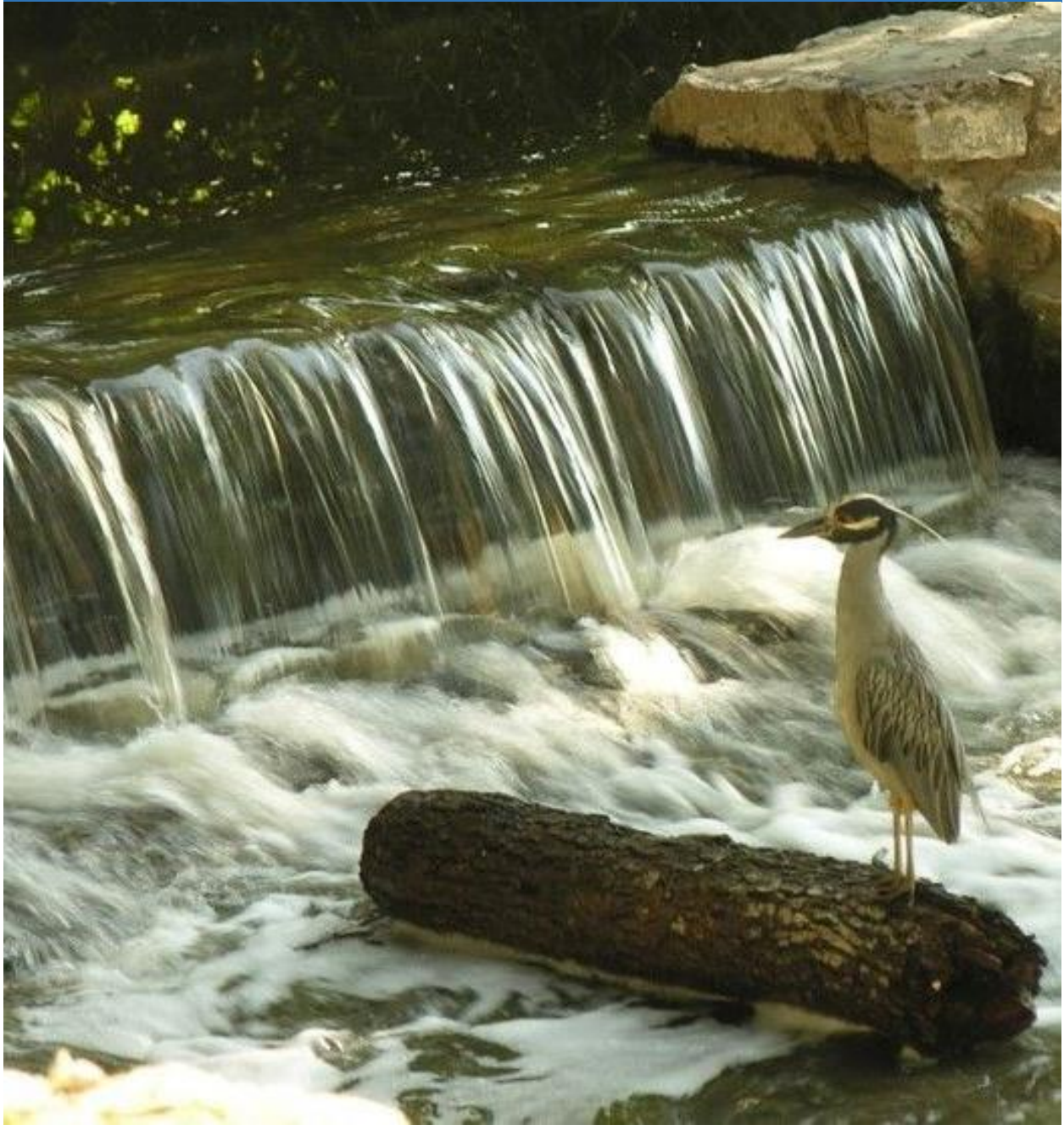




# Stormwater Management Program 2019 [UPDATED 2021]



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## **Introduction**

The original Municipal Separate Storm Sewer System (MS4) Permit for the University of Texas at Austin's storm sewer system was issued from the Environmental Protection Agency under the National Pollutant Discharge Elimination (NPDES) program in 1996. Under this original MS4 permit the University was a co-permittee with the City of Austin. UT Austin and The City of Austin each developed Storm Water Management Programs (SWMP) that complimented each other by outlining areas of responsibility in areas where there was jurisdictional overlap. Since the original permits issuance, the permitting authority for MS4 permits was transferred to the Texas Natural Resource Conservation Commission (TNRCC), now known as the Texas Commission on Environmental Quality (TCEQ) under the Texas Pollution Discharge Elimination System (TPDES). When the UT Austin permit was renewed in 2006, The University became the sole permittee for the storm sewer system that was solely under their operational control. The University and the City of Austin continue to work in cooperation with each other to effectively manage pollutants from reaching surface waters in the state discharging from storm sewer systems, though each entity is permitted separately and maintains individual SWMPs with their own requirements.

The original Storm Water Management Program for UT Austin was developed, adopted and implemented to satisfy the EPA's NPDES requirements for large cities. UT Austin has maintained the program on the larger tracts of developed land where roadways and utility conveyances are owned and maintained by UT Austin including; Main Campus, J.J. Pickle Research Campus (PRC), and the Brackenridge tract including the Gateway Apartments, and the Colorado Apartments.

The SWMP contained herein reflects the current and planned programs that will be maintained by UT Austin to address pollutants from entering the MS4 and to meet the requirements of the TPDES permit issued and effective September 18, 2018. The practices apply to all UT departments that implement projects with a potential for stormwater impacts within the UT Austin MS4. The SWMP has been updated and modified to accurately reflect the efforts of UT Austin and will continue to be updated as programs change and technology allows for greater efficiency of storm water management. Per TCEQ requirements, SWMP modifications will be made annually, based on assessing the effectiveness of measurable goals. The SWMP Minimum Control Measures that constitute the framework of the SWMP provide the permit language requirements followed by a description of the UT Austin program to meet the requirements with a summary table at the end of each listing BMPs, goals, reporting time frames, and UT Austin Departments responsible for the maintenance of the program components.

## References

1. Implementation Plan for Five Total Maximum Daily Loads for Bacteria in Four Austin Streams, Texas Commission on Environmental Quality, January 2015.
2. A Framework Plan for Waller Creek, The University of Texas at Austin, February 2019.
3. SITES (v2) Rating System for Sustainable Land Design and Development, June 2015.
4. Environmental Criteria Manual, City of Austin, Texas, enacted June 12, 2018. (Supp. No. 8-2018)\*.
5. National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, November 2005.

\*: When practices in criteria manual conflict with UT Austin Standards, the University standards will supersede.

## Acronyms

CPC	Capital Planning and Construction
EHS	Environmental Health and Safety
FAS	Financial and Administrative Services
FS-FOM	Facilities Services – Facilities Operations and Maintenance
FS-LS	Facilities Services - Landscape Services
FS-RR	Facilities Services – Resource Recovery
PMCS	Project Management & Construction Services
PTS	Parking and Transportation Services
TRecs- LIS	Technology Resources – Location Information Services
UEM	Utilities and Energy Management
UHD	University Housing and Dining

\*\*When “All” is used, this refers to any department which contributes data to the UT Austin MS4 Annual Report



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## **Minimum Control Measure I**

### **MS4 Maintenance Activities**

### ***MS4 Maintenance Activities Permit Language***

- i. Structural Controls: To the maximum extent practicable (MEP), the permittee shall continue to operate and maintain the MS4, including any storm water structural controls in such a manner as to reduce erosion and the discharge of pollutants to the MEP.*
- ii. Floatables: The permittee shall continue to implement a program to reduce the discharge of floatables (for example litter and other human-generated solid refuse) into the MS4. The permittee shall include source controls at a minimum, and structural controls and other appropriate controls where necessary.*
- iii. Roadways: The permittee shall continue to operate and maintain public streets, roads, and highways to minimize the discharge of pollutants, including pollutants related to deicing or sanding activities.*

## **I. MS4 Maintenance Activities**

### **A. Structural Controls**

#### **1. Inspection, Monitoring, and Maintenance:**

- a. Open Channel Drainage Systems (not Waller Creek) - Annually and more frequently as needed, inspect open channel drainage systems, including bar ditches, and remove any materials that could impede flow or increase erosion. The purpose of this activity is to maintain an appropriate flow rate in flood conditions and to maintain water quality.
- b. Open Channel Restrictions - Quarterly, inspect culverts, bridges, exposed utility conveyances, and other civil or natural open channel restrictions, and remove sediment, debris and vegetation. The purpose of this activity is to maintain an appropriate flow rate in flood conditions and to maintain water quality.
- c. Storm Sewer Mains - Continue the ongoing program of inspection, and if necessary cleaning of the storm sewer system. Suspect segments of the storm sewer mains will be inspected and cleaned immediately if necessary or annually at a minimum. The purpose of this activity is to maintain an appropriate flow rate in flood conditions, identify illicit discharges, and evaluate the condition of the system so that necessary repairs and replacements can be made. Waste materials removed from drainage conveyances will be disposed of in accordance with all applicable regulations promulgated by governmental authorities with jurisdiction.
- d. Repair or replace piping in the storm sewer to maintain optimal operating conditions on an as-needed basis. The purpose of this activity is to maintain an appropriate flow rate in flood conditions, identify illicit discharges, and evaluate the condition of the system so that necessary repairs and replacements can be made. Waste materials removed from drainage conveyances will be disposed of in accordance with all applicable regulations promulgated by governmental authorities with jurisdiction.

This MCM has been in effect for some time as a flood control management practice, and includes clean out of curb inlets, repair of broken pipe, stoppage control, and other activities. Infrastructure maintenance activities will be managed to reduce or minimize the discharge of floatables and other pollutants to surface waters.

#### **2. Flood Control Projects:**

- a. Structural controls – UT Austin operates six detention type flood control structures and a seventh structure will soon be added. Additional details of these structural controls are discussed in MCM II Post-Construction Storm Water Control Measures in section A (2).



## B. Floatables

1. As part of the original SWMP implementation, two floatable monitoring stations were established on Main Campus for the purpose of determining baseline conditions of floatable debris entering the MS4 system. These station locations were selected based on the size of the outfall and the collection area served. UT Austin determined that these are an adequate representation of the floatable debris entering the MS4 system and they are maintained quarterly.

As technology develops, additional structural controls will be evaluated and implemented in strategic areas to supplement overall program effectiveness.

## C. Roadways

1. Street/impervious cover sweeping – UT Austin removes sediment, trash, and organic detritus on University owned streets, mall areas, sidewalks, and in parking garages. UT Austin may utilize a contractor for street and parking area sweeping services when necessary. UT Austin sweeps University owned streets on a semiannual basis and as needed to accommodate increased leaf litter and recover sand from deicing operations in the winter.

**Table MCM 1 – MS4 Maintenance Activities**

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/Frequency</b>	<b>Responsible Dept.</b>
Open Channel Drainage Systems	Inspect open channels and remove any materials that could impede flow or increase erosion to maintain appropriate flow rate in flood conditions and to maintain water quality.	Inspect and remove materials in 100% (all channels) of the open channel drainage system.	September of each year	EHS FS-LS
Open Channel Restrictions	Inspect culverts, bridges, exposed utility conveyances, and other civil or natural open channel restrictions, and remove sediment, debris and vegetation.	Inspect and remove obstructions at 100% of open channel restrictions.	December, March, June, and September of each year	EHS FS-LS UHD
Storm Sewer Mains	Inspect, and if necessary clean storm sewer system mains and laterals	Inspect, and maintain 100% of MS4 system.	Full system by September 2023	UEM
Flood Control Projects	Maintain existing flood control structures according to designed specifications.	Maintain 100% of existing structures to engineered specifications.	September of each year	UEM
Floatables Monitoring	Monitor and maintain floatable control devices and collection stations.	Maintain two floatable monitoring stations and quantify collected floatables	December, March, June, and September of each year	FS-LS
Street/ Impervious Cover Sweeping	Sweep university owned streets on a semiannual basis and as needed.	Utilize owned equipment or contractor to sweep 100% of major thoroughfares, parking garages, and applicable impervious surfaces.	Spring and fall of each year, more frequent as necessary	FS-LS PTS UHD

**Related SMWP MCMs utilized to fulfill MS4 Maintenance component**

MCM 2 – Post Construction Storm Water Controls



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## **Minimum Control Measure II**

### **Post-Construction Storm Water Controls Measures**

### *Post-Construction Storm Water Control Measures Permit Language*

- i. The permittee shall continue implementation and enforcement of the controls to minimize the discharge of pollutants from areas of new development and significant redevelopment, after construction is completed. The goals of such controls must include:
  - A. limiting increases in erosion and the discharge of pollutants in storm water as a result of new development; and*
  - B. Reducing erosion and the discharge of pollutants in storm water from areas of redevelopment.**
- ii. The permittee shall continue to implement a comprehensive master planning process (or equivalent) to include all new development and redevelopment projects that disturb one acre or more of land, including projects less than one acre that are part of a larger common plan of development or sale that will result in disturbance of one acre or more.*
- iii. The permittee shall evaluate and revise the existing SWMP as necessary to ensure that this MCM includes a regulatory mechanism such as an ordinance to implement and enforce the requirements of this program and shall ensure that the SWMP includes strategies for structural and non-structural controls (i.e., BMPs) appropriate for the community. In addition, the permittee shall provide for adequate long-term operation and maintenance of BMPs.*
- iv. The permittee shall assess the impacts on receiving water(s) for all flood control projects. Where feasible, new flood control structures must be designed, constructed, and maintained to provide erosion prevention and pollutant removal from storm water. If applicable, the retrofitting of existing structural flood control devices to provide additional pollutant removal from storm water shall be implemented, to the maximum extent practicable.*

## II. Post –Construction Storm Water Control Measures

### A. Areas of New Development and Significant Redevelopment

UT Austin formed a SWMP working group composed of individuals from EHS, CPC, UEM, PMCS, FS-LS, FS-RR, Office of Sustainability, and UHD. The focus of the working group is to identify areas of improvement and implement feasible goals to enhance water quality across the MS4. The group met regularly during the SWMP review period and will continue to meet bi-annually to identify and address areas of further improvement.

During the implementation of the original SWMP, Environmental Health and Safety, reviewed construction plans for potential impacts on storm water quality to determine if the proposed construction met the requirements of the plan and recommended drainage and runoff controls to reduce erosion and peak flows, and to mitigate poor water quality. EHS has continued the review of construction plans and submits comments to designers in an effort to identify impacts to the MS4 system and compliance with the SWMP.

For both new development and redevelopment, UT Austin publishes training briefs for its construction personnel outlining contractor responsibilities and procedural and structural control management practices. UT Austin has a policy document called *Construction Site Procedures for Contractors* (Appendix B) outlining procedural best management practices ("BMPs") that contractors are required to follow to achieve Maximum Extent Practicable ("MEP") goals. This document is distributed during planning or pre-construction meetings to construction contractors working on University projects. This document, together with the controls outlined in this SWMP, is incorporated by reference into the construction standards manual UT Austin Design and Construction Standards. Private developments on lands leased from UT Austin are not subject to UT Austin Design and Construction Standards or this SWMP.

To help reduce pollution into the MS4, UT Austin requires any future food waste compactors and permanent dumpsters with the potential to contaminate stormwater to have secondary containment installed. These are evaluated on a project by project basis to determine if secondary containment is necessary.

In addition, Landscape Services performs maintenance activities along several sections of Waller Creek. At the Dell Medical School campus, they manage stormwater features, such as concrete and earthen bioswales. This involves soil management, vegetation maintenance, and removing excessive accumulation of sediment. They also implement several other general landscape management activities. These include the use of only organic material on site, and utilizing erosion and compaction measures to ensure soils can support plants. Susceptible areas are monitored, and slopes and banks are repaired when required. Across the Main Campus stretch of Waller Creek, Landscape Services staff continues to address invasive species, revegetate, and address heavily eroded bank areas.

## 1. New Development

Design criteria and specifications for permanent and temporary structural controls contained in the UT Austin Design and Construction Standards for Temporary Storm Water Pollution Control (Appendix C) reference the appropriate sections of the Texas Pollutant Discharge Elimination System (TPDES), the City of Austin's Drainage Criteria Manual and the Water Quality Management section of the City's Environmental Criteria Manual. UT Austin contractors use these manuals, with any modifications approved by UT Austin, as design guidelines for structural controls. In addition, EHS implemented a storm water management design standard (Appendix D) requiring all construction projects including outdoor disturbance to manage a certain percentage of precipitation on site and reduce runoff velocity. Appropriate water quality and flood control measures are evaluated on a project by project basis in order to reduce erosion and the discharge of pollutants into the storm sewer system.

