

MALONE SERVICE COMPANY SUPERFUND SITE
Texas City, Texas



STORM WATER MANAGEMENT PLAN (SWMP)

Prepared for:
Malone Cooperating Parties

Prepared by:
ENTACT
699 S. Friendswood Drive, Suite 101
Friendswood, Texas 77546
(281) 996-9892

March 11, 2014
Revision 1

TABLE OF CONTENTS

| | | |
|------------|--|----|
| 1.0 | INTRODUCTION | 1 |
| 1.1 | Site History..... | 1 |
| 1.2 | Regulatory Overview | 2 |
| 1.3 | Purpose | 2 |
| 1.4 | Pollution Prevention Team..... | 3 |
| 2.0 | FACILITY DESCRIPTION/BACKGROUND | 3 |
| 2.1 | Site Description | 3 |
| 2.2 | Overall Storm Water Management Strategy | 4 |
| 2.3 | Management of Non-Storm water..... | 6 |
| 3.0 | SITE DESCRIPTION/ASSESSMENT | 7 |
| 3.1 | Site Plan..... | 7 |
| 3.1.1 | Earthen Impoundment (Sludge Pit) | 8 |
| 3.1.2 | Earthen Impoundment (Oil Pit) | 8 |
| 3.1.3 | Backwash Pit | 8 |
| 3.1.4 | Freshwater Pond | 8 |
| 3.1.5 | Unit 100 API-I- Separator | 9 |
| 3.1.6 | Unit 1200 API-II Separator | 9 |
| 3.1.7 | Above-Ground Storage Tanks | 10 |
| 3.1.8 | Sumps | 10 |
| 3.1.9 | Process Areas..... | 10 |
| 3.1.10 | Injection Well WDW-138..... | 11 |
| 3.1.11 | Injection Well WDW-73..... | 11 |
| 3.1.12 | Buildings and Utilities | 12 |
| 3.1.13 | Cemetery..... | 12 |
| 3.1.14 | Drainage Ditches | 12 |
| 3.2 | Site Features | 13 |
| 3.2.1 | Geological Setting | 13 |
| 3.2.2 | Soils | 13 |
| 3.2.3 | Hydrology..... | 13 |
| 3.2.4 | Drainage/Runoff | 13 |
| 3.2.5 | Climatological Data..... | 14 |
| 3.2.6 | Receiving Water | 14 |
| 3.2.7 | Identification of Potential Pollutants that May be Present in Storm Water Runoff.. | 15 |
| 4.0 | STORM WATER BEST MANAGEMENT PRACTICES | 16 |
| 4.1 | Good Housekeeping | 16 |
| 4.2 | Employee Training..... | 16 |

| | | |
|------------|---|-----------|
| 4.3 | Periodic Site Inspections | 17 |
| 4.4 | Volatile Organic Compounds and Semi-volatile Organic Compounds Analyses | 18 |
| 4.5 | Deep Well Injection..... | 18 |
| 5.0 | SITE COMPLIANCE EVALUATION..... | 20 |
| 6.0 | REFERENCES..... | 21 |

List of Tables

- Table 1 Pollution Prevention Team
Table 2 Discharge Limits for Storm water
Table 3 List of Annual Parameters

List of Figures

- Figure 1 Site Location
Figure 2 Annotated Site Aerial Photograph
Figure 3 Site Drainage
Figure 4 Storm water Sample Locations
Figure 5 Freeboard Measurement Locations
Figure 6 Storm water Management Decision Tree

List of Appendices

- Appendix A Sampling and Analytical Records
Appendix B Discharge / Disposal Records
Appendix C Periodic Inspection Records
Appendix D SWMP Update
Appendix E Pre-Completed Chain of Custody Forms

LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| API | American Petroleum Institute |
| ARARS | Applicable or relevant and appropriate requirements |
| BMP | Best Management Practices |
| CFR | Code of Federal Regulations |
| COD | chemical oxygen demand |
| CWA | Clean Water Act |
| DMR | Discharge Monitoring Report |
| MSC | Malone Services Company Superfund Site |
| MSL | Mean Sea Level |
| NPDES | National Pollutant Discharge Elimination System |
| NURP | National Urban Runoff Program |
| O&G | Oil and Grease |
| PAH | Polycyclic Aromatic Hydrocarbons |
| PCB | Polychlorinated Biphenyls |
| PSCR | Preliminary Site Characterization Report |
| RI/FS | Remedial Investigation/Feasibility Study |
| RD/RA | Remedial Design / Remedial Action |
| RCRA | Resource Conservation and Recovery Act |
| RQ | Reportable Quantity |
| SVOC | Semivolatile Organic Compounds |
| SWMP | Storm water Management Plan |
| TAC | Texas Administrative Code |
| TCEQ | Texas Commission on Environmental Quality |
| TPDES | Texas Pollutant Discharge Elimination System |
| TSS | Total Suspended Solids |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compounds |

STORM WATER MANAGEMENT PLAN

Project Name and Location:

Name: Malone Service Company Superfund Site

Location: Campbell Bayou Road off Loop 197 South, Texas City, Galveston County, Texas

CERCLIS No.: TXD980864789

Facility Owner Name, Mailing Address, and Contact Information:

Name: Land Navigator, Ltd.

Mailing Address: c/o Project Navigator, Ltd.
10497 Town and Country Way
Houston, Texas 77024

Contact Information: Bob Piniewski
Telephone No.: 919-435-0934

Field Contact: Brian Moore
Telephone No.: 713-534-4546

Storm Water Management Operator Names and Addresses:

Name: ENTACT, on behalf of the Malone Cooperating Parties (MCP)

Location: 699 S. Friendswood Drive
Suite 100
Friendswood, TX 77546

Contact Information: Erik Gehringer
Telephone No. : 281-996-9892

Tom Zodrow
972-580-1323

1.0 INTRODUCTION

This Storm Water Management Plan (SWMP) sets forth the requirements to manage the storm water runoff from the Malone Service Company, Inc. (MSC) Superfund site (Site) pursuant to Paragraph 34 of Administrative Order on Consent, Docket No. CERCLA 06-18-03, as amended (“Order”). Per Section 121 of CERCLA, 42 U.S. C. Section 9621, the Site does not require any local, state, or Federal permits regulating storm water runoff. This SWMP has been prepared to comply with the ARARs relevant to storm water, and addresses storm water management during remediation activities. The previously approved SWMP (URS, 2005) was written to cover storm water operations and maintenance during the site investigation and remedy selection stages. This SWMP will be maintained until mobilization for Phase One RA activities. Once mobilization for RA work begins, the URS SWMP will be superseded by this SWMP. This SWMP is intended to provide an overall guide to storm water management at the Site and is incorporated into Appendix M of the General RD/RA Work Plan.. This Plan includes components of the following other General RD/RA work plans:

- Health and Safety Plan (HASP) - Appendix B
- Sampling and Analysis Plan (SAP) – Appendix F
- Quality Assurance Project Plan (QAPP) – Appendix G

In addition, the previously approved Operations & Maintenance Plan (OMP, by URS in March, 2005) provides the specific operational details for operating and maintaining the storm water management systems on site, including the functional deep injection well (WDW-138) currently being used as needed for disposal of contaminated storm water. These documents as a group comprise the guidance for managing storm water safely, effectively, and in compliance with the applicable or relevant and appropriate requirements (ARARs).

1.1 Site History

The Site began operating in 1964 as a reclamation plant for waste oils and chemicals. Physical operations ceased in January 1996, and the site has remained inactive since.

The facility was permitted as a commercial storage, processing and disposal facility, authorized to store and process industrial solid wastes under the Texas Commission on Environmental Quality (TCEQ) Hazardous Waste Permit No. HW-50003 from 1984 to 1997. Liquid hazardous and non-hazardous wastes were disposed of by separation and reuse, or disposed of by means of deep well injection under Injection Well Permit Nos. WDW-73 and WDW-138.

The Hazardous Waste permit included the following storage/treatment units at various times:

- Various above-ground storage tanks for wastewater or recovered oil;

- Various underground tanks to service a decanning unit (not built as of 1988);
- A hydrocarbon distillation unit;
- One or two American Petroleum Institute (API) separator(s); and
- Various hazardous wastewater filters.

The permit authorized the receipt of Class I and Class II industrial solid waste with the exception of wastes containing polychlorinated biphenyls (PCBs), explosives and radioactive or nuclear waste material. The permit additionally authorized the discharge of storm water runoff. No other wastewater discharge permits have been identified.

The facility is currently inactive; however, waste materials, two API separators, two underground injection wells (only one operational), roll-off bins, a large Freshwater Pond, a large pond containing sludge, numerous tanks containing liquid and sludge, and metal drums inside small buildings were left on the site after the plant was closed.

In 1999 and 2001 injection well WDW-138 was rehabilitated for disposal of facility storm water. Facility storm water from specified facility units is currently managed and disposed of by deep injection into this well.

1.2 Regulatory Overview

The National Urban Runoff Program (NURP) and the Clean Water Act (CWA) reports submitted to Congress in the 1980s identified storm water as a potential cause of water quality impairment. In 1987, Congress amended the CWA to require the United States Environmental Protection Agency (USEPA) to address storm water. The first federal regulations relating to storm water were promulgated in 1990. The U.S. USEPA drafted two storm water General Permits in 1992. The first permit was the non-construction Industrial Permit (or baseline Industrial Permit for operational activities). In order to tailor permits to industry-specific demands, the USEPA issued the Multi-Sector Storm Water General Permit in 1995, followed by the Storm Water Construction Permit. In 2001, TCEQ received full authority to administer the storm water program in Texas. These regulations and permits are possible ARARs for MSC storm water management but no permits are required for the Site.

