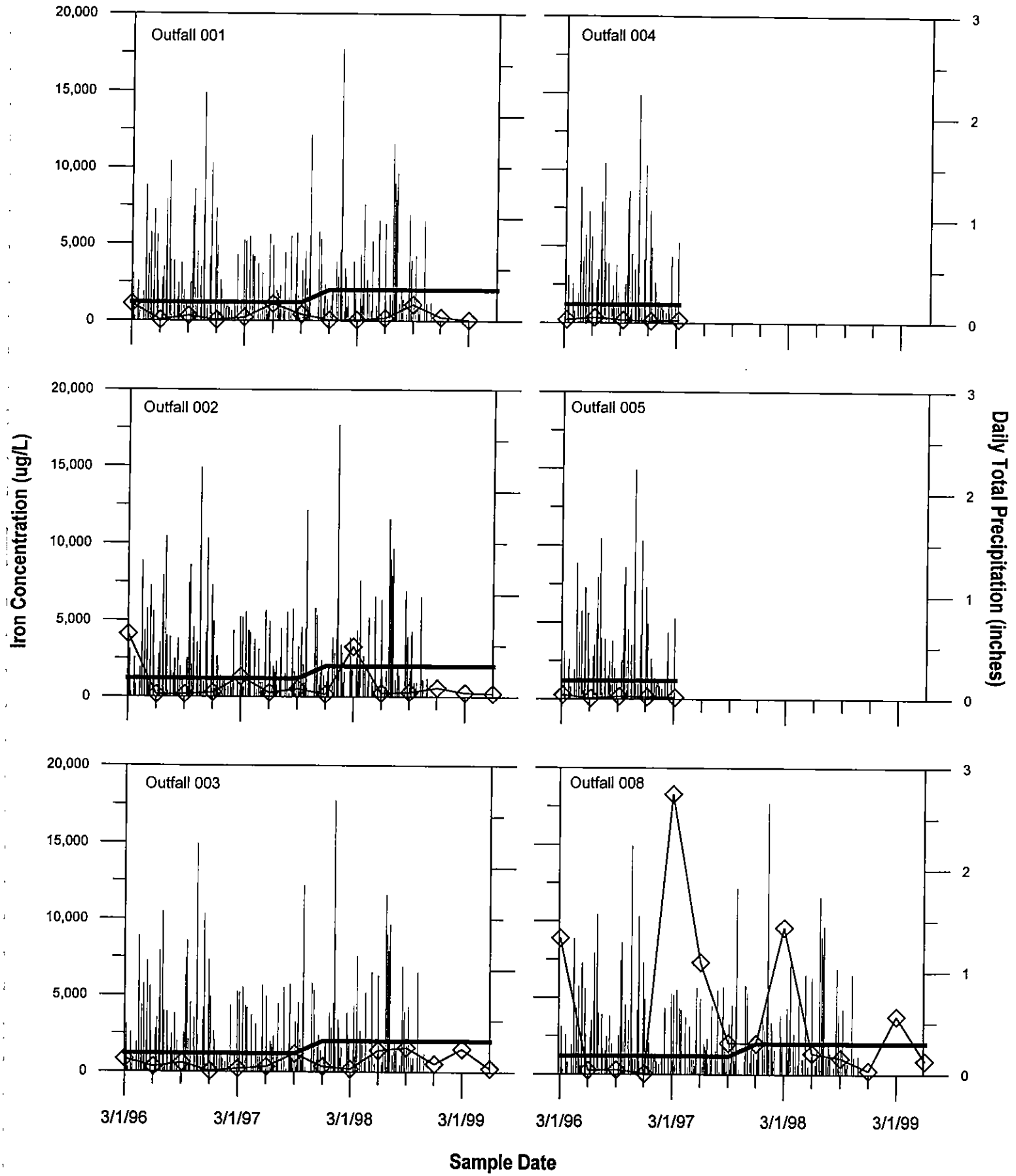
TOTAL DISSOLVED SOLIDS



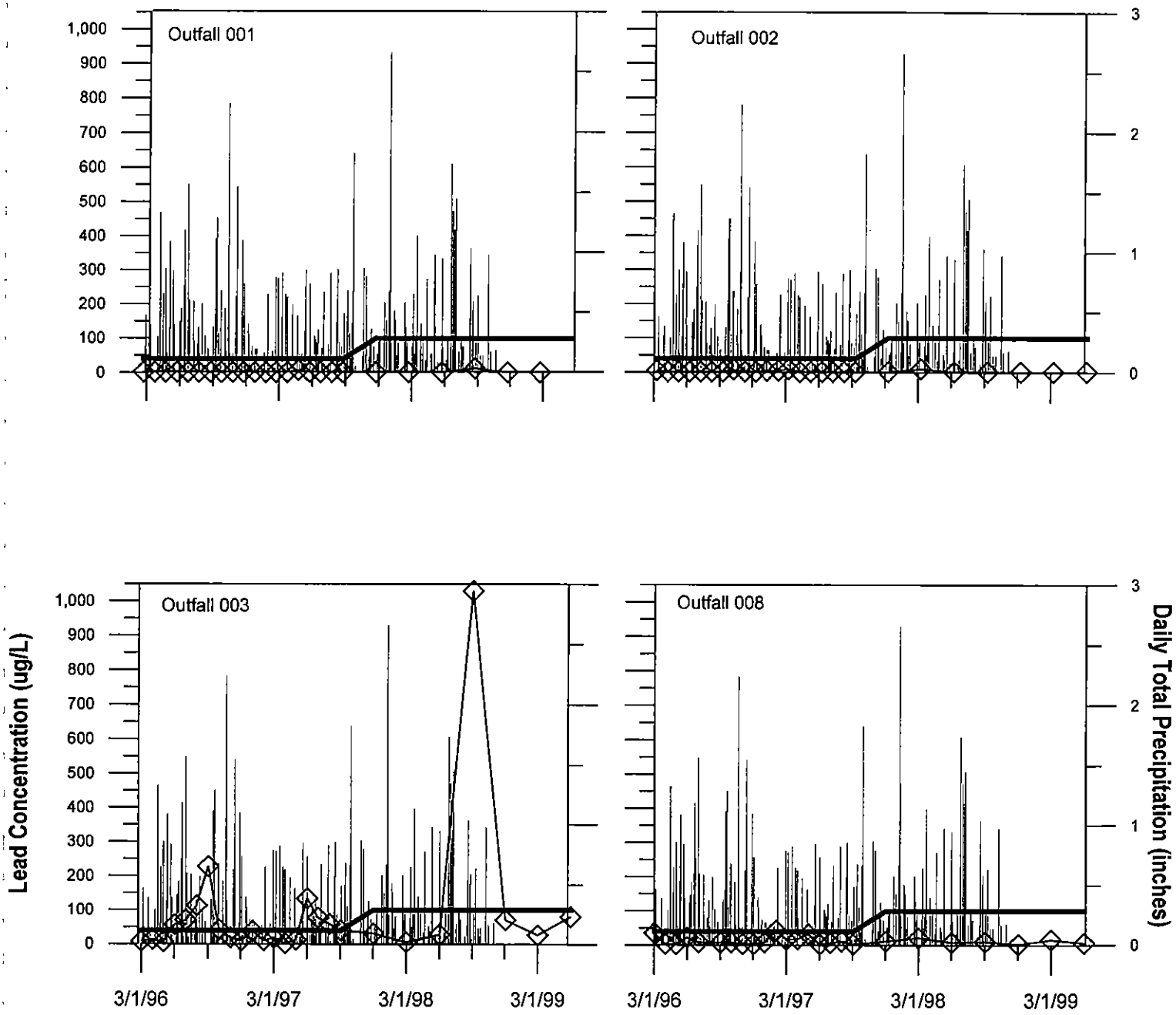
COPPER


Outfall 001
Outfall 004
Outfall 002
Outfall 005
Outfall 003
Outfall 008
Copper Concentration (ug/L)
Daily Total Precipitation (inches)
0
100
200
300
400
500
600
700
1
2
3
3/1/96
3/1/97
3/1/98
3/1/99
Sample Date

IRON


Outfall 001
Outfall 004
Outfall 002
Outfall 005
Outfall 003
Outfall 008
20,000
15,000
10,000
5,000
0
3
2
1
0
Iron Concentration (ug/L)
Daily Total Precipitation (inches)
3/1/96
3/1/97
3/1/98
3/1/99
Sample Date

LEAD


Outfall 001
Outfall 002
Outfall 003
Outfall 008
1,000
900
800
700
600
500
400
300
200
100
0
3
2
1
0
3/1/96
3/1/97
3/1/98
3/1/99
Lead Concentration (ug/L)
Daily Total Precipitation (inches)
Sample Date

SURFACTANTS