- a. Pre-construction - Construction details are reviewed by EHS to determine if erosion, sedimentation, and pollution controls meet the requirements of the UT Austin Design and Construction Standards. UT Austin holds pre-design conferences and schematic (proposed design) reviews allowing for site-specific construction phase and post-construction phase controls to be included in the scope of work.
- b. Construction-Phase Controls - Guidelines for new construction are outlined in the UT Austin Design and Construction Standards. This document requires construction-phase controls to prevent contaminated water from any source with any substance which may cause water pollution or extraordinary maintenance of the storm sewer system from leaving the construction site. It applies to all new development construction projects, where there is any anticipated impact to storm water runoff. This document outlines specific details including preparation of erosion/sedimentation control plans, sequence of development, and frequency of inspection of controls.

At incremental stages of design development, UT Austin conducts construction plan reviews. These reviews provide an opportunity to change the scope of work as necessary to accommodate or mitigate unanticipated impacts on storm water quality and conveyance systems caused by the new development. The Director of Environmental Health and Safety has been assigned responsibility to determine if modifications to construction-phase controls are necessary to meet requirements and goals of the management plan and to require implementation of such controls.

- c. Post-construction Phase Controls - Storm water management planning at the pre-construction phase will focus on aspects of the site plan, grading plan, and proposed storm water utilities. To achieve MEP reduction in pollutant loading of runoff, architectural and structural controls after construction is complete will also be considered. Where the scope of work warrants, UT Austin will look for retrofit opportunities to manage runoff from existing facilities up gradient from the project site.

## 2. Redevelopment

Except where there is no anticipated impact to storm water runoff, redevelopment will follow the same guidelines with respect to erosion and sediment and pollution control as new development. Contractors will be required to implement site-appropriate controls (including BMPs) during redevelopment construction. EHS will review redevelopment projects for opportunities to improve post-construction storm water management in accordance with the Standard for Storm Water Management Design Parameters. Retrofits of existing stormwater infrastructure will be considered, in order to achieve water quality improvements. When sites are redeveloped, the retrofit stormwater infrastructure can continue to serve the new facilities.

a. Comprehensive master plan

UT Austin initiated a campus-wide master plan in 1994 to address architectural continuity and civil engineering aspects of future development and to provide for a more integrated and comprehensive planning process. UT Austin has retained consultants and appointed a Director of Planning to create a master plan guidance document. The University Of Texas Board Of Regents approved the plan in 2013, outlining the first phase for implementation and acknowledging the need for future studies. As suggested by the framework plan, UT Austin will develop a comprehensive, long-term stormwater quality master plan that identifies short and long term improvements and emphasizes that these measures are funded and operationalized.

b. Regulatory mechanism

UT Austin created an Environmental Health and Safety policy, found in the Handbook of Operating Procedures (HOP) 8-1020. This policy takes the place of a City ordinance and protects the health and safety of the campus community and visitors. The policy gives the Director of EHS the authority to terminate an activity or operation that threatens the safety of people or the environment. A copy of this policy may be found in Appendix A. In addition, a water quality incident response Standard Operating Procedure (SOP) is in development between EHS and UEM. The SOP will outline departmental responsibilities for responses to water and wastewater emergencies such as spills and leaks.

c. Flood Control Projects

UT Austin operates six detention type flood control structures and a seventh will become operational soon. three are located on Main Campus at Disch Faulk Field (DFF), the Engineering Education and Research Center (EER), and Robert Rowling Hall (RRH). A fourth is proposed for a project currently under construction, the Energy Engineering Building (EEB). The other three are located at PRC. Due to the current state of development at the PRC campus, it is found that pollutant removal is sufficient utilizing the extensive grassy swale conveyance system as well as the retention the existing structures provide.

Several bioswales and rain gardens are utilized at the Dell Medical School (DMS) for the treatment of stormwater runoff. An additional bioswale is located at John W. Hargis Hall. Rainwater is also harvested, contained in cisterns, and then reused for irrigation purposes at 3 locations, including the Belo Center for New Media (BMC), the Student Activity Center(SAC), and DMS.

Extensive development of the Main Campus has made the construction of above ground retention or detention structures infeasible. As an alternative to surface impoundment structures UT Austin has begun incorporating below grade structures to reduce peak runoff volumes and provide for treatment of storm water runoff such as TSS removal. Any such controls will be designed to reduce peak runoff for rainfall events of short duration or low precipitation rates. Some of the subgrade detention structures also serve to reduce potable water consumption of the University by allowing collected storm water to be re-used for irrigation and other non-potable purposes. To address receiving water channel flooding problems, UT Austin performed a study to assess creek bank stability and identify areas where stabilization improvement projects were needed. Creek bank stabilization and reinforcement projects were initiated at severe erosion locations and the evaluation and stabilization with structural improvements is ongoing. UT Austin works with the City of Austin to incorporate bank stabilization projects in conjunction with urban renewal aspects of the campus-wide master plan.

In addition, as suggested by the framework plan, UT aims to address flood control through softer practices, such as laying back of slopes at the top of Waller creek banks. The benefits of the softer practices include greater resilience in bank stability, and more room to mitigate top of bank run-off and erosion, which will foster greater ecological benefit for Waller Creek. Engineered structures will be used as a last resort.



<b>Table MCM 2 – Post Construction SW Controls</b>				
<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
New Development / Redevelopment	Update and implement design and construction standards for structural BMPs	Review 100% of projects >1 acre for compliance with standard to minimize storm water pollution	September of each year	All
Comprehensive Master Plan	Follow guidance of framework plan and develop a stormwater master plan	Gather input on stormwater master plan from 3 key stakeholder groups at UT Austin, and utilize SITES in the interim.	January 2020	All
Regulatory Mechanism	Enforce and update the policy when required	Conduct monthly SWPPP inspections at 100% of construction sites >1 acre. Ensure that existing environmental policy 8-1020 is enforced.	Every month	All
Flood Control Projects	Evaluate and encourage designers to incorporate flood control structures into future CIPs.	Incorporate available flood control structures into 100% of applicable CIPs.	September of 2023	PMCS EHS CPC
<b>Related SWMP MCMs utilized to fulfill Post-Construction Controls component</b>				
MCM 1 – MS4 Maintenance Activities				
MCM 6 – Construction Site Storm water Run off				



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## **Minimum Control Measure III**

### **Illicit Discharge Detection and Elimination**

## ***Illicit Discharge Detection and Elimination***

*i. The permittee shall prohibit illicit non-storm water discharges from entering the MS4. The permittee shall continue to implement a program, including a schedule, to detect and eliminate illicit discharges and improper disposal into the MS4. This program must include:*

*A. A description of the program, including inspection procedures, frequency, and methods for detecting and preventing illicit discharges, to implement and enforce an ordinance, orders, or similar means to prevent illicit discharges to the MS4.*

*In addition, within one (1) year from the date of permit issuance, the program must include items 2) thru 7).*

*B. A description of procedures to conduct on-going field screening activities, including areas or locations that will be evaluated by such field screens;*

*C. A description of procedures to be followed to investigate portions of the MS4 that indicate a reasonable potential of containing illicit discharges or other sources of non-stormwater;*

*D. A description of procedures to prevent, contain, and respond to spills that may discharge into the MS4;*

*E. A description of a program to promote, publicize, and facilitate public reporting of illicit discharges or water quality impacts associated with discharges from the MS4;*

*F. A description of educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials; and*

*G. A description of controls to limit infiltration of seepage from municipal sanitary sewers to the MS4 where necessary.*

*ii. For the purposes of this permit, the following discharges need not be addressed as illicit discharges by the permittee nor prohibited from entering the MS4:*

*A. Discharges regulated by a separate NPDES or TPDES permit.*

*B. Discharges for which an NPDES or TPDES permit application has been submitted or neither an NPDES nor TPDES permit is required; and*

*C. Miscellaneous non-stormwater discharges*

*iii. The SWMP must identify any all categories of miscellaneous, non-storm water discharges that may be discharged into the MS4, and include a description of any local controls or conditions placed on discharges exempted from the prohibition on non-stormwater.*

iv. *Miscellaneous non-storm water discharges that may be authorized by the permittee include:*

- A. water line flushing;*
- B. landscape irrigation;*
- C. diverted stream flows;*
- D. rising ground waters;*
- E. uncontaminated ground water infiltration;*
- F. uncontaminated pumped ground water;*
- G. discharges from potable water sources;*
- H. foundation drains;*
- I. air conditioning condensation;*
- J. irrigation water;*
- K. springs;*
- L. water from crawl space pumps;*
- M. footing drains;*
- N. lawn watering;*
- O. street wash water;*
- P. individual residential vehicle washing;*
- Q. wash waters using only potable water, and which are similar in quality and character to street wash water or individual residential vehicle washing but without the use of detergents or surfactants;*
- R. flows from riparian habitats and wetlands;*
- S. dechlorinated swimming pool discharges;*
- T. other allowable non-storm water discharges listed in 40 CFR § 122.26(d)(2)(iv)(B)(1);*
- U. other allowable non-storm water discharges listed in the TPDES Construction General Permit No. TXR150000 and TPDES Multi-Sector General Permit No. TXR050000; and*
- V. other similar occasional incidental non-storm water discharges.*

v. *Program descriptions must address discharges or flows from fire-fighting activities only where such discharges or flows are identified as significant sources of pollutants.*

vi. *The permittee shall prohibit any individual non-storm water discharge otherwise exempted under this paragraph from the prohibition on non-storm water that is determined by the permittee to be contributing significant amounts of pollutants to the MS4.*

vii. *Elimination of Illicit Discharges and Improper Disposal*

A. *The permittee shall continue to require the operator of an illicit discharge or improper disposal practice, to eliminate the illicit discharge or stop the improper disposal practices as quickly as reasonably possible. If the elimination of an illicit discharge within 30 days is not possible, the permittee shall continue to require the operator of the illicit discharge to remove the discharge according to an expeditious schedule. Until the illicit discharge or improper disposal is eliminated, the permittee shall continue to require the operator of the illicit discharge to take all reasonable measures to minimize the discharge of pollutants to the MS4.*

B. *The permittee shall continue to:*

1) *keep a list of techniques used for detecting illicit discharges and revise the list as necessary; and*

2) *use appropriate actions and enforcement procedures for removing the source of an illicit discharge and revise when necessary.*

viii. *Overflows and Infiltration. The permittee shall continue to implement controls where necessary and feasible to prevent dry weather and wet weather overflows from sanitary sewers into the MS4. The permittee shall continue to limit the infiltration of seepage from university sanitary sewers in to the MS4.*

ix. *Household Hazardous Waste and Used Motor Vehicle Fluids. The permittee shall prohibit the discharge or disposal of used motor vehicle fluids and household hazardous wastes, and the intentional disposal of collected quantities of grass clippings, leaf litter, and animal wastes in to the MS4.*

A. *The permittee shall continue to ensure the implementation of programs to collect used motor vehicle fluids (including at a minimum, oil and antifreeze) and household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials) for recycling, reuse, or proper disposal. Such programs shall be readily available to the residential sector within the MS4 and shall be publicized and promoted on a regular basis.*

B. *Household hazardous waste collection centers which are operated by the permittee as a SWMP element are not an industrial activity requiring a separate TPDES authorization for the discharge of storm water.*

x. *MS4 Screening and Illicit Discharge Inspections. To locate portions of the MS4 with suspected illicit discharges and improper disposals, the permittee shall continue to*

*implementation of a Dry Weather Screening Program described in Part III Section B.2.h.i of this permit. Follow up activities to eliminate illicit discharges and improper disposals may be prioritized on the basis of magnitude and the nature of the suspected discharge, sensitivity of the receiving water, or other relevant factors. The entire MS4, but not necessarily each individual outfall, shall be screened at least once per five years.*

- xi. Priority Areas. Within one year from the date of permit issuance, the permittee shall develop a list of priority areas likely to have illicit discharges. The permittee shall continue to evaluate and update this list each year and report the results in the annual report.*
- xii. NPDES and TPDES Permittee List. The permittee shall maintain an updated list of discharges that discharge directly to the MS4 that have been issued an NPDES or a TPDES permit. The list shall include the name, location and permit number (if known) of the discharger.*
- xiii. MS4 Map*
  - A. The permittee shall maintain a current, accurate MS4 map of the location of all MS4 outfalls; the names and locations of all waters of the U.S. that receive discharges from the outfalls; and any additional information needed by the permittee to implement its SWMP. Where possible, the permittee shall use the Global Positioning System (GPS) to locate outfalls and photographs for documenting baseline conditions.*
  - B. The permittee shall document the source information used to develop the MS4 map, including how the outfalls are verified and how the map will be regularly updated.*
  - C. New MS4 Areas: The permittee shall continue to develop and implement procedures to ensure that the above mapping requirements in Part xiii are met for all new portions of the MS4.*
  - D. Existing MS4 Areas: The permittee shall continue to demonstrate that it has evaluated all existing portions of the MS4 and that the mapping requirements have been implemented to the maximum extent practicable.*
- xiv. Spill Prevention and Response. The permittee shall continue to implement existing programs which prevent, contain, and respond to spills that may be discharged into the MS4. The spill response programs may include:*
  - A. a combination of spill response actions by the permittee or another public or private entity; and*
  - B. legal requirements for private entities within the jurisdiction of the permittee.*

### III. Illicit Discharge Detection and Elimination

- A.1 The University of Texas at Austin EHS department monitors all storm water regulated activities, including small and large construction sites with NPDES or TPDES permits. EHS will continue to monitor activities to ensure discharges from any permittees do not contribute pollutants into the UT Austin MS4.
- A.2 As stated in III.A.1 all permitted operators on UT MS4 properties will be monitored to prevent potentially polluted runoff from entering the UT MS4.
- A.3 (a) The University of Texas maintains an online Discharge Request system for all batch discharges of water to the sanitary and/or storm sewer systems on Main Campus and Pickle Research Campuses (PRC). EHS maintains and approves discharges after reviewing the information submitted and consulting with the requestor to prevent unintentional discharges of prohibited pollutants to sewer systems. This system allows EHS staff to analyze non-storm water discharges prior to release in order to investigate, and potentially sample to identify any pollutants. Those discharges that are acceptable under the TPDES permit are also subject to this review and approval process. Should a requested discharge be found to have significant pollutants, the discharge will be denied and the requestor may have to pump and haul the water offsite for proper disposal.
- B.1 The following list of non-storm water discharges are allowed on the UT Austin Campus:
- *Water line flushing*
  - *Landscape irrigation*
  - *Diverted stream flows*
  - *Rising ground water*
  - *Uncontaminated pumped ground water*
  - *Discharges from potable water sources*
  - *Foundation drains*
  - *A/C condensate*
  - *Dechlorinated swimming pool water*
  - *Other allowable non-storm water discharges listed in 40 CFR§(d)(2)(iv)(B)(1)*
  - *Other allowable non-storm water discharges listed in*
  - *Springs*
  - *Water from crawl space pumps*
  - *Footing drains*
  - *Hand watering*
  - *Street and other wash water using only potable water w/o detergents/chemicals*
  - *Individual residential vehicle washing*
  - *TPDES CGP TXR150000, and TPDES MSGP TXR050000*
  - *Program descriptions must address discharges or flows from firefighting only where such discharges or flows are identified as significant sources of pollutants.*

All other discharges of non-storm water are prohibited without written authorization from EHS.

Should an illicit discharge be identified through one of the detection techniques, the operator of the discharge is requested to discontinue the discharge as soon as discovered. If the immediate cessation of the discharge is not possible, an expedited schedule of addressing the discharge is required. Most identified illicit discharges are able to be addressed within 30 days, however, should the situation arise that the discharge cannot be properly routed or eliminated, EHS works with the operator to minimize the discharge through appropriate BMPs which may include the pumping and hauling of all non-storm water discharges to an authorized wastewater treatment and disposal facility.

B.2 The University of Texas at Austin will continue the existing program of illicit discharge detection. As part of this updated SWMP a list of techniques being used for detecting illicit discharges as well as the actions and enforcement procedures to be taken are discussed below.