1.3 Purpose

The purpose of this SWMP is to establish a storm water management and discharge strategy for storm water generated in the following areas during Site remedial activities:

1. "Specified Areas" – areas where USEPA has previously required monitoring, Unit 100 (separator), Unit 300 (small tank series), Unit 400 (tank series), Unit 700 (single tank and deep well containment), Unit 800 (tank series), and Unit 1200 (separator), and additional former process-related units or areas

where hazardous liquids, sludges, or contaminated soils are possibly present, either in tanks or in impoundments, specifically, the Earthen Impoundment “Sludge Pit”.

2. “Non-specified Areas” - facility areas where storm water runoff flows across the site and collects in drainage ditches or laterals and can be conveyed into a discharge collection sump; essentially all other areas of the Site not designated as Specified Areas.

For the purposes of this plan, there is no differentiation between the storm water in “Specified Areas” and “Non-specified Areas” for analytical parameters and management strategy.

This SWMP sets forth the requirements to manage the storm water runoff from the site pursuant to Paragraph 34 of Administrative Order on Consent, Docket No. CERCLA 06-18-03, as amended (“Order”). This plan is intended as a basis for development of area-specific storm water management practices in order to minimize the impacts of storm water runoff from the facility.

A copy of the SWMP and all relevant records such as sampling and analytical records, discharge/disposal records, and modifications to the SWMP will be kept as part of the permanent record for the MSC. Periodic inspection reports will be maintained in the appendices of the SWMP for a period of at least three years, as required by TCEQ.

1.4 Pollution Prevention Team

The MCP has established a Pollution Prevention Team to ensure the successful implementation of this SWMP. Table 1 presents the individual names and responsibilities for the members of this team. The team leader will be responsible for maintaining the SWMP, as well as the overall implementation of this plan and making the necessary modifications to it for subsequent USEPA approval.

2.0 FACILITY DESCRIPTION/BACKGROUND

2.1 Site Description

The Site is located in Texas City, Galveston County, Texas, in an industrial and petrochemical area constructed on the shores of Swan Lake/Galveston Bay. Figure 1 depicts the site location. The Site is enclosed by a 15-18 foot high berm (except for a gate area) that serves as containment for the site. Storm water accumulates within containment berms and retaining walls around tanks and process equipment, and within several ponds on the site. Internal ditches or laterals direct uncontained storm water to a discharge collection sump with a discharge pipe leading to Campbell's Bayou, a part of Swan Lake/Galveston Bay. The discharge pipe is normally closed, utilizing a manual screw-operated flapper valve. Figure 2 provides a recent aerial photo showing various specific unit areas and other features identified at the MSC Superfund Site, and Figure 3 shows the general site drainage pattern.

Two deep well injection systems are located on the facility, only one of which remains operational (WDW-138). Although the facility no longer has an active permit, continued use of the deep well for disposal of impacted surface waters in compliance with all ARARs is permitted as part of the Superfund response action with approval by USEPA and TCEQ.

2.2 Overall Storm Water Management Strategy

Prior to Phase One RA

The approved SWMP (URS, 2005) will apply until the site is mobilized for Phase One RA activities. During this period, storm water will be sampled, analyzed, and discharged to Campbell's Bayou or sent to the injection well only when necessary to (1) maintain safe access to Site areas, or (2) prevent releases of possibly contaminated storm water. This will prevent water from overtopping containment and maintain appropriate freeboard within containment berms.

The USEPA requires that specific units (areas) at the Site be monitored and managed to maintain a freeboard of at least one foot below the top of the containment barriers. These units are the 100 (separator), 300 (small tank series), 400 (tank series), 700 (single tank and deep well containment), 800 (tank series) and 1200 (separator) areas. Additionally, the Earthen Impoundment will be monitored and managed to maintain a freeboard of at least one foot, i.e. sufficient freeboard to contain a 25-year 24-hour rainfall event, if practical. In the event that a tropical storm or hurricane is predicted to occur in the area of the Site, the water in the containment units will be pumped down to the extent practical, to avoid containment overtopping. The decision to discharge or inject storm water will be based on sampling for key collective and specific chemical parameters. Storm water will be injected if the water pH, density criteria and chemical analyses do not allow discharge to Swan Lake. Figure 4 shows approximate storm water sampling locations for the various specified and non-specified units and areas. Figure 5 shows approximate locations for freeboard measurement for each unit to be monitored in the specified units and Earthen Impoundment as part of the SWMP requirements. Figure 6 provides a Storm water Management Decision Tree that provides the logic for analyzing storm water in various areas or units to determine the appropriate fate of that storm water, deep well disposal or discharge.

Analytical testing will be performed on water from each unit which will determine the disposition for either discharge or injection. Storm water will be sampled at locations shown in Figure 4 and analyzed for the parameters listed in Table 2. Annually, storm water will also be analyzed for the constituents listed in Table 3. For any constituents greater than 85% but less than 100% of the Daily Maximum listed in Table 3, testing for that constituent will continue at these location(s) prior to each storm water management event. If the concentrations of constituents in Table 3 drop below 85% of the Daily Maximum for three consecutive events, then the testing for that constituent will revert back to the annual testing frequency. Storm water from each unit meeting the discharge requirements in Tables 2 and 3 will be discharged to Campbell's Bayou via the storm water discharge sump. Non-compliant storm water

from each unit will be disposed of by injection into deep well WDW-138 providing the deep well parameters discussed in Section 4.5 are met.

During Remedial Action

In order to develop a comprehensive storm water handling and overall water management strategy in general for all RA activities, two categories of water have been established. The first category is “Contact Water” and is defined as water which comes in contact with known waste materials. Examples of contact water include:

- Storm water from the previously defined Specified Areas. This includes the largest source of storm water, which is the existing water covers above the sludge in the earthen impoundment, the API units, and the ASTs, respectively;
- Personnel and equipment decontamination water;
- Investigation Derived Waste (IDW) groundwater from well abandonment, well installation, or sample purging activities; and
- Groundwater which enters the excavation area during impacted soils removal or resulting from dewatering operations to enhance the solidification process.

The second category is “Non-Contact Water”, which is defined as storm water that originates from areas of the site that are not in contact with known waste streams (previously defined as Non-Specified Areas). Non-contact storm water will continue to runoff flow across the site, collect in the existing drainage ditches and laterals for conveyance to a discharge collection sump for ultimate discharge off site to Campbell’s Bayou. Erosion and sedimentation controls will be in place prior to disturbing the soil surface, to preclude sediment transport off site. The exact location and details of these features will be developed and presented by way of specifications and drawings in the Phase One RA Work Plan.

Contact water from each of the Specified Areas will be sampled at the respective water surfaces and analyzed for the constituents listed in Table 2 and Table 3. If the sample results indicate that the constituents of concern are at concentrations below the levels listed in Tables 2 and 3, the water will be pumped to a nearby lateral or drainage ditch for discharge to Campbell’s Bayou, until the respective water depth is within one foot of the top of sludge surface. Once the water surface is within one foot of the sludge, the water will be re-sampled. At any point if the sample results indicate the constituents are present above the levels given in Tables 2 or 3, respectively, the remaining water will be disposed of by deep well injection in well WDW 138.

The permitted injection rate for WDW-138 is 200 gallons per minute up to a maximum of 4,380,000 gallons per month. The actual injection rate is typically lower than 200 gpm and varies depending on the injection pressure and well condition over time. Preliminary design calculations indicate the amount of water projected to be generated during certain phases of the RA could exceed the capacity of the well.

The MCP will be evaluating options for groundwater management including a potential on-site treatment system during the Phase One Remedial Design Work Plan.

2.3 Management of Non-Storm water

During the performance of the Pre-Design Investigation, IDW water will be generated. The sources of IDW water include water from sampling, decontamination of personnel and equipment, and possibly other activities. This water will be managed by deep well disposal. IDW water will be stored in drums or other appropriate containers and transported to the deep well tank. The water will be assessed for deep well parameters (pH, specific gravity) and disposed of by deep well injection, if meeting the criteria. IDW water will not be discharged off-site to Swan Lake but will be injected or otherwise appropriately managed.

3.0 SITE DESCRIPTION/ASSESSMENT

3.1 Site Plan

The Site is located in Texas City, Galveston County, Texas, in an industrial and petrochemical area constructed on the shores of Swan Lake/Galveston Bay, and is bordered to the east and northeast by Galveston Bay and Swan Lake. The latitude for the site is 29° 19' 59" N and the longitude is 94° 54' 10" W. The Solutia South 20, a closed wastewater pond, borders the site on the southeast. Undeveloped land, in the form of marsh and wetlands, border the southern portions of the site. The Gulf Coast Waste Disposal Authority Campbell Bayou facility is located on the western border of the facility. Northwest of the site is a closed Texas City landfill. The Site encompasses approximately 150 acres (TNRCC 1998). The process-related areas constituted approximately 75 acres. Site operations and historical data obtained from a review of site-related records are summarized in the Preliminary Site Characterization Report (PSCR) (URS 2004). This section summarizes the site history and operations from the PSCR; references to the original site records are contained in the PSCR.