B.2 (a) UT Austin UEM and EHS implemented an extensive dye testing program to identify and eliminate illicit connections to the storm sewer system as part of the SWMP developed for the original Phase I MS4 permit. The dye testing was continued and expanded to test all buildings on UT and PRC campuses. All permanent illicit discharges identified under this program were addressed during this initiative to prevent cross contamination of storm water discharges with sanitary discharges. Whenever an illicit discharge is suspected, UT Austin may use this technique, as well as other methods to identify the discharge and expeditiously eliminate the discharge. In addition to this program the techniques used to detect illicit discharges to the storm sewer system by The University of Texas at Austin include:

1. Regular maintenance of sanitary sewer lines including visual inspection and cleaning of grease traps and known problem areas as needed to prevent overflows.
2. Responding to emergencies using appropriate equipment and materials to control overflows
3. Proper disposal of waste materials
4. Implementation of necessary repairs immediately or as soon as practicable
5. Dry Weather Screening on an annual basis for sanitary characteristics and perform subsurface monitoring by closed-circuit television on any suspect segments of storm sewer mains when suspect segments are identified

B.2 (b) The University of Texas at Austin EHS department has an emergency and spill response program that provides coverage for environmental emergencies 24-hours a day 7 days a week. Should an illicit discharge from a storm sewer be suspected and reported to EHS, an investigation into the source of the discharge is initiated. UT Austin EHS will effect an immediate cessation of illicit discharges upon notice of



such discharge to UEM or EHS. The Director of EHS has been given express authorization for specified individuals to require an immediate cessation of activities. An emergency work order may be initiated as soon as feasible to correct the illicit connection to the MS4. All reasonable efforts will be made to correct the illicit connection within 30 days of discovery. If correction cannot be accomplished within 30 days, an expeditious schedule will be established as to when the connection is expected to be corrected.

C. UT Austin will continue the programs established under previous versions of the SWMP to minimize or prevent overflows and infiltrations from sanitary sewers into the MS4. The elements of these programs include:

1. Regular maintenance of sanitary sewer lines including visual inspection, cleaning of grease traps, and maintaining known problem areas as needed to prevent overflows.
2. Emergency response using appropriate equipment and materials to control overflows.
3. Proper disposal of waste materials.
4. Implementation of necessary repairs immediately or as soon as practicable.

To address seepage UT Austin screens major storm water outfalls observed with dry weather flows on an annual basis for sanitary characteristics and will perform subsurface monitoring by closed-circuit television on any suspect segments of storm sewer mains when suspect segments are identified.

D. UT Austin will control the illicit discharge of motor vehicle fluids, hazardous wastes, animal wastes, and landscape maintenance wastes generated by UT Austin, its employees and agents, by employing the following strategies:

1. Motor Vehicle Fluids – All UT Austin motor vehicles are maintained at storm water protected central facilities with provisions for proper collection, accumulation and transfer of waste fluids. Maintenance protocols and practices in place to prevent contaminated discharges to storm water from motor vehicle fluid handling facilities include containment around storage drums and tanks, use of oil drip pans where necessary, and covered and contained storage for used parts at service centers if the parts present a potential for release of contaminants. Both Main and PRC fleet maintenance facilities utilize EHS for spill response and have posted notices to call EHS should a spill occur. Slug Control Plans implemented to fulfill pretreatment requirements of City of Austin Wastewater Permits also contain provisions for the protection of storm water runoff.
  - a. Motor Oil - UT Austin has an established program to collect and recycle used motor oil. Automotive service operations include protocols for safely storing used motor oil, which is picked up by EHS. Motor oil and other waste oil products such as filters and oily rags, are manifested to an approved vendor for reprocessing to the maximum extent allowed under federal regulations.

- b. Antifreeze - UT Austin has established a policy and program to collect and properly manage antifreeze wastes.
  2. Hazardous Waste Materials - UT Austin is a generator of hazardous wastes and maintains multiple EPA ID numbers. UT Austin maintains a hazardous waste accumulation facility at Main Campus and at PRC. The hazardous waste accumulation facilities are secured, limited access buildings. These facilities are operated as 90-day accumulation facilities consistent with UT Austin's status as a large quantity generator. The hazardous waste management program is publicized to University departments through training workshops, periodic newsletters, and advertisements. Hazardous wastes are picked up from the point of generation and transported to the accumulation facilities by the EHS hazardous waste team. The materials are accumulated at these facilities for a period of no more than 90 days, then removed and disposed of by a contracted hazardous waste disposal company. UT Austin employs full-time hazardous materials specialists in the task of hazardous waste pickup and transport. They are trained and experienced in the proper handling of hazardous wastes and hazardous waste containers and have attended at least 24 hours of Hazardous Materials Emergency Response training. To protect themselves and the environment from chemical exposure, they inspect each container at the point of generation to ensure that its integrity is not compromised. If there is a release of hazardous materials during transport, the hazardous materials specialists have access to spill response supplies (e.g. hydrophilic and hydrophobic absorbents, boom and dike materials, and bioremediation supplies), which reduce the risk of introducing hazardous materials to the storm water system. UT Austin employees transport these wastes only within the UT Austin property where the waste was generated. The accumulation facilities are inspected on a weekly basis by a hazardous materials specialist. All hazardous waste containers are inspected to ensure that proper labeling requirements are met, that containers are tightly sealed, and that no containers are leaking.

UT Austin also addresses applicable provisions of this SWMP in other related programs such as the Waste Minimization Program, Hazard Communication Program, Spill Prevention Control and Countermeasures, and Recycling Program.

3. Animal Wastes - UT Austin's policy for disposal of animal wastes is as follows:
  - a. Research Laboratory Animals - UT Austin maintains an Industrial Wastewater Permit from the City for the disposal of sanitary wastes through the sewage conveyance system to publicly owned treatment works operated by the City of Austin. Non-infectious metabolic wastes from research animals are disposed of through washing into sanitary sewer lines as well as disposal with other municipal trash. Animal carcasses are disposed of by off-site incineration.

- b. Free-roaming Animals - Effect controls for metabolic wastes from roosting pigeons, grackles, starlings, and bats including:
  - (1.) Using noise-based disruption of roosting to the extent allowed by law.
  - (2.) The impact of significant roosting sites on storm water quality will be minimized by an aggressive program to discourage the establishment of such sites and cleaning of these areas by appropriate methods on an as needed basis.
- 4. Landscape Maintenance Wastes - Leaf litter and grass clippings are managed as a renewable resource by shredding, mixing, composting, and mulching. Grounds maintenance controls for leaf litter and grass clippings involve blowing, raking, and sweeping plant wastes into piles for transportation to an on-campus storage location.
- E. UT Austin will continue the Dry Weather Screening Program as required in the MS4 permit. The program will continue to monitor dry weather flows and analyze any identified to ensure improper connections are not made to the MS4 system. In addition to the construction plan review conducted at various development intervals, this program will continue to screen the entire MS4 at least once per 5-year permit term. A summary of the program implemented follows:

Dry Weather Screening Program - UT Austin surveys all outfalls and identifies the location of dry weather flows. Annually, a chemical analysis is performed on identified dry weather flows to locate illicit discharges and improper connections. During the annual chemical analysis, UT Austin will screen dry weather flows from University drainage system outfalls, and perform colorimetric analyses for pH, chlorine, copper, phenol, detergents, and ammonia. Results of the screening and any analysis performed will be retained by the EHS Department. Any illicit discharge identified will be addressed expeditiously as described earlier in this MCM.
- F. UT Austin monitors activities on the covered campuses for any TPDES permitted activities that would contribute to the MS4 system. These separately permitted facilities will be tracked by maintaining a list of the activity including the name, location, and permit number of the discharger. EHS continuously monitors campus activity to identify such discharges and works with operators to ensure permit requirements are met.
- G. UT Austin Mapping Services maintains composite utility maps for sewer systems on UT Austin Campuses. These map(s) include locations for MS4 outfalls, and all receiving waters. The MS4 map(s) were developed through field reconnaissance or visual identification as well as keeping the map(s) updated utilizing the design development construction plan reviews discussed in other MCMs within this SWMP.
- H. UT Austin has had a spill response program for many years and will continue to maintain and improve the program as necessary to prevent, contain, and respond to spills that may enter the MS4. University policy is that any discharge to surface waters of any substance which could

or does cause pollution to surface waters is strictly prohibited. Criteria used to determine whether a substance may cause pollution include color, odor, sheen, impacted aquatic life, turbidity, and sampling and analysis when any of these characteristics are observed.

## Procedural Components

### 1. Prevention Measures

- a. EHS Training Programs – The University provides hazard communication training as required by Texas law. Hazard communication training includes, among other information, information on interpreting labels, and material safety data sheets; general instruction on the handling and disposal of hazardous chemicals; and general instructions relating to spill cleanup procedures. This training is offered to all employees of UT Austin who manage or handle hazardous materials, including teaching assistants.

Additionally, HAZWOPER training is made available to UT Austin employees responsible for managing hazardous wastes. EHS requires additional specific training relating to chemical safety and disposal procedures to any University department. This training is customized to fit the needs of each department and includes information on disposal of waste materials and the reporting and handling of spills. The training sessions are publicized through venues such as the EHS web page and other appropriate means of communication.

- b. Other Educational programs - UT Austin distributes a policy document, the University Construction Site Procedures for Contractors, containing construction site procedures (aimed specifically at reducing pollution of surface waters) required of contractors. This SWMP incorporates by reference this policy document (See Appendix B).

EHS is currently developing a training module that includes stormwater components that must be met by all campus stakeholders when projects are ongoing. This training outlines the requirements of the MS4 permit, proper waste disposal, dye testing, required BMPs, among other topics.

In addition, UT Austin has completed an extensive storm drain marking program. This program is ongoing and newly installed storm drains are labeled after construction projects are complete and/or drains have the labels replaced when they are no longer legible, broken, or removed. This program is described in further detail in Appendix E.

### 2. Response Measures

- a. Personnel - The University implemented an on call system for responding 24 hours a day, 7 days a week to spills on UT Austin properties which threaten or impact surface water quality, regardless of whether the responsible party is affiliated with

UT Austin. Staff members coordinate response and clean-up activities with appropriate state and local governmental offices and ensure that any necessary corrective action is taken. EHS is prepared to respond to spill incidents originating on UT Austin property which have impacted or threaten to impact any of the various surface water bodies in the corporate boundary or the extra-territorial jurisdiction of the City of Austin.

Equipment and Materials - UT Austin maintains a well-stocked equipment and materials cache for mitigating and abating spills which threaten or have impacted surface waters, including hydrocarbon absorbing/hydrophobic booms, dikes, and pads, absorbent clay, storage container liners, pumps, skimmers, shovels, brooms, mops, personal protective gear, and a trailer mounted recovery/storage tank.

### Structural Components

#### 1. Prevention Measures

- a. Underground Storage Tanks - UT Austin maintains compliance with regulatory requirements for underground storage tanks by employing strategies such as double walled USTs, cathodic protection, spill and overflow appurtenances, continuous monitoring and integrity testing.
- b. Aboveground Storage Tanks - Aboveground storage tanks containing bulk process materials such as lubricating oils, acids, scale and corrosion inhibitors, and large outdoor liquid-cooled transformers are designed or retrofitted with secondary containment and/or neutralization. In cases where the secondary containment feature is not protected from rainfall, UT Austin uses an established protocol for the release of trapped storm water. Sampling and analysis of the rainwater will be completed if there is a reasonable suspicion of contamination based upon the criteria of color, odor, sheen, turbidity, or impacted aquatic life. Trained personnel use these criteria to assess storm water quality prior to release from secondary containment.

#### 2. Response Measures

Permanent anchoring bolts for floating booms have been placed at five separate locations in the banks of Waller Creek, the receiving water for approximately 95% of the Main Campus drainage

**Table MCM 3 – Illicit Discharge Detection and Elimination**

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Monitor permitted discharges	UT Austin EHS staff monitor NOI(s) submitted and corresponding permitted activities to prevent unauthorized discharges.	Review 100% of submitted NOIs to prevent unauthorized discharge. Report number of CSN’s submitted as well as the number of NOI’s received	September of each year	EHS
Monitor Non-storm water discharges	UT Austin staff to monitor visible discharges during dry periods	Investigate 100% of observed or reported potential illicit discharges. Track the number of potential illicit connections reported by UT Austin campus community	Investigated upon receipt of report	EHS UEM PMCS UHD FS-LS CPC
Maintain Online Discharge Request System	Monitor and work with requestors to properly discharge waters to appropriate sewer system with approved BMPs to prevent pollutants from entering MS4	EHS staff respond to 100% of submitted requests to review process generating water, and areas proposed for discharge.	Each occurrence	EHS
Maintain sanitary sewer system	UEM to continue process of surveillance and maintenance of damaged sanitary lines to prevent blockage and bypass	Report on repairs, maintenance, inspections conducted by UT personnel	September of 2019	UEM
		Post RFP for sanitary sewer system inspection contract	September of 2020	
		Inspect 100% of sanitary sewer system	September of 2021	
		Repair 50% of deficiencies that could adversely affect receiving stream quality, as identified during inspection	September of 2022	
		Repair remaining 50% of deficiencies that could adversely affect receiving stream quality, as identified during inspection	September of 2023	

**Table MCM 3 – Illicit Discharge Detection and Elimination**

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Grease trap service/maintenance	Service all pretreatment devices according to local requirements to minimize overflows	FS-FOM to maintain contract with licensed service provider to pump grease traps. FS-FOM to repair/maintain grease traps. EHS to ensure 100% of traps are serviced according to local requirements. Track the number of grease traps serviced.	September of each year	FS-FOM EHS
Spill Response Program	Maintain 24-Hr./7-day/week spill response program to minimize unauthorized discharges to MS4	EHS to maintain appropriate spill response equipment, personnel, and staffing to allow for expeditious response to accidental spills that may enter MS4. Respond to 100% of applicable reported spills/incidents. Track the number of spills/incidents reported	September of each year	EHS
Collect and properly dispose of wastes	Continue established programs to collect and properly dispose of hazardous wastes, automotive wastes, animal wastes, and landscape wastes.	Manage the programs of waste pick up and disposal to minimize unauthorized discharges of regulated wastes. Collect and dispose of 100% of regulated wastes. Track the amount of waste disposed.	September of each year	EHS
Dry Weather Screening	Monitor MS4 outfalls during dry weather periods for flows from system.	EHS will survey all 18 outfalls >36 inches within the MS4 and sample any identified for sanitary characteristics as required in the MS4 permit.	September of each year	EHS
Maintain and update MS4 map(s)	Update and revise existing MS4 map(s)	Annually update stormwater system map.	September of each year	EHS TRecs – LIS

**Table MCM 3 – Illicit Discharge Detection and Elimination**

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Maintain SPCC plan(s) for USTs & ASTs	Implement and maintain SPCC plan requirements	Review and update the UT Austin SPCC plan once a year to minimize pollutants from UST/AST facilities.	December of each year	EHS UEM
<b>Related SWMP MCMs utilized to fulfill Illicit Discharge and Elimination component</b>				
MCM 1 – MS4 Maintenance Activities				
MCM 6 – Construction Site Storm water Run off				
MCM 8 – Monitoring, Evaluation, and Reporting				





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## **Minimum Control Measure IV**

# **Pollution Prevention/Good Housekeeping for University Operations**

### ***Pollution Prevention/Good Housekeeping Program for University Operations Permit Language***

- i. Pollution Prevention and Good Housekeeping Program. The permittee shall continue to implement a pollution prevention and good housekeeping program for university operations. The program must include MCMs that address:
  - A. Identification and implementation of good housekeeping and BMPs to reduce pollutant runoff from university operations such as: street and highway maintenance, parks, university office buildings, and water treatment plants.*
  - B. Reduction of discharge of pollutants to the MEP from road repair, equipment yards, material storage facilities, or maintenance facilities;*
  - C. Training for all employees responsible for university operations, which includes information on preventing and reducing storm water pollution from all university operations subject to this MCM; and*
  - D. Within one year from the date of permit issuance, implement a program for structural control maintenance.**
- ii. Waste handling. Permittee shall ensure that waste removed from the MS4 or other university operations is properly disposed.*
- iii. Pesticide, Herbicide, and Fertilizer Application. The permittee shall continue to implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers, by its employees or contractors, to public right-of ways, parks or other university property. If the permittee has jurisdiction over lands it does not directly own (e.g. incorporated city), it shall implement programs to reduce the discharge of pollutants related to the commercial application and distribution of pesticides, herbicides, and fertilizers on those lands.*
- iv. List of University Facilities. The SWMP must include a list of all university operations subject to the university operation, maintenance and training programs listed under this MCM and all university owned and operation industrial activities subject to TPDES or NPDES industrial storm water regulations.*

#### IV. Pollution Prevention / Good Housekeeping Program for University Operations

A. UT Austin EHS conducted an investigation of university operations storage yards on Main and PRC campuses to identify those with a potential to contribute pollutants to storm water runoff. EHS works with the responsible departments to develop best management practices to minimize storm water impacts.

1. As was discussed previously in MCM 1, UT Austin removes sediment, trash, and organic detritus on mall areas, sidewalks, and in parking garages. UT Austin may utilize a contractor for street and parking area sweeping services. UT Austin sweeps University owned streets on a semiannual basis and as needed to accommodate increased leaf litter and to recover sand from deicing operations in the winter.

UT Austin departments responsible for the maintenance of roadways and impervious areas evaluate re-pavement projects and utility repair projects for opportunities to retrofit storm water controls during the design development process.

2. UT Austin EHS staff inspected the campuses falling under the jurisdiction of this SWMP to identify those areas exposed to storm water that would be considered university operations associated with road repair, equipment yards, and material storage, or maintenance facilities. These areas are listed in Section 4D below. The operators of these areas are instructed to minimize the pollutants leaving the area by implementing certain good housekeeping measures in the storage and maintenance of the materials and equipment stored in their areas. The good housekeeping measures that are implemented include;

- Storing only essential items necessary for the work that is performed by the department to reduce the volume of exposed materials.
- Storing materials away from storm drains as much as possible, and protecting receiving storm drain(s) with diversion structures or other BMPs to minimize pollutant transport.
- Whenever possible, covering materials or equipment either with permanent structures or temporary tarps that will be stored for long periods of time.
- Storing materials off the ground on racks, pallets, or other means to minimize contact with storm water runoff.
- Regular sweeping of impervious cover in areas where aggregate or other materials easily transported to storm drains by storm water runoff sheet flow.
- Proper maintenance of oil containing vehicles and equipment to minimize the staining of impervious cover from leaks of oil and fuel. Equipment and vehicles with known leaks that are parked shall utilize drip pans or oil absorbent pads under the equipment to capture leaks prior to staining the ground.

3. EHS will work with responsible departments who oversee the areas identified during the investigation to ensure UT staff are aware of the potential pollutants and the good housekeeping practices necessary to minimize the impact of their activities on storm

water runoff. The training will be incorporated into the orientation and other training as appropriate for employment with UT.

- B. UT Austin conducts storm drain cleaning annually on Main Campus and only as needed on PRC campus due to the limited amount of subgrade conveyance at the PRC campus. The wastes that are removed from the MS4 are temporarily staged in a holding area until all wastes are accumulated. This staging also allows for the visual assessment of the waste to ensure there are no hazardous or prohibited materials being disposed of. Once all materials have been collected the material is transported to an area landfill for proper disposal.

Wastes that are generated from other university operations are evaluated on a case by case basis and either disposed of in a landfill as municipal solid waste, or disposed of through the EHS Hazardous Waste Section.

- C. UT Austin requires all pesticide, herbicide and fertilizer application be conducted in a standard uniform manner by applicators trained and licensed by the Texas Department of Agriculture, or work under a licensed applicator. Both UT Austin employees and contractors must receive annual training covering basic topics of storage, application, and disposal as well as any other requirements as stated in applicable regulations.

The best management practices for UT Austin include the following:

- Use of natural organic fertilizers and soil supplements in lieu of synthetic fertilizers.
- Applying/using techniques that minimize the application to sidewalks, streets, and un-vegetated areas.
- Only apply in dry and low wind conditions. Do not apply just before rain events.
- Apply according to the labels recommended application rate.
- Store in rainfall protected locations within secondary containment.
- Do not leave pesticide, herbicide, or fertilizer containers uncovered.
- Do not rinse containers, equipment, or dispose of pesticides, herbicides, or fertilizers in sinks, storm drains, on the ground outside, or in dumpsters.
- Clean up spills immediately by dry cleanup methods only. Sweep up granular products or utilize absorbent material such as kitty litter to clean up liquids.

D. The following table lists the areas of the MS4 with outdoor storage and maintenance areas that were identified at the time of this SWMP development. This list is dynamic and will change as the campuses evolve with future re-development projects and departmental changes.

<b><u>Main Campus:</u></b>				
<b><u>Building</u></b>	<b><u>Location</u></b>	<b><u>Inventory (exposed)</u></b>	<b><u>Level of concern 0-4</u></b>	<b><u>Responsible Department</u></b>
FC1	West side of Facilities Complex	Scrap metal dumpster	2	PMCS
		Wet saw area	2	PMCS
		Sand/concrete waste area	3	PMCS
		Stone/aggregate storage area	1	PMCS
		Concrete blocks/bricks on pallets	0	PMCS
FC4	Central building in Facilities Complex	Carts	0	PMCS
		Hydraulic equipment	1	PMCS
		Scrap metal	3	PMCS
FC8	Northwest corner of Facilities Complex	Mulch piles	1	FS-LS
		Topsoil storage	1	FS-LS
		Sand storage	1	FS-LS
		Brush piles	0	FS-LS
		Fertilizer application tanks	3	FS-LS
East Campus	20 <sup>th</sup> Street between Comal St. and Leona St.	Leaf Piles	0	FS-LS
		Staged soil, gravel, and sand piles	1	UEM
DMS	Southwest corner of Trinity Garage	Compost Piles	2	FS-LS
<b><u>PRC:</u></b>				
Construction Bullpen	Southwest corner of campus	Outside storage yard with revolving miscellaneous items	1	FS-LS
PRC Campus	Northwest corner of campus	Staged soil and mulch piles	1	FS-LS
ETS 188	Adjacent to Surplus	Storage yard for Electrical Dist.	1	UEM
		Cable rolls for Electrical Dist.	0	UEM
		Piping for Mechanical Dist.	1	UEM
		Transformers for Electrical Dist.	2	UEM
135/136	Fleet Maintenance/ SE Corner	vehicles/equipment	2	FS-FOM, FS-LS, PTS
		5gal. pails of materials on pallet(s)	4	PTS
P45	Surplus Property, Northwest of campus	Outside storage yard with surplus materials	1	FS-RR

<b>Table MCM 4 – Pollution Prevention / Good Housekeeping for University Operations</b>				
<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Inventory	Develop and maintain inventory of areas falling under MCM.	Reach out to the relevant departments to ensure list is accurate. Annually inspect 100% of locations.	September of each year	EHS
Training	Develop training to provide to departments operating affected areas	Perform 1 training per year, to be revised prior to delivery. Number of employees received training.	September of each year	EHS PMCS FS-LS UEM UHD CPC
<b>Related SMWP MCMs utilized to fulfill MS4 P2 and Good Housekeeping for University Operations</b>				
MCM 2 – Post Construction Storm Water Controls				



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## **Minimum Control Measure V**

### **Industrial and High Risk Runoff**

### ***Industrial and High Risk Runoff Permit Language***

- i. The permittee shall continue to improve its existing programs to identify and control pollutants in storm water dischargers to the MS4 from university landfills; other treatment, storage, or disposal facilities from university waste (e.g. transfer stations, incinerators, etc...); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to Emergency Planning and Community Right-to-Know Act (EPCRA) Title III, Section 313; and any other industrial or commercial discharge the permittee determines is contributing a substantial pollutant loading to the MS4.*
- ii. This MCM must include:*
  - A. Priorities and procedures for inspections and for establishing and implementing control measures for such discharges; and*
  - B. An industrial and High Risk Monitoring Program as described in Part III, Section B.2.h.iii of this permit.*

### **IV. Industrial and High Risk Runoff**

UT Austin does not operate industrial & high risk facilities as defined by 40 CFR 122.26(d)(2)(iv)(C). On the properties covered by this permit, U.T. Austin does not own or operate a municipal landfill, hazardous waste treatment, disposal and recovery facilities, or industrial facilities that are subject to section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Further, UT Austin has not identified any industrial facilities on its properties that contribute a substantial pollutant loading to the storm sewer system.





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## **Minimum Control Measure VI**

### **Construction Storm Water Runoff**

## ***Construction Site Storm Water Runoff Permit Language***

- i. The permittee shall continue to implement a program to reduce the discharge of pollutants into the MS4 from construction sites. This MCM must include an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law. The permittee shall continue to ensure that the existing program is revised as necessary to address construction projects that result in a land disturbance of one acre or more, including activities disturbing less than one acre that are part of a larger common plan of development or sale that would disturb one acre or more.*
  
- ii. This MCM must include:*
  - A. requirements to use and maintain appropriate erosion and sediment control BMPs to reduce pollutants discharged to the MS4 from construction sites;*
  
  - B. requirements for construction site operators to address the control of site waste, such as discarded building materials, concrete truck washout water, chemicals, litter, and sanitary waste;*
  
  - C. requirements for inspections of construction sites and enforcement of control measure requirements;*
  
  - D. requirements for the permittee to provide appropriate education and training measures to construction site operator;*
  
  - E. notifications to construction site operators of their potential responsibilities under the NPDES or TPDES permitting regulations and permits for construction site runoff;*
  
  - F. procedures for site plan review that incorporate consideration of potential water quality impacts;*
  
  - G. procedures for receiving and considering input received from the public; and*
  
  - H. a description of a program to implement and maintain structural and non-structural BMPs to reduce pollutants in stormwater runoff from construction sites to the MS4, which must include a description of the following:*
    - 1) procedures for site planning which incorporate consideration of potential water quality impacts;*
  
    - 2) requirements for nonstructural and structural best management practices;*
  
    - 3) procedures for identifying priorities for inspecting sites and enforcing control measures that consider the nature of the construction activity, topography, and the characteristics of soils and receiving water quality; and*

- 4) *appropriate educational and training measures for construction site operators.*
- iii. *Lists of Sites. The permittee shall maintain a current list of construction sites that discharge directly to the MS4 that have been issued an NPDES or a TPDES permit. The list must include the name, location, and permit number of the discharges that have been authorized under an NPDES or TPDES stormwater discharges permit for construction activities (if known).*
- iv. *The permittee shall ensure that this MCM includes the following elements in addition to the ones listed above:*
- A. *Require construction site contractors to implement appropriate erosion and sediment control BMPs and control waste (e.g. discarded building materials, concrete truck washout water, chemicals, litter, and sanitary wastes) at the construction site that may cause adverse impacts to water quality.*
- B. *For site plan reviews, the permittee shall continue to incorporate consideration of potential water quality impacts, receipt and consideration of information submitted by the public, and site inspections and enforcement of control measures to the extent allowable under state and local law.*

## VI. Construction Site Storm Water Runoff

- A. As mentioned earlier in the SWMP, UT Austin policy 8-1020 takes the place of a City ordinance and protects the environmental health and safety of the campus community and visitors. The policy gives the Director of EHS the authority to terminate an activity or operation that threatens the safety of people or the environment. EHS ensures water quality compliance for all construction sites, including those less than 1 acre, with the requirement of a site-specific erosion and sediment control plan. For sites larger than 1 acre, the appropriate TPDES procedures are followed.

EHS plans to implement the “SWPPPPerstar Award” program. Once per year, this program will reward the most compliant construction site during the preceding twelve-month period. Recipients will be chosen based on criteria such as – lowest number of deficiencies on SWPPP inspections, most responsiveness to correcting outstanding issues/malfunctioning BMPs etc. The award winning project team will be featured in the Financial and Administrative Services (FAS) newsletter. In addition, individuals will be recognized for exemplary efforts towards proactive stormwater management.

- B. UT Austin has maintained a construction storm water program since the first permitting period. The following control measures will continue to be mandatory for all construction activities occurring on the sites covered under this MS4 permit.
1. Requirements to use and maintain appropriate erosion and sediment control BMPs – UT Austin requires BMP implementation to reduce pollutant loading of runoff from construction sites (including exterior washing practices) to the maximum extent reasonably possible. Construction sites are monitored by UT Austin personnel identified by various job titles depending on department.
  2. As recommended by the Sustainable Sites Initiative (SITES), to ensure soil protection before and during construction, a Vegetation and Soil Protection Zone (VSPZ) will be designated and communicated by FS-LS (subject matter experts) with involvement from EHS as needed, to the project team and contractors. The feasibility of implementing a VSPZ will be evaluated on a project by project basis. Such a plan will include specific strategies that minimize disturbance from construction activities and treatment plans for soils restoration.
  3. Requirements to control site waste – UT Austin requires contractors to properly store site wastes, discarded materials, chemicals, litter and sanitary waste. These items are monitored by the project teams and EHS.
  4. Inspection of construction sites and enforcement of control measures – The authority to enforce pollution control measures for construction projects, including the authority to issue a stop-work order for failure to implement or maintain pollution control BMPs has been provided to the Director of EHS. Construction inspectors review the work of the contractors on a regular basis and execute a weekly check-off inspection for properly functioning BMPs. EHS makes both

announced and unannounced reviews of construction sites and housekeeping practices of the contractors. Contractors are required to immediately cease any activity or practice which is impacting or threatening to impact surface waters or the MS4 and correct any defect in structural controls.

5. Appropriate Education and Training Measures for Construction Site Operators, including UT Austin Construction Inspectors and Coordinators – The policy document *University Construction Site Procedures for Contractors* is distributed to construction site superintendents or project managers prior to initiation of the project. PMCS issues new contractors a *Contractors Handbook* that includes several environmental topics with protection of storm water as a recurring topic. In addition, EHS provides briefs and training workshops as requested to UT Austin construction inspectors and coordinators to familiarize them with construction site pollution control BMPs and other requirements.
6. Contractor Notification of Potential Responsibilities for Construction Site Runoff – In addition to references to this SWMP in the construction standards manual, UT Austin Design and Construction Standards, and University Construction Site Procedures for Contractors, pre-bid and pre-construction review meetings also provide an opportunity to notify construction site operators of their responsibilities to control construction phase storm water runoff.
7. Site Plan Review and Consideration of Water Quality Impacts – EHS has a full-time plan review coordinator housed in the technical review team at UT. This individual, along with other EHS staff review design documents at multiple stages of design in order to ensure that the proposed projects meet MS4 requirements and are taking steps to improve water quality. Future projects along Waller Creek and across main campus will be subject to the framework plan, which calls for water quality improvements to be installed on projects that border the creek. Future projects that do not directly border the creek will be expected to take similar steps towards improving water quality.
8. Public Input Considerations – EHS organized and facilitated a working group involving key departments and stakeholders throughout the University community to ensure a wide range of input was reflected in the stormwater management program.
9. Maintenance programs for structural and non-structural BMPs – Several UT departments partner to provide ongoing maintenance of the water quality BMPs, including but not limited to UEM, Landscaping, General Construction Shop and UHD.

- C. EHS maintains a list of all construction activities that occur on UT Austin campuses affected by this SWMP.

Previous sections of this MCM and SWMP discussed the provisions that require construction site operators to implement erosion and sediment control BMPs to minimize pollutants from leaving construction sites and entering the UT Austin MS4.

UT Austin continues to require installation of BMPs on all construction sites with soil disturbance. The UT Austin Design and Construction Standard for Temporary Storm Water Pollution Control (Appendix C) provides details of the requirements. Through construction plan review, site investigation, and responses to calls received, EHS representatives ensure that BMPs are installed and maintained according to TPDES, and UT Austin construction standards.