Operations conducted at the facility were:

- Separation of oily materials from aqueous materials via separators;
- Recycling or reuse of the oily materials; and
- Deep well disposal of the aqueous residuals.

During early operations, incoming wastes were separated in two earthen pits, the Earthen Impoundment "Sludge Pit" and the Oil Pit. The oil fraction that rose to the top of the Earthen Impoundment was skimmed off the surface or overflowed a low separating berm and deposited into the Oil Pit. This oil was then pumped to one of the tanks for further treatment, or for resale as waste oil for energy recovery. With enactment of the Resource Conservation and Recovery Act (RCRA), MSC added one and then a second constructed API separator to replace the pits. Waste management facilities authorized under HW-50003 included multiple tanks, multiple filters, API separator(s), and one distillation unit. A brief description of each unit follows along with a brief discussion of past and future management under this SWMP.

Because of the very flat surface elevations within the facility and the depths of the drainage ditches, laterals and the storm water discharge sump, water in the ditches and laterals is expected to flow to the discharge sump when the sump is allowed to discharge to Campbell's Bayou. Historically, the drainage system would have collected storm water and any releases that escaped the containment areas in the plant unit areas. The ditches and laterals are earthen in some areas and concrete lined in others. Concrete conduits collect water from non-process concrete pad areas via storm grate drainage and transports this water into the lateral drainage ditches.

3.1.1 Earthen Impoundment (Sludge Pit)

MSC operated an unlined earthen impoundment for the separation and equalization of incoming waste streams prior to RCRA and the construction of the concrete API separators. This impoundment consisted of a large pit, termed the “Sludge Pit”, and an associated smaller pit termed the “Oil Pit”. A berm separated the two pits and acted to allow overflow of floating oil from the sludge pit to the oil pit. The volume estimated range from 4.4 million cubic feet to 8.3 million cubic feet for the Sludge Pit with an average depth of 37 feet below the crests of the hurricane levees on site.

The earthen impoundment was used as a waste receiving/treatment unit for the separation of oil, water, and solids from a variety of industrial waste streams as stated above. The solids and oils were separated from the aqueous waste, with the solids remaining in the impoundment. A synthetic cover/liner and sand was placed over one portion of the impoundment sludges and a leachate collection system was installed around the perimeter of the impoundment. Several months after the closure activities ceased in 1986, the geotextile fabric tore, allowing waste materials to flow to the top of the sand.

3.1.2 Earthen Impoundment (Oil Pit)

The Oil Pit operated from 1964 to 1979. The dimensions were 20 feet by 100 feet by 33 feet deep with volume estimates ranging from 560,000 cubic feet to 800,000 cubic feet. The Oil Pit was used to store oils and organic wastes separated from the aqueous or solid fraction of the waste in the Sludge Pit. The pit was reportedly covered with permeable and impermeable liners and capped with soil. However, the cap has suffered subsidence and ponding of storm water.

3.1.3 Backwash Pit

This unit operated from 1970 to 1982. The Backwash Pit was located approximately 100 feet south of the Unit 700 area and directly east of the Oil Pit in an area now served by a roadway. In 1982 (or later), MSC excavated the pit until the natural clay was visible. No storm water accumulation has been noted for this area. Storm water from this area is collected by the drainage ditches along the WDW-73 and west side of the maintenance area and conveyed to the north storm water lateral.

3.1.4 Freshwater Pond

The Freshwater Pond is located on the west side of the site. The pond is reported to be at the lowest elevation within the enclosed facility and the drainage ditch systems reportedly connected to this pond. The connection of the drainage ditches to the pond is not apparent today and it appears that the pond receives most of its water from localized drainage immediately around the pond and possibly from the laydown area to the north of the pond. The Freshwater Pond is an excavated pit with a volume of approximately 20,000,000 gallons (267,000 cubic feet). The accumulated storm water in this pond has not been managed in the past. It is not anticipated that this pond will be managed as part of the SWMP.

3.1.5 Unit 100 API-I- Separator

The Unit 100 API-I separator is an in-ground, concrete unit consisting of four separate basins and a system of baffles and/or weirs, installed in 1978. The separator is located near the center of the site, adjacent to and southeast of the Earthen Impoundment, and is believed to be located above the paleochannel that crosses beneath the MSC site. The following wastes were managed in the separator: rinse water/wastewater, lubricating oils, contaminated rainwater, paint solvents and spent solvent mixtures, waste oils, separator sludge, and separator solids.

Volume estimates for the Unit 100 API Separator range from 625,000 cubic feet to 1,308,000 cubic feet. The dimensions of separator basins A and B are 135 feet by 20 feet by 6 feet deep and 100 feet by 30 feet by 6 feet deep for Basins C and D. The separator is surrounded by a 12-inch thick concrete wall and underlain by a 12-inch thick concrete floor.

One wastewater pump, two filters, two reclaimed oil pumps, and two oil screen filters are located in the Unit 100 pump house. Four wastewater pumps are located on concrete pads outside the Unit 100 pump house. The storm water in this area generally drains into the 100 unit, while storm water in the other areas surrounding the 100 separator appears to drain to the drainage ditches in the area.

3.1.6 Unit 1200 API-II Separator

The facility operated a second separator, designated Unit 1200 API-II Separator. The separator is located on the east side of the plant processing area, just south of the Unit 1100 area, deep well WDW-138. This separator served the same purpose as the Unit 100 API Separator. Most waste that entered the plant was treated in the Unit 100 API Separator; the Unit 1200 API Separator served as a backup.

The separator consists of:

- Four large (60 feet by 60 feet by 6 feet deep) settling basins;
- Two small (20 feet by 60 feet by 6 feet deep) settling basins; and
- One large (145 feet by 60 feet by 6 feet deep) solids treatment area

Each basin is lined with 12-inch thick concrete floors and outer walls and 5-foot high inner walls. A 20-inch high, 2-foot thick concrete wall surrounds the separator. This wall is surrounded on all four sides by a concrete pad.

Wastes flowed between the four large and the two small basins by overflowing the internal concrete walls. Water and oils in the small basins were transported to the Unit 100 API Separator using a vacuum truck. Sludge was removed from the basins using a clamshell bucket and placed in the solids treatment area.

3.1.7 Above-Ground Storage Tanks

Many aboveground storage tanks (ASTs) were constructed at the facility. These tanks, which are located in Unit 300, Unit 400, and Unit 800, accepted oils pumped, or transported by vacuum truck, from the Unit 100 or Unit 1200 Separators.

The Unit 300 Tank Farm contained 46 tanks; 36 tanks (Tanks 301 – 336) were used to store/blend reclaimed oil. Two tanks (Tanks 337 and 339) were used as final product storage for reclaimed oil. Tanks 338 and 340 were reportedly unused because of unstable soil conditions at the proposed tank locations. Six tanks (Tanks 341 – 346) were used to store materials such as brine water and barite used in the plant processes. All tanks are located within the same concrete walled and floored containment area.

The Unit 400 Tank Farm contained six tanks (Tanks 401 – 406), which were used to blend reclaimed oils. Eight additional tanks (Tanks 407 – 414) were permitted but never built. All six tanks are located within the same clay berm containment area.

The 700 series tanks were used to support the WDW-73 injection well disposal activities. The Unit 700 tank was used for storage of water for WDW-73. The tank is contained within an earthen berm containment.

The Unit 800 tank farm consisted of six ASTs (Tanks 801 – 806). Each tank is contained within its own earthen berm containment. The tanks were used to store and blend reclaimed fuel oil. Three transfer sumps (were located approximately 200 feet apart on the southern border of the Unit 800 Tank Farm. The capacity of each sump was approximately 100 gallons. Sump SWMU 90 served Tanks 801 and 802, Sump SWMU 91 served Tanks 803 and 804, and Sump SWMU 92 served Tanks 805 and 806. The 802 tank was removed and only the containment remains.

3.1.8 Sumps

Five “transfer” sumps (SWMU Nos. 28, 88-91) were located at the inlet and outlet pump or line locations of several tanks. These sumps were reportedly used to collect any spills from pumping oil or wastewater in or out of these tanks. Three sumps were located in the Unit 800 Tank Farm, one at Tank 700, and one at the southern end of the Unit 400 Tank Farm. An unused sump (in 1988) was located at the north end of the Unit 400 Tank Farm. Materials collected in the sumps were reportedly pumped into a vacuum truck and taken back to the Unit 100 API Separator.

Two 2200-gallon concrete-lined sumps were located at the wastewater disposal areas (Units 700 and 1100). Liquids collected in these sumps were reportedly vacuumed out and taken to the Unit 100 API Separator for treatment.

3.1.9 Process Areas

The distillation unit (Unit 900) was constructed in 1978 to treat incoming oil wastes by distillation. The unit was reportedly only used once, in 1985, when crude oil was distilled into light (naphtha and

kerosene) and heavy fractions. The unit consisted of two distillation columns, one boiler, and 13 tanks (901 – 913) and is located on a concrete pad, surrounded by a 3-foot high concrete wall.