**Table MCM 6 – Construction Site Storm Water Runoff**

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Implement an awards program for construction sites	Develop a program to reward the most compliant construction sites	Reward 1 construction site for having the lowest average number of violations on SWPPP inspections.	September and March of each year	EHS & partners w/ construction projects
Require installation of phase control BMPs for active construction sites.	Update and maintain storm water pollution control construction standard. Implement program to ensure requirements are met by construction personnel.	Include storm water pollution control standard and other storm water compliance goals at 100% of pre-planning and construction bid meetings to notify contractors of compliance expectations.	September of each year	EHS & partners w/ construction projects
Require the designation of a Vegetation and Soils Protection Zone	Before construction, project team and contractors will create specific strategies to minimize disturbance and address treatment plans for restoration.	Analyze 3 projects for feasibility of VSPZ implementation and report square footage of protected soils/vegetated areas where implemented.	September of each year	EHS, FS-LS & partners w/ construction projects
Inspection of construction sites for compliance with phase control installation and maintenance	EHS personnel, construction inspectors and coordinators to conduct regular inspections of construction sites.	Perform monthly construction inspections at all projects with SWPPP.	September of each year	EHS & partners w/ construction projects
Maintain and distribute guidance documents developed	Maintain EHS “Construction Site Procedures for Contractors” and the PMCS Contractors Handbook for distribution to contractors	Include documents in distribution of information disseminated to 100% of new contractors at the start of construction projects	September of each year	EHS & partners w/ construction projects
Include water quality impacts of construction projects	EHS and construction site managers will collaborate to ensure that projects incorporate strategies to improve water quality.	Review a minimum of 3 projects in design stage with potential for water quality improvement infrastructure and report the number of projects where water quality improvements were incorporated.	September of each year	EHS & partners w/ construction projects

Maintain list of permitted construction sites	EHS to maintain a list of all construction sites occurring on UT Austin campuses affected by this SWMP	Maintain list containing 100% of permitted construction sites.	September of each year	EHS
Maintain list of BMPs installed at construction sites	EHS to maintain a list of BMPs installed at construction sites >1 acre	Maintain a list detailing the number of construction sites using specific types of BMPs	September of each year	EHS
<b>Related SMWP MCMs utilized to fulfill Construction Site Storm Water Runoff component</b>				
MCM 3 – Illicit Discharge Detection and Elimination				





The University of Texas at Austin  
**Environmental Health & Safety**

**Minimum Control Measure VII**

**Public Education and Outreach /  
Public Involvement and Participation**

## ***Public Education and Outreach/Public Involvement and Participation Permit Language***

### ***A. Public Education and Outreach***

***A. The permittee shall document and ensure that the SWMP promotes, publicizes, and facilitates public education and outreach to: residents, visitors, public service employees, businesses, commercial and industrial facilities, and construction site personnel and provide justification for any group that is not addressed by the program. The permittee shall document the activities conducted and materials used to fulfill this program element and provide enough detail to demonstrate the amount of education and outreach resources and materials used to address each group.***

***B. The permittee shall continue to implement a public education and outreach program component to promote, publicize, and facilitate:***

- 1) public reporting of illicit discharges or improper disposal of materials into the MS4;***
- 2) the proper management and disposal of used oil and HHW; and***
- 3) the proper use, application, and disposal of pesticides, herbicides, and fertilizers by public, commercial, and private applicators and distributors.***

***B. Public Involvement and Participation: The permittee shall continue to develop and implement a public involvement and participation program which must comply with State, Tribal, and local public notice requirements. This program element must include opportunities for a wide variety of constituents within the MS4 area to participate in the SWMP development and implementation.***

## **VII. Public Education and Outreach / Public Involvement and Participation**

A. UT Austin will continue to maintain the public education campaign initiated during the first permitting term and update the program as necessary to include those elements described in the current permit with the following components:

1. Promote, publicize, and facilitate reporting of illicit discharges and improper disposal of materials into the MS4.
  - a. UT Austin has established a "pollution hotline" telephone line to facilitate reporting of observed illicit discharges or other environmental concerns by the public. The phone is answered by EHS staff during normal business hours and is forwarded to University Police Department (UTPD) during non-business hours. UTPD contacts EHS for all incidents involving spills or other environmental emergencies.

Twice a year UT Austin publishes an announcement in the Daily Texan, the UT student newspaper, in connection with the bi-annual Waller Creek Clean-Up events. These announcements include information on the event, where to sign up, as well as the results from the previous clean-up. In addition, information is posted as digital ad content on the EHS website, and other campus locations and in bathroom flyers which rotate periodically. Often included in the content is language educating UT students, staff, and faculty on how to report illicit discharges, protection of storm drains, proper disposal of materials such as; automotive fluids, and household hazardous waste, as well as other tips to protect the MS4 system. Similar information is also available on the EHS web site at all times. EHS staff also participate in outreach events on campus by tabling and sharing information on the programs to reduce impacts of development, and provide information on events and opportunities for the campus community to participate. One such outreach event is the UT Marketplace at which EHS both tables and publishes an announcement twice a year.

2. Promote, publicize, and facilitate proper disposal of used motor vehicle fluids and hazardous wastes.
  - a. In addition to the program elements that are described in MCM III.3.D.1-4 of this SWMP, UT Austin continues to maintain the storm drain marking program that was initiated during the first permitting term of the MS4. This drain labeling program is described further in Appendix E.
  - b. UT Austin is not permitted to collect household hazardous waste (HHW) from campus residents. The majority of campus residents are also City of Austin residents, and as such all residents of the City of Austin are eligible to participate in the City's HHW program allowing for the drop off of accumulated HHW. UT Austin encourages and educates all campus students, staff, and faculty to properly dispose of their wastes generated for personal use through referral to community programs and opportunities such as these.

3. Promote, publicize, and facilitate the proper use, application, and disposal of pesticides, herbicides, and fertilizers by public, commercial, and private applicators and distributors.

UT Austin Facility Services Landscaping, University Housing and Dining, and Athletics are the three main departments identified as having employees that may apply pesticides, herbicides, and/or fertilizers. Those employees applying pesticides receive annual training and are supervised by individuals licensed by the Texas Department of Agriculture. An integrated pest and fertilizer management program with the following elements has been in place at UT Austin since the first permitting period to reduce pollutant discharges associated with storage, application, and disposal of fertilizers and pesticides (including herbicides):

- a. Identification of all UT Austin departments or offices with employees that apply pesticides and fertilizers on UT properties.
  - b. Requirement that application of pesticides and fertilizers be performed only by trained individuals and in a standard, uniform manner.
  - c. Require an annual training on pesticide and fertilizer management techniques addressing, at a minimum, the following:
    - Storage - pesticides and fertilizers of any type will be stored in rainfall protected locations within secondary containment.
    - Application - pesticides and fertilizers will be applied using techniques that minimize their application to impervious cover and un-vegetated areas.
    - Disposal - unused pesticides and fertilizers and pesticide and fertilizer residues will be properly disposed of according to applicable state and federal regulations.
    - Other considerations required by law.
  - d. In addition to the proposals put forth in this SWMP, U.T. Austin notifies contracted commercial landscapers associated with new construction and re-vegetation projects of the required compliance with the procedures of this SWMP.
- B. EHS organized and facilitated a working group involving key departments and stakeholders throughout the University community to ensure a wide range of input was reflected in the stormwater management program.

<b>Table MCM 7 – Public Outreach and Education/Public Involvement and Participation</b>				
<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Maintain pollution “hotline” for the reporting of illicit discharges.	Respond to calls or incidences affecting surface water quality of receiving stream segments.	Report 100% of responses/incidents involving storm water.	September of each year	EHS
Publish announcements in Daily Texan newspaper and UT Austin Office of Campus Safety Social Media	Develop and publish the announcements to educate students, staff, and faculty on MS4 protection, and proper waste management	Publish 1 announcement in newsletter and 1 announcement on Social Media	Newsletter: September and March of each year  Social Media: once every month	EHS
Storm Drain Labeling Program	Continue to inspect and label existing storm drains with missing labels. Label new storm drains as a result of development or redevelopment	Label 10 existing storm drains and 100% of new storm drains	September of each year	EHS
Stakeholder Involvement	Meet with SWMP Working Group annually to discuss areas of improvement	Report 100% of proposed additions or changes to SWMP.	September of each year	EHS



The University of Texas at Austin  
**Environmental Health & Safety**

**Minimum Control Measure VIII**

**Monitoring, Evaluation, and Reporting**

## **Monitoring, Evaluation, and Reporting Permit Language**

*The permittee shall continue to implement, and modify as necessary, the following monitoring or screening programs for dry weather, wet weather, and industrial and high-risk runoff:*

- i. Dry Weather Screening Program. This program shall continue the permittee's efforts to detect the presence of illicit connections and improper discharges to the MS4. All areas of the MS4 must be screened at least once during the permit term. The permittee may utilize modified screening methods based on experience gained during previous field screening activities; the screening methods are not required to conform to the protocol in 40 CFR § 122.26(d)(1)(iv)(D). Sample collection and analysis is not required to conform to the requirements of Part V, Section B.2. of this permit, "Test Procedures;" however, samples taken to confirm (e.g., in support of possible legal action) a particular illicit connection or improper disposal practice must conform to the requirements of Part V, Section B.2. of this permit, "Test Procedures.*
- ii. Wet Weather Screening Program. The permittee shall identify, investigate, and address areas within their jurisdiction that may be contributing excessive levels of pollutants to the MS4. The wet weather screening program must:*
  - A. Screen the MS4 as specified in the SWMP; and*
  - B. Specify the sampling and non-sampling techniques to be used for current screening and also for follow up screening.*

*Sample collection and analysis for the Wet Weather Screening Program is not required to conform to the requirements of Part V, Section B.2. of this permit, "Test Procedures;" however, samples taken to confirm (e.g., in support of possible legal action) a particular illicit connection or improper disposal practice must conform to the requirements of Part V, Section B.2. of this permit, "Test Procedures."*

- iii. Industrial and High Risk Runoff Monitoring Program.*
  - A. This program must include monitoring for pollutants in storm water discharges to the MS4 from university landfills; other treatment, storage, or disposal facilities from university waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to Emergency Planning and Community Right-to-Know Act (EPCRA) Title III, Section 313; and any other industrial or commercial discharge the permittee determines is contributing a substantial pollutant loading to the MS4.*
  - B. The program must include the collection of quantitative data on parameters which have been identified by the permittee as a pollutant of concern for that facility, and shall:*

- 1) *Coincide with the corresponding industrial sector-specific requirements of the TPDES Multi-Sector General Permit No. TXR050000 or any applicable general permit issued after September 29, 1995 and is not contingent on whether a particular facility is actually covered by the general permit;*
  - 2) *Coincide with the monitoring requirements of any individual permit for the storm water discharges from that facility; or*
  - 3) *Include pollutants of concern for the storm water discharge from that facility as identified by the permittee*
- C. *To avoid the duplication of efforts, the permittee may review data collected by a facility as required by any individual or general permit for that facility rather than performing additional sample collection and analysis.*
- D. *In lieu of the monitoring discussed above, the permittee may accept a "no exposure" certification from a facility, which certifies that raw and waste materials, final and intermediate products, by-products, material handling equipment or activities, industrial machinery or operations, or significant materials from past industrial activity are not presently exposed to storm water and are not expected to be exposed to storm water for the certification period. Where a permittee accepts a "no exposure" certification, the permittee shall conduct site inspections of the facility not less than once per permit term to verify the "no exposure" certification; the permittee may waive this inspection for those facilities which participate in the TCEQ's Small Business and Local Government Assistance Compliance Commitment (C2) Program.*
- iv. *Storm Event Discharge Monitoring. The permittee shall comply with the monitoring requirements in part IV of this permit in order to characterize the discharge from the MS4.*
- v. *Floatables Monitoring. The permittee shall implement a floatables program as described in Part IV, Section B of this permit.*



## VIII. Monitoring, Evaluation, and Reporting

### A. Dry Weather Screening Program

Over the course of previous permitting terms, UT Austin surveyed all outfalls and identified the location of dry weather flows. Annually, a chemical analysis is performed on identified dry weather flows to locate illicit discharges and improper connections. Drainage maps of the Main Campus have been compiled at 1:200 scale on both planimetric and topographic bases. These maps incorporate the UT Austin storm sewer system and identify specific outfall points for each drainage area.

Several surveys of the Waller Creek drainage (a primary drainage from Main Campus) have been made during periods of dry weather and narrative descriptions of visual observations have been made for each outfall. A program is ongoing to identify sources of observed dry weather flows, using visual overland reconnaissance for obvious sources such as irrigation runoff, and manhole surveys of storm lines involved in the conveyance of dry weather flows.

During the annual chemical analysis, UT Austin screens dry weather flows from University drainage systems, with a particular emphasis on suspect flows, and also performs colorimetric analyses for pH, chlorine, copper, phenol, detergents, and ammonia. UT Austin continues to monitor and mitigate any illicit discharges as a result of renovation, new construction, or other modifications that would have the potential to affect the MS4 system. All areas of the MS4 are screened at least once every permitting term.

### B. Wet Weather Screening Program

UT Austin utilizes a visual assessment to provide a post-storm event evaluation of the storm water runoff to campus area waterways. UT Austin utilizes the wet weather screening program to accomplish the following objectives:

- Provide a tool to detect excessive levels of pollutants in waterways after storm events.
- Provide information related to the type of pollutants present in waterways after storm events.
- Provide a tool for investigating the origin of pollutants.
- Provide a limited assessment of storm water impact on aquatic life.
- Provide a tool to detect acute pollution events.

## ***SCREENING LOCATIONS***

### **Site Selection:**

The screening sites within each watershed have been selected based on the following criteria:

- within UT Austin's permit area,
- along the main stem of the stream or main open channel system,

- distribution within permit area,
- ability for staff to access site safely,
- ability to determine the area discharging upstream of the site.

**Site locations:**

The Wet Weather Screening program completes visual assessments of storm water flow in the following watersheds:

Waller Creek Watershed

- **NEW:** Waller Creek at north end of Whitaker Field
- **NEW:** Waller Creek at south end of Whitaker Field
- **NEW:** Waller Creek at south side of E. Dean Keeton Street
- **NEW:** Waller Creek (Hemphill Branch) at southeast side of Speedway
- Waller Creek at 24th Street
- Waller Creek at 21st Street
- Waller Creek at Martin Luther King Blvd.
- **NEW:** Waller Creek at 15<sup>th</sup> Street

Town Lake Watershed

- SW corner of Colorado Apartments

Johnson Creek Watershed

- North end of Creek along West side of Gateway Apts.
- South end of Creek along West side of Gateway Apts.

Shoal Creek Watershed

- SE corner of J. J. Pickle Research Campus
- SW corner of J. J. Pickle Research Campus (near intersection of Neils Thompson Dr. and Innovation Rd.)
- NW corner of J.J. Pickle Research Campus (outfall west of BEG-131)

***PROGRAM PROCEDURES***

Each site is screened at least once a year. A visual assessment of storm water flow is completed at each monitoring site within 24 hours of a storm event. For the purposes of this screening program, a storm event is defined as any event greater than or equal to 0.10 inches of rain. After determining that a storm event has occurred within the target watersheds, EHS staff conducts a visual evaluation related to the type of pollutants that may be present in the storm water flow at each monitoring site. EHS staff completes one data collection form in each

watershed monitored. A copy of the Wet Weather Screening Field Observation Form is included in Appendix F.

## ***ANALYSIS***

EHS staff reviews each screening site assessment for indications of elevated pollutant levels. If unusual conditions exist at a screening location, a complaint investigation may be initiated. If, during an assessment, site conditions indicate that an acute pollutant event may have occurred, EHS spill response personnel are notified and investigators respond to initiate a detailed investigation of the situation.

## ***RECORD KEEPING AND REPORTING***

EHS staff will retain all wet weather screening field observation forms as required by the permit. EHS staff will also enter field data into a spreadsheet for electronic storage and reporting purposes. The results of the assessment activities described above are included and submitted to the TCEQ in the MS4 Annual Report.

### **C. High Risk Runoff Monitoring Program**

As stated in MCM V, UT Austin does not operate industrial & high risk facilities as defined by 40 CFR 122.26(d)(2)(iv)(C), however, UT Austin has established a TPDES inspection program that includes random and planned inspections of University facilities, particularly those facilities that may be considered to be associated with high risk activities. UT Austin has an on-going program to identify potential sources of surface water pollution. Surveys of loading areas, garbage disposal facilities, and a general survey of the Main Campus grounds have been completed during previous permitting periods and continue to be monitored. A building survey program involving interviews with building personnel, site inspections, and reviews of mechanical and plumbing drawings was also completed during the first permit term. The information has been beneficial in identifying areas within the MS4 that require closer monitoring due to the nature of the discharges.

1. Outfall 001, sampled in conjunction with the wet weather monitoring program includes discharges from facilities which are representative of broader campus land use activities. These include the laboratories, cogeneration plant structures, and chilling stations.
2. Many facilities in which activities or materials handled might be considered a risk to surface water quality have been designed or redesigned with architectural and structural controls to prevent storm water contact with potential pollutants. Hence, UT Austin requested a certification of "no exposure" from the managers of the following structures:
  - a. PPL (cogeneration plant complex, a three-building facility)
  - b. CS (chilling stations 3, 4, 5,6, and 7 five separate buildings)
  - c. MTC (materials transfer center)
  - d. PRC Accumulation Facility

e. Waste Management Area (PRC)

3. In lieu of monitoring these facilities as outlined at 40 CFR 122.26 (d)(2)(iv)(C), EHS conducted site inspections of each facility during the first permitting period. EHS continues ongoing monitoring for any indication of pollutant discharges to the MS4 from these facilities.

D. Storm Event Discharge

UT Austin will continue the Storm Event Discharge Monitoring Program that has been established under previous MS4 permits. UT Austin has elected to update the program in accordance with the requirements of Part IV Section A.1 for Representative Monitoring under the current TPDES MS4 permit.

1. Representative Monitoring Program

- a. Discharge monitoring samples for UT Austin shall be collected from Outfall 001 prior to entering Waller Creek. Outfall 001 is located under the Waller Creek crossing on 24<sup>th</sup> St. just east of San Jacinto Blvd.
- b. The monitoring frequency shall be once per period during each year of the permit. The monitoring periods are September-November, December-February, March-May, and June-August.
- c. Samples shall be collected from a qualifying rain event of  $\geq 0.1$ " that occurs at least 72 hours from the previously measurable storm event of  $\geq 0.1$ ". In cases where the quarter is about to end and a representative sample has not been obtained due to staff hours or the time and rainfall quantity restrictions, a sample will be collected and back up documentation presented to make the case for the sampling.
- d. Samples collected shall be composite samples for all pollutants except as described in the TPDES MS4 permit Part IV A.1a.(1).
- e. Each monitoring sample shall be analyzed for the following parameters, and shall be reported with the daily maximum concentration in milligrams per liter except as indicated below:

biochemical oxygen demand, 5-day (BOD)	total zinc ( $\mu\text{g/L}$ )
chemical oxygen demand (COD)	chlorides (as Cl)
oil and grease	sulfates
total suspended solids (TSS)	DDT ( $\mu\text{g/L}$ )
total dissolved solids (TDS)	DDD ( $\mu\text{g/L}$ )
total nitrogen	DDE ( $\mu\text{g/L}$ )

total kjeldahl nitrogen (TKN)	total PCBs (µg/L)
nitrate+nitrite	Chlordane (µg/L)
total phosphorus	E. coli (MPN/100 mL)
dissolved phosphorus	enterococci (cfu/100 mL)
total cadmium (µg/L)	pH (report daily minimum and daily maximum results in standard units, "S.U.")
total copper (µg/L)	hardness (as CaCO <sub>3</sub> )
total lead (µg/L)	temperature (°C)
total silver (µg/L)	Atrazine (µg/L)

#### E. Floatables Monitoring Program

UT Austin's Floatable Monitoring program was initiated during the original SWMP development. The program established monitoring sites at two major outfalls just prior to their discharge into Waller Creek. Each monitoring site consists of a section of expanded metal that extends across the width of the outfall discharge point to trap floating materials as they flow toward the creek. Each station is anchored at the bottom and on both sides of the flared section of each headwall.

The site selection criteria for both stations were based on suitable conditions for access to cleaning, debris removal, and the ability to access the site in a safe and secure manner. The locations chosen were identified as having characteristics that would make it likely to be impacted by the diversified segments of the campus. These impacts consist of mixed educational and include educational and administrative buildings, student residences, pervious and impervious covers. Waller Creek in its entirety is approximately 9 miles in length and runs 1.1 miles north and south through UT Austin. The northern portion of the creek prior to university property is primarily urban; however, the floatable monitoring stations do not capture these flows.

#### Floatable Monitoring Site Locations

Watershed with Segment Number	Site No.	Monitoring Site Location	Land Use
Waller Creek 1429	1	Outfall 9031 (12' x 8')	Mixed educational
	2	Outfall 3692 (6' x 4')	

EHS staff monitors the condition of each station on a quarterly basis and within 24 hours after significant rainfall events of  $\geq 0.50$ ". Each site is cleaned on a quarterly basis at a minimum, or more frequently as conditions necessitate.

Cleaning of the monitoring stations occurs once flow has ceased. All trapped floating material caught in the station will be removed, bagged, measured, and disposed of appropriately. Dates, times, floatable station number and measurements will be logged in and tabulated on a quarterly basis. Measurements are converted in cubic yard estimates for reporting purposes. Logged information is reported in the MS4 Annual Report.

<b>Table MCM 8 – Monitoring, Evaluation, and Reporting</b>				
<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Dry Weather Screening	Survey outfalls during dry weather periods to identify outfalls discharging.	Survey 20% of outfalls annually.	September of each year	EHS
Wet Weather Screening	Visually assess storm water quality from designated locations within 24 hrs. of qualifying rain event	Observe all 14 locations and identify pollutant discharge events.	September of each year	EHS
High Risk Runoff Monitoring	Monitor those facilities identified as potentially high risk within MS4 permitted area(s)	Inspect or monitor 1 potentially high risk area	September of each year	EHS
Storm Event Discharge Monitoring	Collect samples at designated outfall from qualifying rain events	Collect sample from 1 qualifying rain event and have analytical tests according to permit requirements to properly characterize discharge(s)	December, March, June, and September of each year	EHS
<b>Related SMWP MCMs utilized to fulfill Monitoring, Evaluation, and Reporting component</b>				
N/A				



The University of Texas at Austin  
Environmental Health & Safety

## **Total Maximum Daily Load (TMDL) Compliance**

## **IX. Total Maximum Daily Load Compliance**

The Texas Commission on Environmental Quality (TCEQ) has adopted an implementation plan (I-Plan) for total maximum daily load (TMDL) for bacteria for four Austin streams, including the portion of Waller Creek from Martin Luther King Jr. Blvd and upstream. UT Austin is a regulated participant on the I-plan and as such must meet TMDL requirements. The University is upholding the commitments outlined in the plan.

### **A. Benchmark Identification**

The UT Austin MS4 discharges into the same impaired watershed as other MS4s. During the I-Plan development process, a sub-Waste load allocation (WLA) or sub WLA was defined for UT. Table 5 of the I-plan defines the sub-WLA for Waller Creek segment 1429C\_02 (MLK to 41<sup>st</sup> St.) as 50.72 billion mpn/day.

The current and proposed ways in which UT plans to address the bacterial loads in its MS4 are discussed below.

Bacterial contamination generally comes in two different forms – runoff loads and in-line loads. Below are some ways in which UT proposes to address each of these loads.

### **B. Runoff Loads**

Runoff loads are those that come from the general landscape and are considered non-point sources of pollutants. These types of loads are best treated with source reductions, community education and upland treatment systems. In this vein, UT Austin proposes the following:

- Installation of pet waste collection stations at several locations on the outskirts of the main campus
- Creation of a public education campaign for the university community about taking responsibility to clean up after our pets
- Working cooperatively with the City of Austin to implement BMPs to help achieve bacterial load reductions
- Explore additional locations for BMPs, such as bioswales, which have proven successful in reducing bacterial contamination

The City of Austin has begun implementing the rain catcher pilot program in the upper Waller watershed. This involves an extensive combination of demonstration projects and riparian restoration. It is the university's goal to explore similar installations for UT's MS4.

### **C. In-Line or End-of-Pipe Loads**

In-line loads typically come from leaking sanitary infrastructure and sanitary sewer overflows that drain into the storm sewer network. UT Austin conducts dye testing when plumbing changes warrant to ensure there are no cross connections between storm and sanitary sewer systems. UEM



contractors clean and inspect all the sanitary sewers once every five years. Additionally, UEM will continue to TV lines on an as needed basis when there is a suspected sanitary infrastructure leak and perform preventive maintenance in known problem areas. These efforts will continue, in order to identify leaking sanitary sewers and make repairs. EHS and UEM are in the process of developing a SOP (under review) to outline departmental responsibilities for responses to water and wastewater emergencies such as sanitary sewer overflows. This water quality incident response SOP will ensure the most efficient response is taken to minimize negative environmental impact. UEM also partners with City of Austin to ensure their sanitary infrastructure in UT's MS4 is well maintained, inspected, and leaks are identified and repaired.

In-line loads may be treated with end of pipe technologies such as lower capacity media filters or disinfection systems. These target the low flow but are bypassed during larger storm events. UT will explore these end-of-pipe treatment technologies during the first two years of the permit term. UT will also consider alternative practices for treating microbial pollution in areas with low, dry weather flow. One option is disinfecting runoff using ultraviolet light to reduce water quality issues related to bacterial contamination. (From EPA guide page 5-53) Pre and post treatment installation monitoring will be conducted in order to test these technologies.

<b>BMP</b>	<b>Tasks</b>	<b>Quantifiable Target</b>	<b>Deadline/ Frequency</b>	<b>Responsible Dept.</b>
Pet Waste Collection Stations	Identify several high traffic areas on the outskirts of the main campus to install pet waste collection stations	Install 2 collection stations	December 2020	EHS FS-LS
Pet Waste Maintenance	Maintain pet waste collection stations	Maintain 100% of collection stations	Monthly	FS-LS
Pet Waste Public Education Campaign	Develop a campaign to educate new and existing pet owners about water quality impacts of pet waste	Report publication dates of 1 article or advertising material	September of each year	EHS
Implement and monitor BMPs to achieve bacterial load reductions	Work cooperatively with the COA, and explore additional locations for BMPs which have proven successful. Monitor for effectiveness.	Report 1 project where bacteria-reducing BMP/s were designed or implemented. Monitor bacterial levels at 3 locations along Waller Creek on quarterly basis.	September of each year	EHS FS-LS COA

Maintain sanitary sewer system	UEM to continue process of surveillance and maintenance of damaged sanitary lines to prevent blockage and bypass	Report on repairs, maintenance, inspections conducted by UT personnel	September of 2019	UEM
		Post RFP for sanitary sewer system inspection contract	September of 2020	
		Inspect 100% of sanitary sewer system	September of 2021	
		Repair 50% of deficiencies that could adversely affect receiving stream quality, as identified during inspection	September of 2022	
		Repair remaining 50% of deficiencies that could adversely affect receiving stream quality, as identified during inspection	September of 2023	
<b>Related SMWP MCMs utilized to fulfill Monitoring, Evaluation, and Reporting component</b>				
N/A				



The University of Texas at Austin  
Environmental Health & Safety

## **Appendix A: UT Austin MS4 Enforcement Authority**



Handbook of Operating Procedures 8-1020

# Environmental Health and Safety Policy

Effective June 08, 2015

Executive Sponsor: Senior Vice President and Chief Policy Officer: Director, Environmental Health & Safety  
Financial Officer

## I. Policy Statement

The University of Texas at Austin (“University”) is committed to protecting the health and safety of its students, faculty, staff, and visitors as well as the environment. This is achieved through appropriate compliance with University policies and applicable laws and regulations. Responsibility for the administration of the University’s environmental health and safety program is delegated to the director of environmental health and safety and implemented through operations of the Department of Environmental Health and Safety (“EH&S”). Compliance with EH&S program procedures and guidelines and applicable laws and regulations is a shared responsibility of all University members.

## II. Reason for Policy

To identify authority and responsibility for the proper management of the University’s environmental health and safety program in accordance with applicable policies and regulatory requirements.

## III. Scope & Audience

This policy applies to all University employees, students, University affiliates, and visitors.

## IV. Definitions (specific to this policy)

### Campus:

All facilities, buildings, and property owned or leased by the University of Texas at Austin.

## V. Website (for policy)

<https://policies.utexas.edu/policies/hop/8-1020>

## VI. Contacts

CONTACT	DETAILS	WEB
Environmental Health and Safety	Phone: 512-471-3511	Website: <a href="http://www.utexas.edu/safety/ehs/">http://www.utexas.edu/safety/ehs/</a> ( <a href="http://www.utexas.edu/safety/ehs/">http://www.utexas.edu/safety/ehs/</a> )

## VII. Responsibilities & Procedures

### A. Responsibilities

All supervisors and employees are responsible for compliance with applicable environmental health and safety laws, regulations, and codes as well as applicable policies and procedures of the University and The University of Texas System. Responsibility for compliance follows administrative channels noted

below.

## 1. Environmental Health and Safety

EH&S is responsible for

- identifying potentially hazardous conditions through regular inspections of University facilities, including but not limited to laboratories, buildings, animal use facilities, greenhouses, growth chambers, machine shops, classrooms and offices;
- developing safety manuals and guidelines to promote safe work environments and maintain compliance;
- monitoring compliance with all applicable rules and procedures, guidelines, regulations and laws;
- developing programs and guidelines that promote good environmental stewardship;
- providing timely and effective training;
- decommissioning laboratories and assisting investigators leaving the institution to ensure proper inactivation and disposal of biohazards and proper disposition/disposal of chemicals, radioisotopes, etc.;
- providing timely incident response;
- assisting and advising departments/units to promote a safe work environment;
- assisting and advising departments in identifying individuals who by nature of their job function are at risk of potential exposure to biological, chemical, physical, and radiological hazards; and
- conducting audits and inspections.

## 2. Committees

The following committees are responsible, in part, for developing policy and providing advice and guidance to senior management and EH&S on matters of safety and the environment:

- Research Safety – Research Safety Steering Committee (RSSC)
- Chemical and Lab Safety – Laboratory Safety Advisory Committee (LSAC)
- Lasers – Laser Safety Committee (LSC)
- Biosafety – Institutional Biosafety Committee (IBC)
- Radiological Safety – Radiation Safety Committee (RSC)

## 3. Department/Unit (Deans, Directors, Department Chairs/Heads, Managers)

Deans, directors, department chairs/heads, and managers are responsible for

- establishing, promoting, and maintaining a culture of safety within the department/unit;
- responding to safety and environmental inspections;
- ensuring employees are aware of the University rules regarding environmental health and safety; and
- monitoring and ensuring departmental compliance with applicable rules, procedures, guidelines, regulations, and laws.

## 4. Supervisors

Supervisors are responsible for:

- identifying individuals who by nature of their job function are at risk of potential exposure to biological, chemical, physical, and radiological hazards;
- assessing the workplace for chemical, physical, radiological, or biological hazards which can cause illness, injury, or impairment;
- providing and ensuring proper use of safety equipment and personal protective equipment;
- providing training and information regarding the EH&S programs; and
- monitoring and ensuring compliance with applicable programs and their related rules, regulations, policies, and procedures regarding safety and environment.

## 5. Employees, Visitors, and Students

Employees, visitors, and students are responsible for:

- compliance with applicable state and federal laws, regulations, and guidelines as well as approved University rules and procedures.

## B. Environmental Health & Safety Rules and Regulations

The University will fully comply with federal and state laws and regulations and other applicable requirements relating to environmental health and safety. These laws, regulations, and requirements, as well as institutional policy, guide EH&S in the development of institutional programs and procedures which will facilitate University compliance. EH&S will consult with external agencies and regulatory bodies as appropriate on behalf of the University.

## C. Inspections and Audits

EH&S has authority to

- conduct inspections and audits to ensure safe practices and compliance with various environmental health and safety related laws, policies, procedures and regulations;
- access all buildings and facilities on campus to inspect, sample, or monitor conditions;
- require appropriate corrective actions; and
- plan strategies including the development of new safety programs.

## D. Suspend, Restrict, or Close Unsafe Operations

The director of environmental health and safety, or designee, has the authority to immediately suspend, restrict, or close any operation that presents

- an immediate danger to the health, safety, or welfare of persons or property;
- a serious violation or repeated violations of institutional requirements or standards; or
- clear or threatened violation of laws or regulations.

In the event EH&S orders the termination of an activity or operation, EH&S will immediately communicate the issue or violation to the individual(s) involved and his or her immediate supervisor. Notice will be promptly given by EH&S to the associate vice president for campus safety and security, the affected department head, and the appropriate regulatory agency, as required by law.

The terminated activity may resume with the approval of the director of environmental health and

safety, or designee, in consultation with the associate vice president for campus safety and security.

#### E. Program Areas

EH&S, in consultation with University committees as needed, is responsible for the development and maintenance of the following programs consistent with applicable regulations and University policies. The following list of EH&S program areas under EH&S authority may change based on institutional policy, as well as revised or new laws or regulations.