3.1.10 Injection Well WDW-138

This injection well is located in the northeast corner of the plant process area and was part of the Unit 1100 waste disposal area. This well was the facility's secondary injection well, disposing of wastewater treated at the plant when WDW-73 was inoperative. Wastewater was injected for disposal into the Miocene sands at a subsurface interval between 4162 and 4323 feet. This well remains operable and is expected to be an integral component in storm water management as the default mechanism for management (disposal) of storm water that cannot be discharged to Swan Lake via Campbell's Bayou.

Using brine water, a minimum positive pressure differential of 100 pounds per square inch (psi) was maintained in the annulus around the well. The brine water was stored in a small tank located within a concrete containment area near the well. Piping to the well was constructed above concrete pads, as was the wellhead. A concrete-lined, 2200-gallon capacity sump was located directly east of the well head. Flow to the well could be shut off by a control valve at the wellhead. Wastewater filtering for the WDW-138 well was performed in the Unit 100 API Separator or the Unit 700 WDW-73 injection well.

Two wastewater tanks, Tanks 1102 and 1103, stored wastewater prior to injection. The tanks were located on the Unit 1100 concrete pad, which was surrounded by a 3-foot high concrete wall. The concrete pad drained to the Unit 1100 sump. These tanks and associated piping are no longer in use although this well is used to manage storm water at the site.

Mechanical integrity testing (MIT) and a Bottomhole Pressure Survey of WDW-138 were performed by Sandia Technologies (URS subcontractor) on behalf of the MCP and a report submitted to the USEPA and TCEQ (Sandia 2004). The tests showed the integrity of the well and indicated that the well could be used for management of storm water. The well testing indicated that two packers were present in the well in the injection zone and while the placement of these packers does not prevent routine injection of water down the well, during testing of the wells the packers acted as a mechanical obstruction until a centralizer was used to guide the MIT tools through both packers and the intervening section of casing. MIT surveys are performed on an annual basis.

3.1.11 Injection Well WDW-73

Injection well WDW-73 is part of the Unit 700 area. This well was the primary disposal injection well for the facility when operating. WDW-138 was the backup injection well for this well. Filtered wastewater was injected into this well for disposal at a subsurface interval of 4912 and 4995 feet in the Miocene Sands. This well is no longer operational.

3.1.12 Buildings and Utilities

In addition to tanks and structures associated with the facility operations, several buildings remain at the site. These include the office and laboratory building, the weight room, the shop and two buildings located between Unit 700 and Unit 400 that are labeled as “lunchroom” and “restroom.” A small office is located at the Unit 1100 injection well.

Small equipment was cleaned and repaired in the maintenance shop.

Five septic tanks were located in the facility in the following locations (Dillard 1981):

- Unit 1100 – adjacent to small office and pump house;
- Unit 900 – one behind the building labeled restroom and one behind the building labeled lunchroom (former laboratory septic tank);
- Shop – south side (back) of shop; and
- Office – adjacent to building on west side

In addition, three laboratory waste holding tanks were located on the west side of the laboratory. These septic tanks, holding tanks and related structures contents are not in contact with the storm water in these areas.

Two storm water discharge sumps are located on the northern side of the facility. Each sump contains a plate that can be lowered to block the discharge. The sumps have large hand screw operated flapper-gates that can be closed manually to prevent water flow in either direction. The eastern most sump is connected to the storm water outlet that discharges through the flood protection levee into Campbell's Bayou. The western most sump valve is chained closed and no longer operable.

3.1.13 Cemetery

The Campbell Bayou Cemetery is located on the property, between Unit 900 and the Oil Pit. The cemetery served the settlers of Campbell Bayou and is mentioned on a historical marker located near Interstate 45.

3.1.14 Drainage Ditches

Various drainage ditches or laterals provide general storm water drainage inside the hurricane levees that surround the facility (Figure 3). These ditches connect such that as storm water collects in the ditches it can be conveyed to the storm water discharge sump. These ditches are both unlined and concrete lined. The ditches were cleaned out as part of the USEPA emergency responses at the Site.

3.2 Site Features

3.2.1 Geological Setting

The shallow subsurface strata beneath the MSC Superfund Site primarily consist of an upper fine sandy to silty clay with a varying thickness of 11 to 15 feet underlain by a low permeability, stiff red or gray clay to a depth of at least 40 to 45 feet bgs. The meandering buried paleochannel forms a wide arch beneath the MSC site from the northwest to the southeast. A smaller distributary channel bifurcates from the main channel near the center of the site and trends to the north-northeast to Swan Lake. The paleochannel, also referred to as the sand channel or sand channel aquifer, typically consists of fairly uniform tan, very fine-grained, silty sand. The upper boundary of the buried paleochannel is found about 10 feet bgs and the base of the aquifer is about 30 feet bgs on top of the red clay. The width of the buried paleochannel varies from about 200 to 1000 feet.

3.2.2 Soils

The MSC Superfund Site is located within soils of the Ijam-Urban land complex that consists of nearly level, poorly drained, moderately saline, clayey soil with a clayey subsoil and Urban Land. Typically, these soils have a surface layer that is a calcareous, dark grayish brown clay about 12 inches thick. The upper part of the underlying material, to a depth of 40 inches, is a dark gray clay. The lower part, to a depth of 60 inches, is a gray clay. The soil is moderately saline and moderately alkaline throughout. The soils in this complex are of very low permeability. The high water table allows for very little water movement through the soil. The soil remains saturated throughout the year.

3.2.3 Hydrology

Shallow groundwater beneath the MSC Superfund Site is primarily restricted to the fine silty sands in the buried paleochannel. Ground water flow in the sand channel aquifer has been shown to be variable, primarily controlled by the recharge pattern in the Freshwater Pond to which it is hydraulically connected. Additional hydraulic boundary conditions potentially influencing groundwater movement include liquid and sludge stored in the earthen impoundment, tidal influences from Swan Lake/Galveston Bay, and the closed Solutia South 20 wastewater pond down gradient of the site.

3.2.4 Drainage/Runoff

Surface runoff is very slow and the Site is enclosed in a 15-18 foot high hurricane levee such that the site is not flooded by storm tides. Swan Lake, a small bay off of Galveston Bay, is located northeast of the site. Generally, storm water runoff in the drainage ditches drains in an east-southeast direction toward the storm water discharge sump near Campbell's Bayou thence to Swan Lake/Galveston Bay. In the west and northwest of the site, surface drainage is to the freshwater pond. This pond appears on some maps and aerial photographs to have been connected to the drainage ditches at one time but currently does not connect with them except by overflow through grassy areas. Currently, most surface storm water runoff at the site accumulates in the containment structures around tanks within soil or concrete levees or retaining walls. The remaining storm water is fully contained within the levees and berms, and collects in

internal drainage ditches that direct the water into a storm water discharge collection sump which discharges into Campbell's Bayou. The discharge pipe of the sump has a valve to retain water within the facility, until testing determines whether storm water should be discharged or deep wellled.

3.2.5 Climatological Data

The MSC facility is located in the warm, moist Texas Coastal Zone. Temperatures range from a January minimum of 43°F to a summer average maximum of 94°F. Between 1931 and 1960, the average annual air temperature in the Houston-Galveston area was about 70°F. Annual rainfall in the vicinity of the site ranged from 35 to 74 inches from 1964 to 2002, with an average annual rainfall of 50.6 inches. Annual lake surface evaporation ranged from 38 to 58 inches in the same time period, with an average annual evaporation rate of 48.0 inches (TWDB 2004). Since 1964, the Galveston-Houston area has been adversely affected by several major tropical storms and hurricanes, including Tropical Storm Felice (1970), Tropical Storm Claudette (1979), Hurricane Danielle (1980), Hurricane Alicia (1983), Tropical Storm Allison (1989), Hurricane Chantal (1989), Hurricane Jerry (1989), Tropical Storm Frances (1998), Tropical Storm Allison (2001), and Hurricane Ike (2008). The 24-hour rainfall record (43-inches) for the continental United States was recorded in Alvin, Texas during Tropical Storm Claudette in 1979 (NOAA 2004). Alvin, Texas is located approximately 20 miles west of the MSC site.

The prevailing winds, from the southeast, blow from the site towards the Texas City Industrial Complex (Kearney 1989).

3.2.6 Receiving Water

The receiving water for any runoff from the facility is Campbell's Bayou thence to Swan Lake/Galveston Bay. The National Oceanic Atmospheric Administration (NOAA) habitats of concern are the surface waters of Swan Lake and Galveston Bay, as well as the surrounding wetlands. Swan Lake is a contiguous embayment of Galveston Bay. Together, these two water bodies compose the seventh largest estuary in the United States and have been designated a National Estuary as part of the National Estuary Program (GBNEP 1992). The wetlands between the MSC site, Swan Lake, and Galveston Bay are considered an intertidal, estuarine environment.

Numerous NOAA trust resources, including both invertebrate and marine/estuarine fish species, use the surface waters of Swan Lake and Galveston Bay for a variety of habitat functions, including spawning and nursery areas as well as for adult habitat and as a migratory route. Many of the NOAA trust resources support both commercial and/or recreational fisheries. In addition, a number of endangered species exist in the vicinity of the MCS site. Federal- and state-listed endangered leatherback sea turtles, Atlantic hawksbill sea turtles, and Kemp's ridley sea turtles, as well as state-listed endangered loggerhead sea turtles, have all been identified in the area (TNRCC 1998).