- Biological and Laboratory Safety – including programs such as biosafety, drinking water quality, indoor air quality, lab safety, select agents, food safety, and any others as appropriate.
- Campus and Occupational Safety – including programs such as accident prevention and investigation, industrial hygiene, asbestos, indoor air quality, occupational safety, hearing protection, respiratory protection, confined space, shop safety, and any others as appropriate.
- Environmental Protection – including programs such as hazardous materials, spill prevention and response, hazardous waste, storm and waste water, environmental assessments, permitting, and any others as appropriate.
- Radiation and Laser Safety – including programs such as laser safety, radiological safety, radioactive waste, radiation producing machines and any others as appropriate.

EH&S is authorized to develop program documentation, educational materials, training requirements, guidance documents, and standard operating procedures to ensure compliance with relevant environmental health and safety requirements, laws, and regulations.

### ***VIII. Forms & Tools***

Supporting policies and other EH&S related institutional requirements are documented in the Compliance section of the [EH&S website](http://www.utexas.edu/safety/ehs/compliance). (<http://www.utexas.edu/safety/ehs/compliance>)

### ***IX. Frequently Asked Questions***

None

### ***X. Related Information***

[EH&S website](http://www.utexas.edu/safety/ehs) (<http://www.utexas.edu/safety/ehs>)

[President's Environmental Health and Safety Statement of Commitment](http://www.utexas.edu/safety/ehs/about/statement_of_commitment.pdf) ([http://www.utexas.edu/safety/ehs/about/statement\\_of\\_commitment.pdf](http://www.utexas.edu/safety/ehs/about/statement_of_commitment.pdf))

[UT-Austin Emergency Preparedness Plans](http://www.utexas.edu/safety/preparedness/plans/) (<http://www.utexas.edu/safety/preparedness/plans/>)

### ***XI. History***

Last review date: June 8, 2015

Next scheduled review: June 2017

This policy was previously called "Safety Policy".  
Original HOP 6.32



The University of Texas at Austin  
**Environmental Health & Safety**

## **Appendix B: Construction Site Procedures for Contractors**





## **COMMON ACTIVITIES OF CONCERN:**

### ***Equipment Cleaning***

- Equipment must be cleaned in a manner that does not create any discharge of cleaning agents, paints, oil or other pollutants to a storm sewer or waterway. Soaps and detergents must never be discharged to the ground or off-site. When rinsing painting equipment outside, rinse water must be contained in a bucket or other container. Water based or latex paint rinse water may be discharged to the sanitary sewer. Oil-based paint wastes, including solvents and thinners, must not be disposed of in the sanitary sewer; they must be collected and disposed of through the contractor's disposal company in accordance with applicable laws and regulations. Cement handling equipment must be rinsed in a contained concrete washout area installed in an area of minimal slope and there must be no drainage off-site.

### ***Pressure Washing***

- Discharges from pressure washing must not be allowed to enter a storm sewer or waterway. Consider vacuuming up the water or berming the process water and allowing it to evaporate. If the rinsate only contains water and dirt/sediment it may be discharged to a vegetated area with prior permission from Landscape Services and provided the area is large enough to accept the discharge and not enter a storm sewer or waterway. Depending on the content of the material it may also be possible to discharge to a sanitary sewer with prior permission from Environmental Health & Safety. (Permission to discharge to sanitary sewer may take up to seven business days.)

### ***Waste Disposal***

- Any trash or debris must be contained on site and disposed of in a recycling bin or waste receptacle in accordance with applicable laws and regulations to prevent wind or rain from carrying it off-site into a storm drain or waterway. Petroleum wastes, such as waste oil and used oil filters, must be containerized for recycling or disposal by the contractor. Non-hazardous solid wastes, such as general construction debris may be recycled or disposed of in the trash container. *Never dispose of liquid wastes of any kind in dumpsters.*

### **Packing Lamps**

- Used fluorescent high intensity discharge (HID) and UV germicidal lamps must be collected in containers that protect the lamps during storage and transportation. The original shipping container is the preferred package for spent lamps. Remove extra cardboard end pieces to assure that lamps fit in the box. Remove any plastic lamp sleeves and tape from spent lamps when packing for waste collection. The Office of Environmental Health & Safety also has boxes available for packaging standard four foot and eight foot length fluorescent lamps. To receive a packing box, email [EHS-HazardousMaterials@austin.utexas.edu](mailto:EHS-HazardousMaterials@austin.utexas.edu) with the subject line:

CP# - BLDG - Fluorescent Light Bulb Storage Container Request. In the body of the email include:

- Building and room
- Contact Name and Phone Number
- # of container(s) and length or appropriate number of bulbs to dispose of and length

An open top metal drum or poly drum should be used for other types of lamps such as small lamps, mercury vapor lamps, and other odd shaped fluorescent tubes. In the case of smaller bulbs, additional packing materials such as vermiculite must be added to prevent breakage.

### **Broken Fluorescent Lamps**

- When fluorescent lamps and HIDs are broken, mercury is released to the environment, but some mercury still remains on the surfaces of the glass, phosphor, and the metal or plastic. If a fluorescent, HID, or UV germicidal lamp is broken, all the broken parts must be collected as a hazardous material. Dedicate 30

gallon metal drums labeled with the words "broken fluorescent lamps" to collect the broken pieces, and contact EHS for disposal when the drum is full. The drum must be sealed when it is not actively receiving broken bulbs.

### **Sediment**

- ✿ Proper erosion and sedimentation controls must be in place prior to any construction activity to prevent sediment or silt run-off. Sediment (including cement) should never be rinsed off the site; instead it must be cleaned up using dry cleanup methods or in a manner that does not allow any material to reach a storm drain or waterway. Equipment tires should be rinsed before leaving the site if necessary to avoid tracking sediment into the roadway or off the site. Erosion and sediment control plans and/or Storm Water Pollution Prevention Plans shall be submitted to EHS prior to soil disturbance. All erosion and sediment controls are to be maintained throughout the duration of the construction and maintained until all areas are stabilized.
- ✿ Erosion controls installed onsite must meet the requirements of UT Design and Construction Storm Water Management Standard 01 57 23.
- ✿ *All vehicles must leave the site through a stabilized construction entrance meeting the requirements of the University's Construction Standard 02060 regarding Erosion and Sedimentation Controls.*

### **Site Dewatering, Tank, & Pipe Testing**

- ✿ Discharges from dewatering, water or fire line testing, hydrostatic tank testing or pipe pressure testing must be free from sediment, chemicals, and any other pollutants. Some discharges, such as those from underground storage tank pits, may require temporary discharge permits from EHS and contractor is responsible for obtaining such permits. EHS shall be notified prior to dewatering and/or discharging.

### **Petroleum**

- ✿ Spills of hydraulic fluid, oil and other petroleum products must always be immediately cleaned up to prevent discharge of these fluids with stormwater run-off. Petroleum contaminated soil must be cleaned up and disposed of properly in accordance with applicable laws and regulations. Storage containers must be kept closed, clean and free of oily residue. Containers stored outside with any of the above fluids must be stored in secondary containment or on appropriately sized spill pallets.

### **Temporary Storage Tanks**

- ✿ SEMI-PERMANENT INSTALLATION - tanks must either be 2-hour fire rated (will carry a designation of UL-2085 & are double walled) or be internal to a liquid tight concrete vault.
- ✿ TEMPORARY/CONSTRUCTION SITE USE – Must be located in a bermed containment area. In this case, the tank must be installed/located as follows:
  - The berm should be about 3 feet out in all directions from tanks.
  - The height of the berm must contain the maximum contents of the largest tank + 8 inches --this almost always equates to about a 10 inch tall berm.
  - First lay down 2 inches of sand, then water tight barrier (should be minimum 6 mil plastic or rubber), build up 10 inch berm height with dirt or whatever, lap barrier over berm and weight down with more dirt, put 2 inches of sand in bottom over barrier.
  - Storage tanks must be 50 feet from nearest building and property lines.
  - It is best to use tanks on skids with pumps (pumps must be UL rated for fuels).
  - If using the "tower" or gravity feed type setup, the containment must be wide enough that if either tank falls to the side it will entirely land inside of containment. There must also be a fusible link at the valve that will shut off flow to hose in the event of a fire.

### **Separators or Traps**

- ✿ Before removing oil/water separators or traps connected to storm sewers, the materials in them must have been tested (by Toxicity Characteristic Leachate Procedure or TCLP) within the last two years before they are cleaned out. Be aware that this test may take three weeks to complete if a recent test has not been completed. Contractor is solely responsible for accommodating the time for such testing and no claims for delay arising out of such testing will be permitted. Documentation of the test results must be submitted to EHS staff for review and approval before emptying or removing the trap.

## **SPILL PREVENTION, CLEAN-UP AND DISPOSAL**

- Be prepared to contain spills to prevent spreading. Small areas are easier to clean than large ones. Spill kits are recommended to be kept on hand by anyone working on exterior projects. Spill cleanup materials recommended to be kept on hand may include; sorbent materials such as clay (kitty litter), polypropylene booms and pads, rags and sawdust to contain spills immediately.

### ***Clean-Up***

- Sorbent materials can be used to effectively clean-up various materials spilled on pavement, water and soil. Soil or other media which has been contaminated with petroleum or other pollutants must be excavated or remediated in accordance with applicable laws and regulations to prevent contaminated discharges to a storm drain or waterway. Excavated contaminated materials must be stored in containers or on plastic and covered so as to ensure that the contamination is not flushed back onto the ground during a rainstorm.

### ***Contaminated Material Disposal***

- Proper disposal of waste materials depends partly on the type of contaminant. Hazardous wastes (such as flammable petroleum products and solvents, thinners) and materials contaminated with hazardous wastes are considered regulated wastes, and should be containerized for transport and disposal by a permitted company in accordance with applicable laws and regulations. Disposal also depends on the amount of contaminant. Contact EHS at 471-3511 for assistance in the disposal required.

## **CONTRACTOR REQUIREMENTS AND RESPONSIBILITIES**

- Contractors are solely responsible for cleaning up and properly disposing of all spilled pollutants brought to the site as part of the contractor's work, including oil, paint, fuels, antifreeze, solvents, etc. in accordance with applicable laws and regulations. Contractor must keep accurate records (such as receipts, copies of analytical results, etc.) indicating proper disposal of spilled materials in accordance with applicable laws and regulations. Furthermore, Contractor is responsible for ensuring that all discharges from the site are in compliance with all applicable laws and regulations.
- No substance may be dumped or leaked onto the ground or allowed to run-off of a construction site that might cause pollution. Be aware that the contractor is responsible for preventing pollutant contaminated run-off and proper disposal of all waste materials generated as a result of the contractor's activities.

## **NOTIFICATION REQUIREMENTS AND PROCEDURES**

UT EHS (471-3511) should be notified immediately in the event of:

- Any spill that threatens to enter a storm sewer or watercourse.
- All petroleum spills e.g. hydraulic fluid, transmission fluid, diesel, gasoline, etc.
- Any hazardous or unknown material spill, e.g. many solvents, cleaners, etc.
- Any discharge from your site which you suspect may be in violation of City Code, state regulations, or other applicable laws and regulations, e.g. discharges which are cloudy, foul smelling, colored, contain chemicals or heavy sediment loads.

Notification can be accomplished by calling the UT-Austin EHS at 471-3511 during regular business hours and calling 911 after hours.

The University of Texas at Austin Environmental Health and Safety Department would like to acknowledge the assistance of the City of Austin Watershed Protection Department for the use of some of the information contained within this document.



The University of Texas at Austin  
**Environmental Health & Safety**

**Appendix C: UT Austin Design and Construction  
Standard 015723**



# The University of Texas at Austin

## Project Management and Construction Services

### Design and Construction Standards Technical Specification

#### SECTION 01 57 23

#### Temporary Storm Water Pollution Control

All renovation and new construction activities on The University of Texas at Austin campuses are required to meet the UT Austin Design and Construction Standards (DCS). This includes the very first planning and design stages through actual construction and facilities maintenance and management. They reflect the planning, design, construction, maintenance, and other facilities asset expertise of University personnel. These documents are to be used as a guideline on all UT Austin projects, and are not to be used for bidding, permitting, construction or any other purpose. Any deviations must be approved by the respective Division Champion, and will be submitted in writing by the Project Manager. The Design and Construction Standards are controlled by Project Management and Construction Services, The University of Texas at Austin. This document is the property of UT Austin, and use of this document, in part or in whole, for any purpose other than for a UT Austin project may not be done without written permission of the University.

For any comments or questions related to UT Austin Design and Construction Standards, please contact the Project Management and Construction Services Planning group at: campus\_standards@austin.utexas.edu or by phone at (512) 471-0665.

The issuance and revision history of this Section is tabulated below. Please destroy any previous copy in your possession.

Rev Date	Pages	Remarks	Documents Referenced
6/5/2019	All	New Technical Specification created.	
1/31/2020	All	New Technical Specification published.	
6/18/2020	2	Modified 1.2B and 1/2C to include links.	

## **SECTION 01 57 23 – TEMPORARY STORM WATER POLLUTION CONTROL**

*(Note to PSP: Comply with requirements of authorities having jurisdiction and requirements established by the UT EHS Department. Coordinate with the UT Project Manager)*

### **PART 1 - GENERAL**

#### **1.1 DEFINITIONS**

- A. BMP – Best Management Practices
- B. CSN – Construction Site Notice (Large CSN for large sites; Small CSN for small sites)
- C. EHS – Environmental Health and Safety
- D. NOI and NOT – Notice of Intent and Notice of Termination for TPDES permits
- E. ODR – Owner Designated Representative
- F. Land Disturbance – Any activity which affects the ground surface and/or vegetation
- G. SWPPP – Storm Water Pollution Prevention Plan
- H. TCEQ – Texas Commission on Environmental Quality
- I. TPDES – Texas Pollutant Discharge Elimination System
- J. Large Construction Activities – Construction activities including clearing, grading and excavating that result in land disturbance equal to or greater than 5 acres of land. *(Note to PSP: Provide additional notes to the appropriate specification section or drawings as required.)*
- K. Small Construction Activities - Construction activities including clearing, grading and excavating that result in land disturbance equal to or greater than 1 acre and less than 5 acres of land. *(Note to PSP: Provide additional notes to the appropriate specification section or drawings as required.)*
- L. Under 1 Acre Construction Activities - Construction activities including clearing, grading, excavating, or any activity which affects the ground surface and/or vegetation that results in land disturbance under 1 acre of land *(Note to PSP: Include an Erosion Control & Sedimentation Plan as part of the construction documents. Prior to submission, coordinate with PMCS Project Manager & EHS as required.)*

#### **1.2 RELATED DOCUMENTS AND APPLICABLE WORK**

- A. The TCEQ TPDES Construction General Permit (CGP) No. TXR150000 effective March 5, 2018 and the project SWPPP. This specification requires compliance with all provisions of the TCEQ TPDES permit, the City of Austin Drainage Criteria Manual, and the City of Austin Environmental Criteria Manual. The TCEQ requirements currently pertain to large construction activities of 5 acres or more and small construction activities that disturb between 1 and 5 acres. *(Note to PSP: Coordinate with UT EHS for guidance and recommendations.)*
- B. The UT Austin approved [Storm Water Management Program \(SWMP\)](#).
- C. The UT EH&S [Construction Site Procedures for Contractors](#).

- D. Information to Respondents, Agreement, latest version of Uniform General Conditions, Additional General Conditions, and Special Conditions shall be read carefully for provisions pertaining to this work. In the event of conflict, the better quality shall prevail.
- E. The work described in this section is applicable to any and all sections of the contract documents. Any and all work that would disturb the existing site conditions or present the potential for site runoff shall adhere fully to this specification section.
- F. Unless specifically notified to the contrary in writing by the Owner, all aspects of this specification shall apply to this project.