3.2.7 Potential Pollutants that May be Present in Storm Water Runoff

Chemicals present in source areas at the Site (such as the impoundments and separators) and may be present in surface water runoff include:

- Metals;
- Semivolatile organic compounds (SVOCs) - primarily phthalate esters and polycyclic aromatic hydrocarbons (PAHs); and
- Volatile organic compounds (VOCs) - primarily chlorinated and aromatic hydrocarbons.

4.0 STORM WATER BEST MANAGEMENT PRACTICES

This section identifies the baseline best management practices (BMPs) currently employed and those that will be implemented in the future at the site. BMPs are activities, preventative measures, prohibited practices, maintenance procedures, and other temporary or permanent storm water controls and management tools. These BMPs minimize the exposure of storm water runoff to significant materials and include:

- Good housekeeping program;
- Employee training;
- Periodic site inspections; and
- Proper discharge of storm water.

4.1 Good Housekeeping

The following good housekeeping practices will be followed on site:

- An effort will be made to store only enough of a product brought on site for RA activities, to meet the requirements of the immediate job;
- All materials stored on site will be stored in a neat, orderly manner in appropriate containers and, if possible, under a roof or other enclosure;
- Products brought on site as part of the RA will be kept in their original containers with the original manufacturer's label;
- Any IDW will be stored in water-tight drums or other containers and handled in an appropriate manner;
- Personal Protective Equipment (PPE) used as part of the storm water management activities will be disposed of in an appropriate manner;
- Substances will not be mixed with one another unless recommended by the manufacturer;
- Whenever possible, all of the products brought on site will be used before disposing of or recycling the container;
- Manufacturer's recommendations for proper use and disposal will be followed; and
- Storage areas, including equipment storage, will be inspected for visible signs of oil or other spillage.

4.2 Employee Training

Employees and site personnel will be made aware of this storm water management plan and understand the importance of the program. Employees and site personnel responsible for sampling will be trained in the appropriate sampling, sample storage, sample preservation and quality assurance procedures.

Employee training records will be maintained on site or at another location agreed to by the USEPA during the RI/FS and must be maintained for a period of three years from the date of the record.

4.3 Periodic Site Inspections

The collection systems (drainage ditches, berms, and levees) and disposal systems (deep well injection) will be properly operated and maintained. Proper operation includes adequate laboratory, sampling and sample storage controls, and appropriate quality assurance procedures. Adequately trained staff will conduct sampling, operation, and testing functions to ensure compliance with this SWMP.

The following components will be inspected weekly or more often as required below:

- Rain gauges or weather monitors will be inspected after each storm event and the inches of rainfall will be recorded;
- Containment areas will be inspected after each storm event and the depth to water (freeboard) will be recorded;
- Drainage channel and Campbell's Bayou discharge valves will normally be in the closed position; and
- The site will be inspected for general access and vegetation overgrowth. Proper drainage will be maintained in the drainage ditches and surface water conveyances.

The following records will be maintained on site or at a location agreed to with USEPA during implementation of the SWMP:

- Sampling and Analytical Records (Appendix A)
Date and time samples were collected, names of personnel that collected the samples, the visual quality of the storm water discharge, the laboratory that conducted the analysis, technique or methods of analysis, the results of the measurement, and site related quality control/quality assurance records (i.e. sample storage, etc.);
- Discharge/Disposal Records (Appendix B)
Volumes of water discharged, time and date of discharge, associated analytical record numbers including date sampled, notifications of disposal or discharge to the USEPA/TCEQ;
- Periodic Inspection Records (Appendix C)
Inspection records for the drainage and containment systems, including dates, field notes, noted issues or problems, corrective actions, resolution of problems or issues;
- SWMP Updates (Appendix D);
- Employee training activities; and
- Dates, training type, attendance, test results (if appropriate).

The above-stated records will be maintained in accordance with the provisions of the Data Management Plan, except for the periodic inspection records, which will be maintained at the site or at another location agreed to by the USEPA for a period of three years from the date of the record.

Proper Discharge of Storm Water

A Storm Water Management Decision Tree, shown in Figure 6, provides the logic for deciding whether storm water from particular areas can be discharged to Swan Lake or should be transferred for treatment and/or disposal by deep well injection. The decision tree assumes that any storm water at the Site can be injected via deep well by simply being aqueous and meeting the required pH and specific gravity limits.

Storm water from each unit can be discharged to Campbell's Bayou by demonstrating compliance with the parameters in Tables 2 and 3 prior to the discharge event, for samples from the locations shown on Figure 4. If water does not meet discharge criteria, storm water will be treated or disposed of in deep well WDW-138 (providing the pH and specific gravity criteria above are satisfied). If treated, the water will be re-sampled and analyzed. Treatment will continue until the water meets discharge criteria for off-site discharge or deep well injection.

4.4 Volatile Organic Compounds and Semi-volatile Organic Compounds Analyses

Following the RI/FS, storm water has annually been sampled from each location shown on Figure 4 and analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) listed on Table 3. The samples were analyzed for the parameters listed on Table 3, using USEPA Methods 624 and 625, respectively. This process will continue and the data will be used, in conjunction with the sample results from the analyses listed in Table 2, to determine if the water is acceptable for discharge or requires deep well injection, up to the point that RA activities begin. Concentrations for the detected VOCs and SVOCs will be compared to the Daily Maximum limits listed in Table 3. If the concentration of a parameter on Table 3 exceeds 85% of the Daily Maximum (but less than the Daily Maximum) listed in Table 3, testing for that chemical will continue at the location(s) with the elevated concentrations prior to each storm water management event. If the concentrations of the parameter drop below 85% of the Daily Maximum for three consecutive events, then the testing for that parameter will revert back to the annual testing frequency.

Following the initiation of RA activities, contact water will be sampled and analyzed for the parameters indicated in Tables 2 and 3, as described earlier in Section 2.2 of this document.

4.5 Deep Well Injection

Storm water failing to meet the discharge requirements as discussed in Sections 4.5 and 4.6 will be treated until these criterion are met or alternatively, disposed of in deep well WDW-138, provided the pH and specific gravity criteria discussed in Section 4.5 are satisfied. In the event of the appearance of floating

solids, visible oil, or visible foam in the discharged water, pumping will be immediately ceased, the affected areas will be isolated, and the storm water will be collected and disposed of in deep well WDW-138, provided the pH and specific gravity criteria discussed in Section 4.5 are satisfied.

5.0 SITE COMPLIANCE EVALUATION

A program of routine quarterly inspections (and corrective actions, if necessary) will be conducted at the site to ensure compliance with this SWMP. This evaluation is in addition to the storm water sampling described above. This evaluation will be conducted at least once per year by qualified employees familiar with the activities performed at the site and the elements of this SWMP.

The evaluation must include:

- Inspections of all containment areas, drainage ditches, collection sump, and levees; and
- A review of all records required by this SWMP.

The evaluation must result in an annual report. This report must discuss compliance with the SWMP and should include who conducted the evaluation, the date of the evaluation, and any incidents of non-compliance. The Report should be included with the SWMP.

Following the evaluation, the SWMP should be revised as necessary to include the findings from the compliance evaluation. A copy of each revised SWMP from the preceding 3-year period must also be maintained and made available for review.

6.0 REFERENCES

Sandia Technologies, LLC. 2004. Malone Services Corporation Injection Well WDW-138: 2004 Mechanical Integrity Testing & Bottomhole Pressure Survey Report. April 21, 2004.

Texas Natural Resource Conservation Commission (TNRCC). 1998. Screening Site Inspection Report. Volume I of III for Malone Service Company, Inc., Texas City, Galveston County, Texas. TXD 980864789. Houston, TX: Prepared for the U.S. Environmental Protection Agency.

URS Corporation (URS). 2004. Preliminary Site Characterization Report for the Malone Service Company Superfund Site. April 2004.

Tables

Table 1 Pollution Prevention Team

| Team Member | Title | Contact Information | Responsibility |
|--------------------|--------------------------------|--|---|
| David Abshire | USEPA Remedial Project Manager | Direct: 214-665-7188 Mobile: 214-789-2625 | USEPA RPM, responsible for reviewing and approving plans, reports, maps, and project schedules. Provide regulatory guidance and monitor progress on the project. |
| Bob Piniewski | Project Coordinator | Direct: 919-435-0934 Mobile: 919-539-1928 | Coordinates communications between the USEPA, MCP, and ENTACT concerning issues, schedule, progress, financials, and other deliverables. Provides coordination and record keeping of conference call notes, MCP committee decisions, polls, and discussions. Convenes and facilitates conference calls. |
| Erik Gehringer | ENTACT Project Manager | Direct: 281-996-9892 Mobile: 561-707-7088 | Team Leader. Coordinates all stages of plan development and implementation. Coordinate or delegate employee-training program. Conduct or delegate inspections, implement remediation or repairs, and oversee good housekeeping measures. |
| TBD | ENTACT Engineer | | Routine and non-routine gauging of freeboard. Sampling and shipping of storm water samples for determination of appropriate disposal. Routine housekeeping inspections of Site and facilities. |
| Lin Liu, PE, PhD | ENTACT Site QA/QC Manager | Direct: 281-996-9892 | Keep all records and ensure reports and notifications are submitted. |
| Brian Moore | MCP Field Project Manager | 713-534-4546 | Field point of contact for RD/RA activities. |

Table 2: Discharge Limits for Storm Water

| Parameter | Daily Maximum (mg/L) | Sample Frequency | Sample Type |
|---|-------------------------------|--------------------------------------|----------------|
| Oil & Grease | 15 | Once in each unit prior to discharge | Grab |
| pH | Between 6-9 standard units | Once in each unit prior to discharge | Grab |
| COD | 150 | Once in each unit prior to discharge | Grab |
| Visible Oil Sheen | None | Once in each unit prior to discharge | Grab |
| Arsenic, total | 0.3 | Once in each unit prior to discharge | Grab |
| Barium, total | 4.0 | Once in each unit prior to discharge | Grab |
| Cadmium, total | 0.3 | Once in each unit prior to discharge | Grab |
| Chromium, total | 5.0 | Once in each unit prior to discharge | Grab |
| Copper, total | 2.0 | Once in each unit prior to discharge | Grab |
| Lead, total | 1.5 | Once in each unit prior to discharge | Grab |
| Manganese, total | 3.0 | Once in each unit prior to discharge | Grab |
| Mercury, total | 0.01 | Once in each unit prior to discharge | Grab |
| Nickel, total | 3.0 | Once in each unit prior to discharge | Grab |
| Selenium, total | 0.3 | Once in each unit prior to discharge | Grab |
| Silver, total | 0.2 | Once in each unit prior to discharge | Grab |
| Zinc, total | 6.0 | Once in each unit prior to discharge | Grab |
| <p>The water discharged shall not contain floating solids, visible oil, or visible foam in other than trace amounts.</p> <p>Samples for metals analyses will not be filtered.</p> | | | |

Table 3: VOC & SVOC Parameters

| Constituent | CAS No. | Method | Daily Maximum (µg/L) | MAL (µg/L) |
|--------------------------------------|------------|--------|----------------------|------------|
| Cyanide | 57-12-5 | 335.4 | 420 | 10 |
| Acrylonitrile | 107-13-1 | 1624B | 232 | 50 |
| Benzene | 71-43-2 | 624 | 134 | 10 |
| Carbon tetrachloride | 56-23-5 | 624 | 380 | 2 |
| Chlorobenzene | 108-90-7 | 624 | 380 | 10 |
| Chloroethane (ethyl chloride) | 75-00-3 | 624 | 295 | 50 |
| Chloroform | 67-66-3 | 624 | 325 | 10 |
| Chloromethane | 74-87-3 | 624 | 295 | 50 |
| Dichlorobenzene, 1,2- | 95-50-1 | 624 | 794 | 10 |
| Dichlorobenzene, 1,3- | 541-73-1 | 624 | 380 | 10 |
| Dichlorobenzene, 1,4- | 106-46-7 | 624 | 380 | 10 |
| Dichloroethane, 1,1- | 75-34-3 | 624 | 59 | 10 |
| Dichloroethane, 1,2- | 107-06-2 | 624 | 500 | 10 |
| Dichloroethylene, 1,1- | 75-35-4 | 624 | 60 | 10 |
| Dichloroethylene, trans-1,2 | 156-60-5 | 624 | 66 | 10 |
| Dichloropropane, 1,2- | 78-87-5 | 624 | 794 | 10 |
| Dichloropropene, cis 1,3- | 10061-01-5 | 624 | 794 | 10 |
| Dichloropropene, trans 1,3- | 10061-02-6 | 624 | 794 | 10 |
| Ethyl benzene | 100-41-4 | 624 | 380 | 10 |
| Methylene chloride (dichloromethane) | 75-09-2 | 624 | 170 | 20 |
| Tetrachloroethylene | 127-18-4 | 624 | 164 | 10 |
| Toluene | 108-88-3 | 624 | 74 | 10 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 625 | 794 | 10 |
| Trichloroethane, 1,1,1- | 71-55-6 | 624 | 59 | 10 |
| Trichloroethane, 1,1,2- | 79-00-5 | 624 | 127 | 10 |
| Trichloroethylene | 79-01-6 | 624 | 69 | 10 |
| Vinyl chloride | 75-01-4 | 624 | 172 | 10 |
| Acenaphthene | 83-32-9 | 625 | 47 | 10 |
| Acenaphthylene | 208-96-8 | 625 | 47 | 10 |
| Anthracene | 120-12-7 | 625 | 47 | 10 |
| Benzo(a)anthracene | 56-55-3 | 625 | 47 | 5 |

Table 3: VOC & SVOC Parameters

| Constituent | CAS No. | Method | Daily Maximum (µg/L) | MAL (µg/L) |
|--|----------|--------|-------------------------|------------|
| Benzo(a)pyrene | 50-32-8 | 625 | 48 | 5 |
| Benzo(b)fluoranthene | 205-99-2 | 625 | 48 | 10 |
| Benzo(k)fluoranthene | 207-08-9 | 625 | 47 | 5 |
| Bis (2-ethylhexyl) phthalate | 117-81-7 | 625 | 258 | 10 |
| Chrysene | 218-01-9 | 625 | 47 | 5 |
| Diethyl phthalate | 84-66-2 | 625 | 113 | 10 |
| Dimethyl phenol, 2,4- | 105-67-9 | 625 | 47 | 10 |
| Dimethylphthalate | 131-11-3 | 625 | 47 | 10 |
| Di-n-butyl phthalate | 84-74-2 | 625 | 43 | 10 |
| Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-) | 534-52-1 | 625 | 277 | 50 |
| Dinitrophenol, 2,4- | 51-28-5 | 625 | 4,291 | 50 |
| Fluoranthene | 206-44-0 | 625 | 54 | 10 |
| Fluorene | 86-73-7 | 625 | 47 | 10 |
| Hexachlorobenzene | 118-74-1 | 625 | 794 | 5 |
| Hexachlorobutadiene | 87-68-3 | 625 | 380 | 10 |
| Hexachloroethane | 67-72-1 | 625 | 794 | 20 |
| Naphthalene | 91-20-3 | 625 | 47 | 10 |
| Nitrobenzene | 98-95-3 | 625 | 6,402 | 10 |
| Nitrophenol, 2- | 88-75-5 | 625 | 231 | 20 |
| Nitrophenol, 4- | 100-02-7 | 625 | 576 | 50 |
| Phenanthrene | 85-01-8 | 625 | 47 | 10 |
| Phenol | 108-95-2 | 625 | 47 | 10 |
| Pyrene | 129-00-0 | 625 | 48 | 10 |

MAL – Minimum Analytical Limit

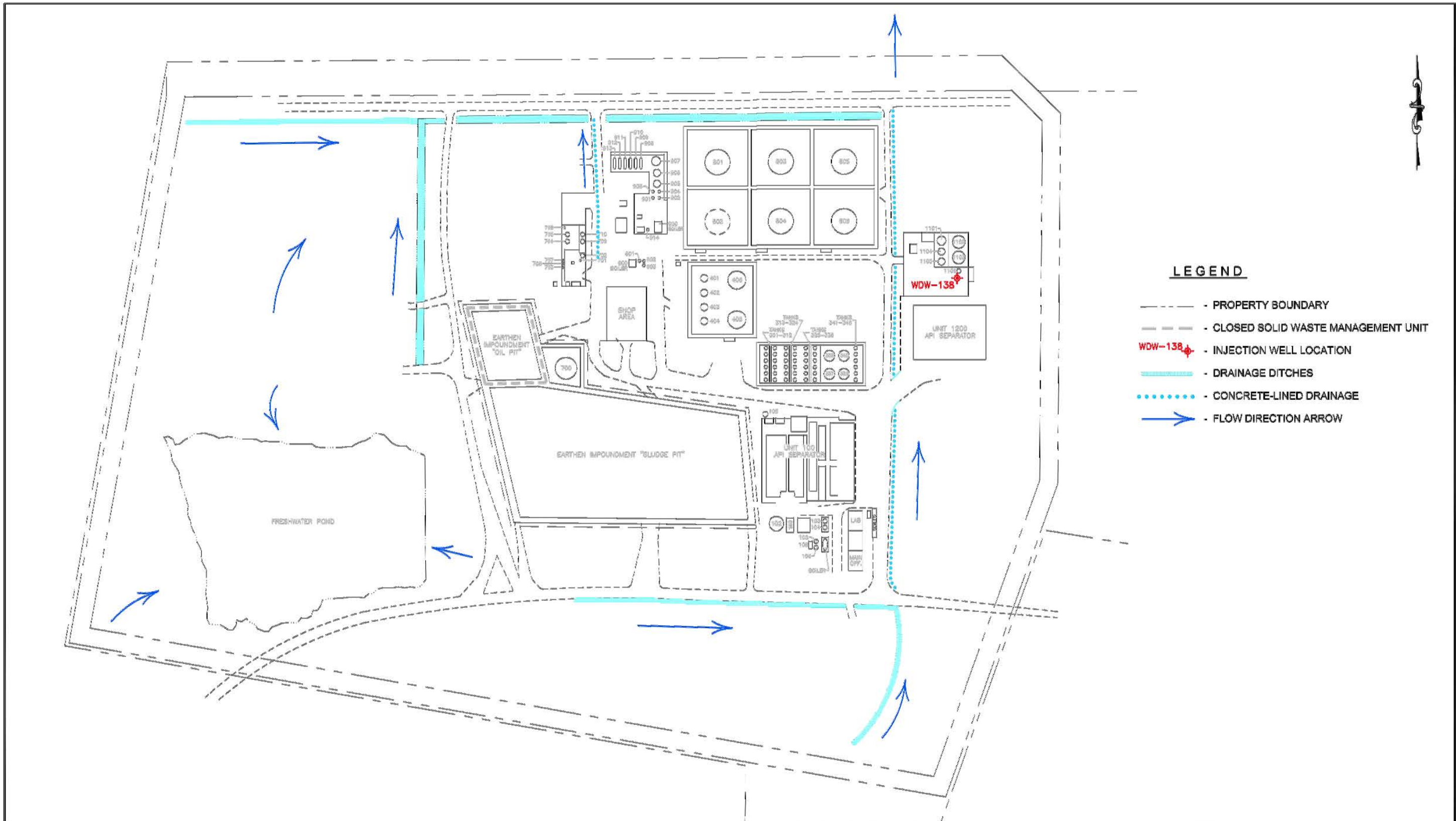
Methods for the Chemical Analysis of Water and Wastes, 40 CFR 136

Prior to RA Only: If the concentration of any constituent exceeds 85% of the Daily Maximum at a sample location(s), but is less than the Daily Maximum, that constituent will be analyzed prior to each discharge event at the location(s) until three consecutive analyses demonstrate that the constituent concentration is less than 85% of the Daily Maximum.

In no event will storm water be discharged from a unit if the concentration of any one constituent for the sample from the unit exceeds the Daily Maximum.

Figures

- Figure 1 Site Location**
- Figure 2 Annotated Site Aerial Photograph**
- Figure 3 Site Drainage**
- Figure 4 Storm Water Sample Locations**
- Figure 5 Freeboard Measurement Locations**
- Figure 6 Storm Water Management Decision Tree**



LEGEND

- - - - - PROPERTY BOUNDARY
- - - - - CLOSED SOLID WASTE MANAGEMENT UNIT
- WDW-138 - INJECTION WELL LOCATION
- — — — — DRAINAGE DITCHES
- CONCRETE-LINED DRAINAGE
- FLOW DIRECTION ARROW

NOTES:

1. THIS DRAWING IS A REFERENCE OF URS STORMWATER PLAN DRAWINGS, FIGURE NO. 3, TITLED "SITE DRAINAGE" DATED 5-4-04.
2. THE INFORMATION PRESENTED HEREIN IS PROPRIETARY IN NATURE AND IS NOT TO BE REPRODUCED OR RE-USED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF ENCTACT.



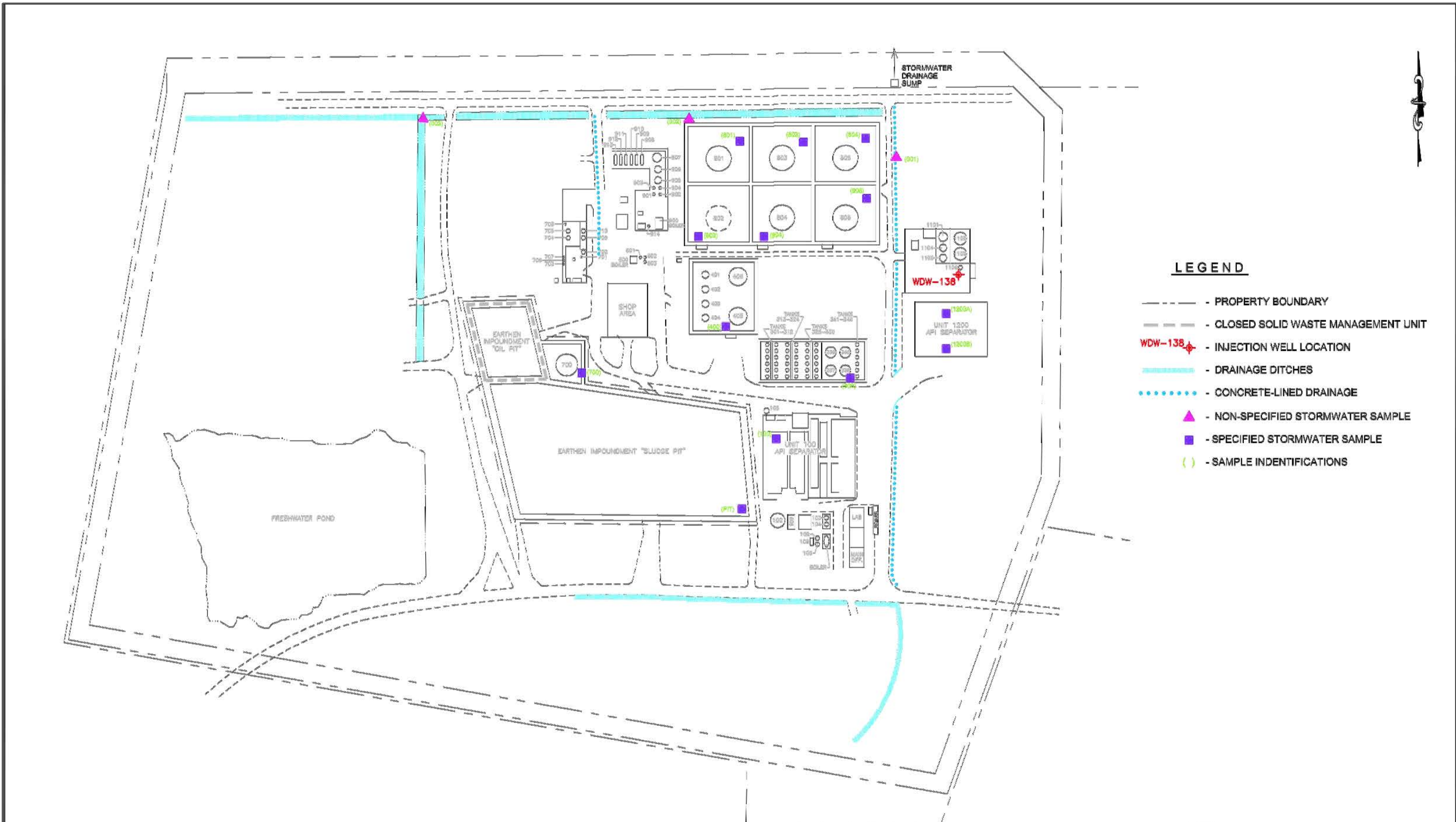
| REV | DATE | BY | CHK'D | APR'VD | DESCRIPTION |
|-----|------|----|-------|--------|-------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ENTACT 699 South Friendswood Dr., Suite 101
 Friendswood, Texas 77546
 P. 281-996-9882

DRAWING NAME: **SITE DRAINAGE**

PROJECT NAME & LOCATION: **MALONE SERVICE COMPANY SUPERFUND SITE, TEXAS CITY, TEXAS**

| | | | | | |
|-------------|----------|-------------|-------------|-------------|--------|
| DRAWN BY | J. HOUGH | APPROVED BY | G. TUNSTALL | REV | |
| DATE | 10-23-12 | DATE | 10-23-12 | SHEET NO. | 1 OF 1 |
| DRAWING NO. | | FIGURE NO. | | PROJECT NO. | F7988 |



LEGEND

- - - - - PROPERTY BOUNDARY
- - - - - CLOSED SOLID WASTE MANAGEMENT UNIT
- WDW-138 - INJECTION WELL LOCATION
- - - - - DRAINAGE DITCHES
- CONCRETE-LINED DRAINAGE
- ▲ - NON-SPECIFIED STORMWATER SAMPLE
- - SPECIFIED STORMWATER SAMPLE
- () - SAMPLE IDENTIFICATIONS

- NOTES:**
1. THIS DRAWING IS A REFERENCE OF URS STORMWATER PLAN DRAWINGS, FIGURE NO. 4, TITLED "STORMWATER SAMPLING LOCATIONS" DATED 7-22-04.
 2. THE INFORMATION PRESENTED HEREIN IS PROPRIETARY IN NATURE AND IS NOT TO BE REPRODUCED OR RE-USED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF ENCTACT.



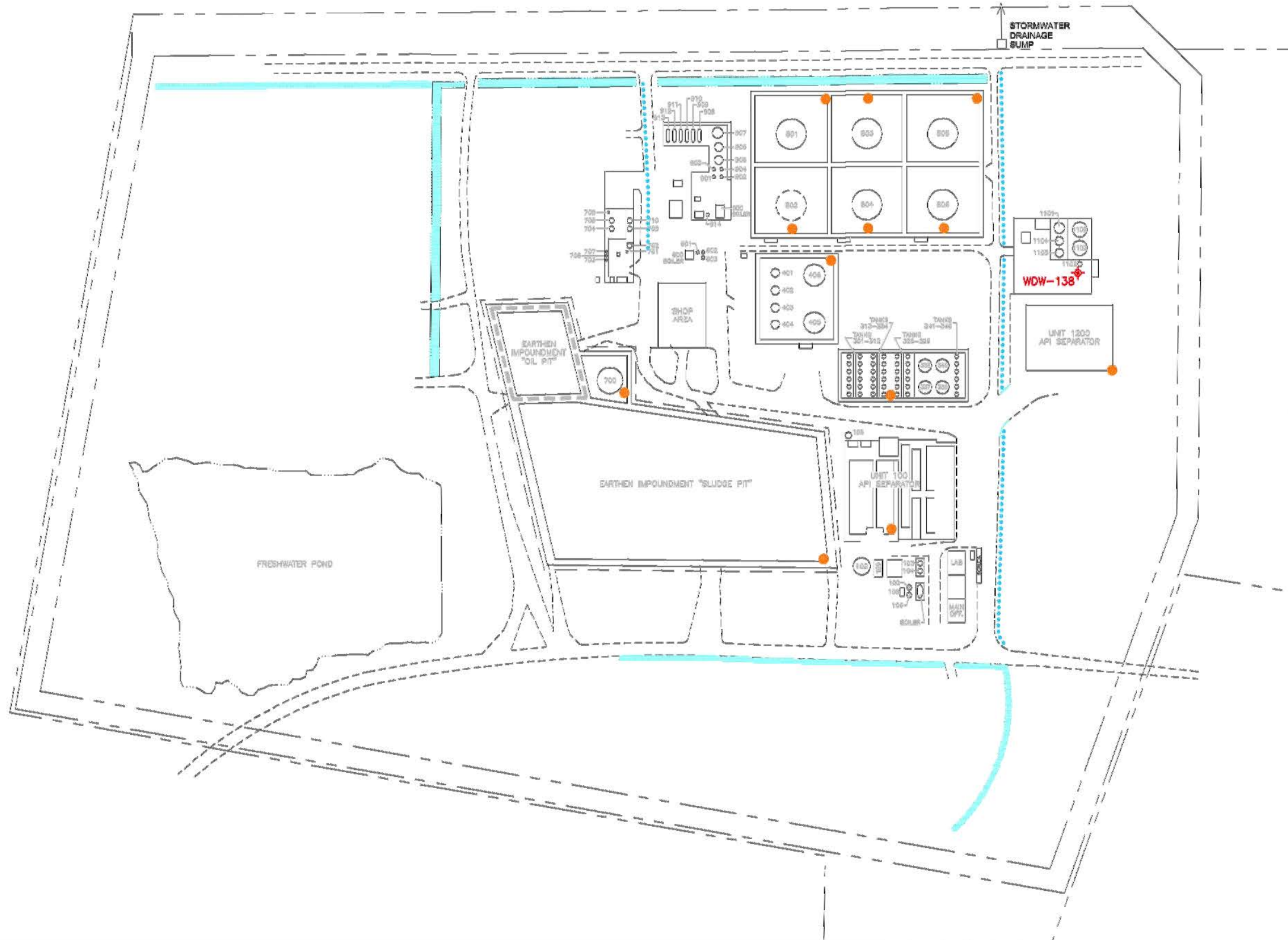
| REV | DATE | BY | CHK'D | APR'VD | DESCRIPTION |
|-----|------|----|-------|--------|-------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ENCTACT 699 South Friendswood Dr., Suite 101
 Friendswood, Texas 77546
 P. 281-996-9882

DRAWING NAME: STORMWATER SAMPLING LOCATIONS

PROJECT NAME & LOCATION: MALONE SERVICE COMPANY SUPERFUND SITE
 TEXAS CITY, TEXAS

| | | | | | |
|-------------|----------|-------------|-------------|-------------|--------|
| DRAWN BY | J. HOUGH | APPROVED BY | G. TUNSTALL | REV | |
| DATE | 10-23-12 | DATE | 10-23-12 | SHEET NO. | 1 OF 1 |
| DRAWING NO. | | FIGURE NO. | | PROJECT NO. | F7988 |



LEGEND

- - - - - PROPERTY BOUNDARY
- - - - - CLOSED SOLID WASTE MANAGEMENT UNIT
- WDW-138 - INJECTION WELL LOCATION
- - - - - DRAINAGE DITCHES
- CONCRETE-LINED DRAINAGE
- - FREEBOARD MEASUREMENT

- NOTES:**
1. THIS DRAWING IS A REFERENCE OF URS STORMWATER PLAN DRAWINGS, FIGURE NO. 5, TITLED "FREEBOARD MEASUREMENT LOCATIONS" DATED 7-22-04.
 2. THE INFORMATION PRESENTED HEREIN IS PROPRIETARY IN NATURE AND IS NOT TO BE REPRODUCED OR RE-USED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF ENCTACT.



| REV | DATE | BY | CHK'D | APR'VD | DESCRIPTION |
|-----|------|----|-------|--------|-------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

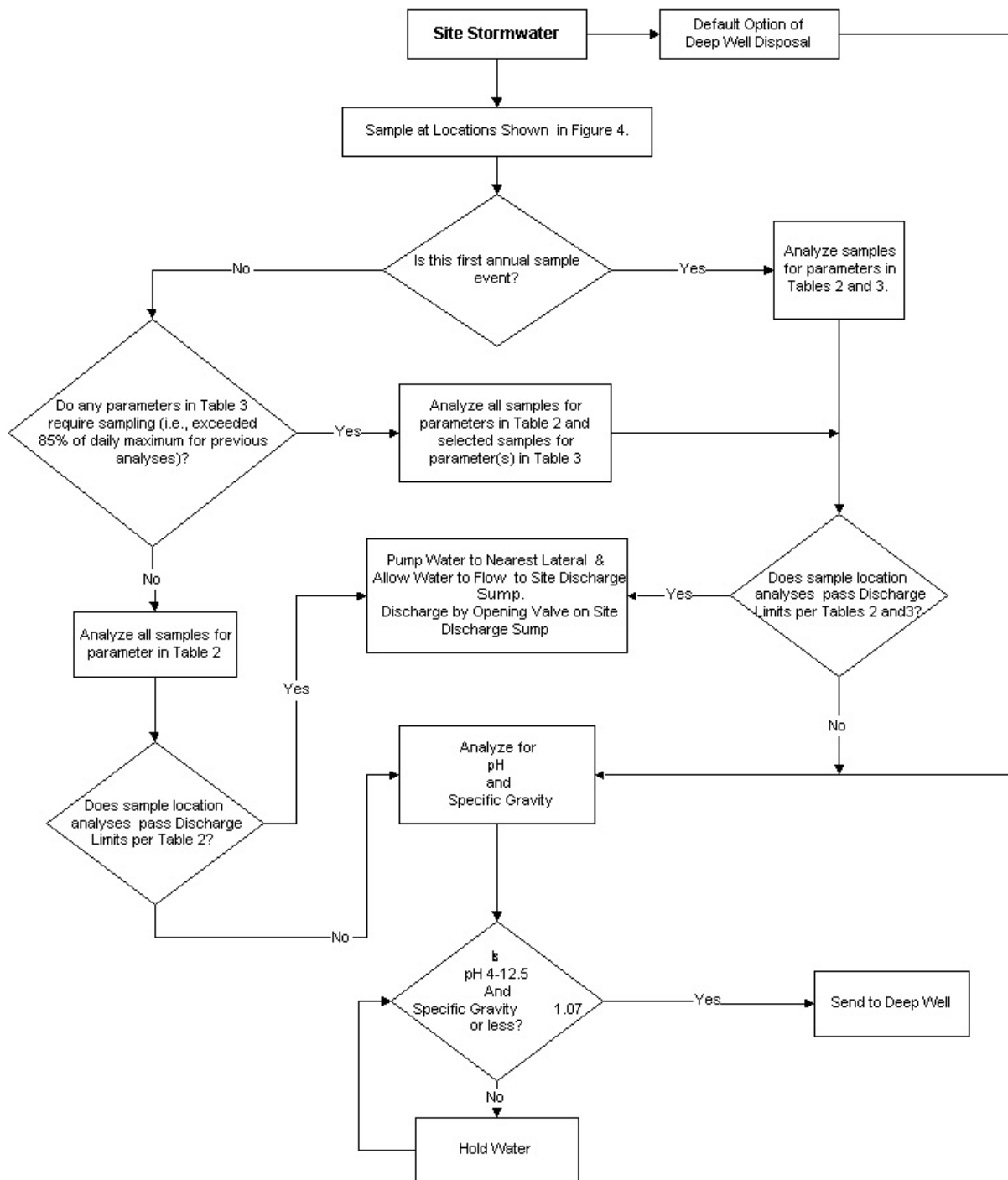
ENTACT 699 South Friendwood Dr., Suite 101
 Friendwood, Texas 77546
 P. 281-996-9882

DRAWING NAME: **FREEBOARD MEASUREMENT LOCATIONS**

PROJECT NAME & LOCATION: **MALONE SERVICE COMPANY SUPERFUND SITE
 TEXAS CITY, TEXAS**

| | | | | | |
|-------------|----------|-------------|-------------|-------------|--------|
| DRAWN BY | J. HOUGH | APPROVED BY | G. TUNSTALL | REV | |
| DATE | 10-23-12 | DATE | 10-23-12 | SHEET NO. | 1 OF 1 |
| DRAWING NO. | | FIGURE NO. | | PROJECT NO. | F7988 |

Figure 6
Stormwater Management Decision Tree



Appendix A Sampling and Analytical Records

Date and time samples were collected, names of personnel that collected the samples, the visual quality of the storm water discharge, the laboratory that conducted the analysis, technique or methods of analysis, the results of the measurement, and site related quality control/quality assurance records (i.e. sample storage, etc.).

(Completed Forms to be Inserted Here)

Appendix B Discharge / Disposal Records

(Completed Forms to be Inserted Here)

Appendix C Periodic Inspection Records

(Completed Forms to be Inserted Here)

Appendix D SWMP Update

Appendix E Pre-Completed Chain of Custody Forms