**1.3 CONTRACTOR RESPONSIBILITIES**

- A. This project requires implementation of storm water Best Management Practices for control devices and monitoring by the Contractor to comply with all provisions of the SWPPP developed for the project by the licensed civil engineer. The Contractor must fulfill all TPDES regulatory requirements, including the filing of the NOI and NOT or signing and posting of the CSN.
- B. The Contractor shall provide signatures of a Corporate Officer for the NOI, Large CSN, Small CSN, NOT and any other forms or applications as required by the TPDES Construction General Permit TXR150000. The Contractor shall also provide delegated authorization to sign reports per 30 TAC 305.128. Individuals conducting site inspections shall be qualified to the satisfaction of the Owner. *(Note to PSP: Coordinate with UT EHS for guidance and recommendations.)*
- C. When the Contractor receives the approved SWPPP from the Owner, the Contractor signs and electronically files (through STEERS) the NOI, signs the Large or Small CSN and forwards it to the Owner. The application fee(s) must accompany the NOI. The Contractor shall insert a copy of the signed NOI or Small CSN into the SWPPP book to be kept at the jobsite. The application fee is not required for small construction sites. A copy of the NOI must be submitted to UT Austin EHS at [EHS-EnvironmentalOps@austin.utexas.edu](mailto:EHS-EnvironmentalOps@austin.utexas.edu).
- D. The SWPPP book kept at the jobsite shall also contain the following:
  - 1. A letter delegating signature authority to the field personnel for the Contractor
  - 2. A copy of the TPDES permit when received
  - 3. A copy of the Large or Small CSN
  - 4. A copy of the Shared SWPPP Acceptance Certification form
  - 5. A copy of the SWPPP Project Start-Up form
- E. The Contractor shall review the SWPPP and verify existing conditions at the site before determining scope of implementation of site controls. Site survey and site plan drawings shall be used for additional reference. The Contractor shall notify the Owner, in advance, of this site review to allow for Owner and campus EHS participation.
- F. The Contractor shall construct a Project SWPPP sign and place it at the main entrance to the project site. This sign shall include the NOI and TPDES permit along with the TCEQ TPDES Large or Small CSN, depending on the size of the construction project. The sign shall be constructed as detailed in the sample SWPPP sign drawing included in Part 4 of this Section.
- G. The Contractor shall contact the UT Austin project specific ODR and EHS for review of initial site controls in place prior to commencing site-disturbing activities, to ensure that any unusual circumstances or unforeseen site conditions with regard to erosion and sedimentation have been addressed. The Contractor, ODR, & EHS shall complete the SWPPP Project Start-up form and



shared SWPPP Acceptance Form before commencing soil disturbing activities. Both parties shall sign this form when the requirements listed in the SWPPP Project Start-up form have been met.

- H. The Contractor shall provide all material, labor, equipment and services required to implement, maintain and monitor all erosion and sedimentation controls in compliance with the SWPPP. All controls implemented by the Contractor shall comply with the TPDES regulations as issued by the TCEQ on March 5, 2018. These controls shall remain in operation until project completion and re-establishment of the site to pre-existing conditions (or improved) or longer as directed by the ODR. The work shall include, but not be limited to, the following:
1. All earthwork as required to implement swales, dikes, basins and other excavations for temporary routing of utilities, to protect against erosion or sediment-laden (polluted) storm water runoff.
  2. All structural controls as shown or specified, including silt fences, sediment traps, stabilized construction entrance, subsurface drains, pipe slope drains, inlet/outlet protection, reinforced soil retention, gabions, rock berms, etc.
  3. All non-structural controls as shown or specified, including temporary or permanent vegetation, mulching, geotextiles, sod stabilization, preservation of vegetative buffer strips, preservation/protection of existing trees and other mature vegetation.
  4. All modifications and revisions to SWPPP necessary to meet changing site conditions and to address new sources of storm water discharges, as the work progresses.
  5. All maintenance and repair of structural and non-structural controls in place shall continue until final stabilization is achieved or as directed by the ODR.
  6. Weekly site inspections, as required by the SWPPP, of pollutant sources, including hazardous sources, structural and non-structural controls, and all monitoring of SWPPP revisions and maintenance of inspection records.
  7. Removal of all structural and non-structural controls as necessary upon completion, and only after final stabilization is achieved.
  8. Filing of NOT with the ODR within 30 days of final stabilization being achieved and being approved by the Owner, or of another Operator assuming control of the unstabilized portions of the site.
  9. Refer to the SWPPP for additional requirements to ensure compliance with TPDES regulations.

#### **1.4 QUALITY ASSURANCE**

- A. In order to minimize the discharge of pollutants to storm water, the Contractor shall implement all permanent and temporary site controls according to TPDES Guidelines, as set forth by the TCEQ.
- B. Implementation of site controls shall be performed by a qualified contractor experienced in the proper installation of such devices in accordance with manufacturers' specifications, and in keeping with both recognized Best Management Practices (BMPs), and TPDES regulations.
- C. The Contractor shall inspect all BMPs at regular intervals as specified in the Storm Water Pollution Prevention Plan for this project. Use standard Owner Inspection forms for each inspection. Record all deficiencies of site controls, and take immediate action to correct any



deficiencies recorded. Keep records of inspections current and on file, available for review by EPA, TCEQ, MS4 Operator and Owner.

## 1.5 SUBMITTALS

- A. Submittals of products used in structural and non-structural controls shall be made through established procedures prior to installation on the site. The Contractor shall make available physical samples and product literature on any material used in structural or non-structural controls during the course of the project prior to its implementation in the field.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

Specific site control devices are identified in the SWPPP. Where such devices are indicated, their material composition shall comply with this section. Refer to exhibits for details of listed materials. Projects may propose alternative BMPs, as long as they are effective at performing the desired functions.

- A. Materials to be used in structural and non-structural site controls shall include, but not be limited to the following:
1. **Area Inlets, Curb Inlets and Silt Fences:** implemented to filter and remove sediment from storm water; they shall be composed of the materials listed in Exhibit A, B, and C respectively.
  2. **Rock Berms:** shall be composed of the materials listed in Exhibit D:
  3. **Triangular Filter Dikes:** for use on surfaces or in locations where standard silt fence cannot be implemented. Refer to Exhibit E.
  4. **Mulch Sock:** shall be composed of the materials listed in Exhibit F
  5. **Stabilized Construction Exit:** allows the safe passage of vehicles while agitating the tires to loosen and remove the soil buildup. The grid or structures shall conform to the following:
    - a. Bull Rock and Cattle Guard (Exhibit G)
    - b. Bull Rock (Exhibit H)
    - c. Cattle Guard
      - 1) It shall consist of pipes or tubes spaced such that there is a minimum clear distance between the pipes or tubes of 4½ inches.
      - 2) Minimum diameter of pipe or tube shall be 3 inches.
      - 3) It shall be of sufficient length so that the agitation will remove the soil from the tires, or a minimum of 12 feet.
      - 4) At the street side approach of the grid there shall be an impervious surface or it shall consist of 3" to 5" diameter angular crushed stone/rock approximately 5 feet in length, minimum, and 8 inches deep, minimum. On the job site side of the grid, there shall be 3" to 5" diameter angular crushed stone/rock 15 feet in length, a minimum of 8 inches deep. The steel grid will be between the street side approach and the job site crushed stone/rock. All crushed stone/rock shall have filter fabric beneath the stone/rock.
    - d. Tracking Control Mat (Exhibit I or equivalent product)
  6. **Concrete, Paint and Stucco Washout:** shall be used for containment of fluids from concrete truck washout wastes. Refer to Exhibit J. (Note to PSP: Provide location on the site plan.)

7. **Temporary Storage Tanks:** shall be used for temporary storage of fuels on the construction project site. (Note to PSP: Provide location on the site plan.)
  - a. 2 inches of sand on the bottom of the containment area
  - b. 6 mil plastic sheeting
  - c. 2 inches of sand on top of the plastic sheeting
8. **Diversion Dike:** Refer to Exhibit K.
9. **Interceptor Swale:** Refer to Exhibit L.
10. **Erosion Control Matting:** shall be used on steep slopes, in drainage swales, and in high traffic pedestrian areas of barren soil. It shall include one or more of the following
  - a. Jute Mat – a plain fabric made of jute yarn, woven in a loose and simple manner, with a minimum unit weight of 2.7 pounds per square yard. Width shall be as required for the dimensions of the area to be covered.
  - b. Wood Fiber Mat – a mat composed of wood fibers, which are encased in nylon, cotton or other type of netting
  - c. Synthetic Webbing Mat – a mat manufactured from polyvinyl chloride or polypropylene monofilaments, which are bonded together into a three-dimensional web to facilitate erosion control and/or re-vegetation.
11. **Organic Mulches:** shall be used for covering bare soil, retaining moisture under existing vegetation being preserved, and for absorbing the energy of compaction caused by foot or vehicular traffic. Refer to Exhibit M.
12. Any other materials indicated in the SWPPP.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. The Contractor shall provide a complete installation of all site control devices and measures (BMPs) indicated in the SWPPP book, including the Site Erosion and Sedimentation Control Drawing and as specified herein. These BMPs must be confirmed as fully operational with the Owner before any work that disturbs the site can begin.

As an alternative to the BMPs indicated in the SWPPP book, the Site Erosion and Sediment Control Drawing and as specified herein, the Contractor may propose alternate BMPs that perform the same function as the indicated BMP but may be of a different configuration, materials, or type for review and approval by UT Austin. Installation of alternate BMPs shall not proceed until reviewed and approved by UT EHS.

- B. The Contractor shall provide inspection and monitoring of controls in place and shall perform all revisions and updating of SWPPP book. An accurate, chronological record of all Contractor inspections, revisions and additional controls shall be kept on file at the project site, for review, with a copy of the SWPPP book.
- C. The Contractor shall submit their NOT to the Owner after all disturbed areas are re-established (stabilized) with vegetative cover following completion of construction. Following acceptance of stabilized areas, all site controls that are no longer necessary shall be removed.
- D. If applicable, contractor to follow the approved de-watering plan, either as included in the approved SWPPP or as a stand-alone plan in conjunction with the erosion and sedimentation control plan. (Note to PSP: Provide a site specific de-watering plan during the design phase to EHS for review and comment.)

### **3.2 CONTROL DEVICES**

Execution of specific site control devices is described in the following paragraphs. Refer to the SWPPP for applicable devices, extent and location. Refer to exhibits for details on the execution of listed control devices. (Note to PSP: Review UT EHS website for Best Management Practices (BMPs) for your project and coordinate with EHS personnel prior to including necessary requirements.)

- A. AREA INLET: Refer to Exhibit A.
- B. CURB INLET: Refer to Exhibit B.
- C. SILT FENCE: Refer to Exhibit C.
- D. ROCK BERM: Refer to Exhibit D.
- E. TRIANGULAR FILTER DIKE: Refer to Exhibit E
- F. MULCH SOCK: Refer to Exhibit F.
- G. STABILIZED CONSTRUCTION EXIT: The stabilized construction exit shall be properly maintained throughout the entire construction process until removal is approved by UT Austin.
  - 1. Bull Rock and Cattle Guard (Exhibit G)
  - 2. Bull Rock (Exhibit H)
  - 3. Cattle Guard
    - a. It shall be elevated above the ground surface a minimum of 8 inches to allow water, debris and soil to drain.
    - b. It shall be designed to support any and all vehicles entering and leaving the construction site.
    - c. It shall be firmly placed in the ground at the exit.
    - d. Steel grid area shall be used as the tire wash area. When tire wash is in use (rainy or muddy days), the area shall be manned and the tires shall be washed using a high pressure hose/nozzle.
    - e. The area beneath the grid shall be sloped such that debris, soil and water shall be diverted back onto the construction site or to a sediment basin. No water, soil, or debris shall leave the construction site. The resulting discharge shall be disposed of properly.
    - f. The stabilized construction exit shall be properly maintained throughout the entire construction process until removal is approved by UT Austin
  - 4. Tracking Control Mat (Exhibit I or equivalent product)
- H. CONCRETE/PAINT/STUCCO WASHOUT (SELF INSTALLED): Refer to Exhibit J.
- I. TEMPORARY STORAGE TANKS
  - 1. Must be located in a bermed containment area. The berm must be a minimum 3 feet in all directions, and the height of the berm must contain the maximum contents of the largest tank plus 8 inches (approximately 110% of the tank capacity). The containment area is constructed by beginning with a 2-inch sand pad, and then covered with 6-mil plastic or rubber sheeting. The sheeting is then covered with another 2-inch layer of sand. The plastic sheeting is secured to the outer berm.
  - 2. Storage tanks are to be placed no closer than 50 feet from a building or property line.

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3. If using tanks with a gravity feed setup, the containment must be of sufficient size to be able to contain the tank if it should fall over.
  4. There must be a fusible link at the valve that will shut off the flow to the hose in the event of a fire.
  5. There must be sufficient cover for the tank and the containment area to prevent potential storm water runoff.
  6. The area within the containment area is to be kept free and clear of spills; if a spill occurs, the sand is to be removed and replaced with a fresh layer of sand.
  7. The storage tank containment area is to be removed from the site once it has been determined that it will no longer be used on the construction site.
- J. DIVERSION DIKE: Refer to Exhibit K.
- K. INTERCEPTOR SWALE: Refer to Exhibit L.
- L. EROSION CONTROL MATTING
1. Remove all rocks, debris, dirt clods, roots, and any other obstructions which would prevent the matting from lying in direct contact with the soil. 6 inch by 6-inch anchor trenches shall be dug along the entire perimeter of the installation. Bury matting in trenches, backfill and compact. Fasten matting to the soil using 10-gauge wire staples, 6 inches in length and 1 inch wide. Use a minimum of 1 staple per 4 square feet of matting, and at 12 inches on center along all edges. Install parallel to flow of water and overlap joining strips a minimum of 12 inches.
  2. Maintain erosion control matting by repairing any bare spots. Missing or loosened matting shall be promptly replaced or re-anchored.
  3. Remove matting where protection is no longer required. In areas where permanent vegetation is established along with matting, matting can be left in place permanently.
- M. ORGANIC MULCHES
1. Apply specified mulches in areas identified on the SWPPP, to a depth of 3 inches or as otherwise specified on the SWPPP drawings. Refer to Exhibit M.
- N. BMP Details
1. Refer to Exhibits for the following BMP details:
    - Exhibit A -- Area Inlet Detail
    - Exhibit B -- Curb Inlet Detail
    - Exhibit C -- Silt Fence Detail
    - Exhibit D -- Rock Berm Detail
    - Exhibit E -- Triangular Filter Dike Detail
    - Exhibit F -- Mulch Sock Detail
    - Exhibit G -- Stabilized Construction Exit -- Bull Rock and Cattle Guard Detail
    - Exhibit H -- Stabilized Construction Exit -- Bull Rock Detail

Exhibit I – Stabilized Construction Exit – Tracking Control Mat Detail

Exhibit J – Concrete, Paint and Stucco Washout Detail

Exhibit K – Diversion Dike Detail

Exhibit L – Interceptor Swale Detail

Exhibit M – Organic Mulches Detail

### **3.3 INSPECTIONS AND RECORD KEEPING**

- A. Contractor shall inspect all BMPs on 7-day intervals. Coordinate inspections with ODR, who is also required by TPDES to regularly inspect the site. Use standard Owner Inspection forms for each inspection. Record all deficiencies of site controls, and take appropriate action to correct any deficiencies recorded. Exception is rock berms located in a streambed. Any rock berm located in a streambed shall be inspected on a daily basis.
- B. Contractor shall accommodate the monthly (at minimum) inspections of SWPPP controls by EHS as the MS4 Authority Having Jurisdiction (AHJ).
- C. Contractor shall keep records of all Contractor, ODR, and EHS inspections on file with SWPPP book at project site for the duration of the project. Contractor shall keep records of all major grading and stabilization activities on file with the SWPPP book at the project site for the duration of the project. These records shall be made available for review by ODR, EPA, TCEQ or MS4 Operator officials requesting review of SWPPP inspection records.
- D. All onsite SWPPP records shall be submitted to the ODR at the project completion. The ODR must submit these records to EHS. EHS will keep these on file for 3 years per TCEQ regulations.

### **3.4 MAINTENANCE**

- A. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If through inspections the permittee determines that BMPs are not operating effectively, maintenance must be performed before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run over, removed or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

### **3.5 WASTE DISPOSAL**

- A. Contractor is responsible for proper disposal of hazardous materials. Hazardous wastes (such as flammable petroleum products and solvents, thinners) and materials contaminated with hazardous wastes are considered regulated wastes, and should be containerized for transport and disposal by a permitted company in accordance with applicable laws and regulations.
- B. Any trash or debris must be contained on site and disposed of in a recycling bin or waste receptacle in accordance with applicable laws and regulations to prevent wind or rain from carrying it off-site into a storm drain. Non-hazardous solid wastes such as general construction debris may be recycled or disposed of in the trash container. Never dispose of liquid wastes of any kind in University dumpsters.
- C. Contractor to remove all temporary control measures from the project site.

**PART 4 - SAMPLE DOCUMENTS**

**4.1 THE FOLLOWING FORMS OR SKETCHES ARE TO BE USED BY THE CONTRACTOR IN THE EXECUTION OF THE WORK IN THIS SECTION, IN COMPLIANCE WITH TPDES REQUIREMENTS AND THE SWPPP.**

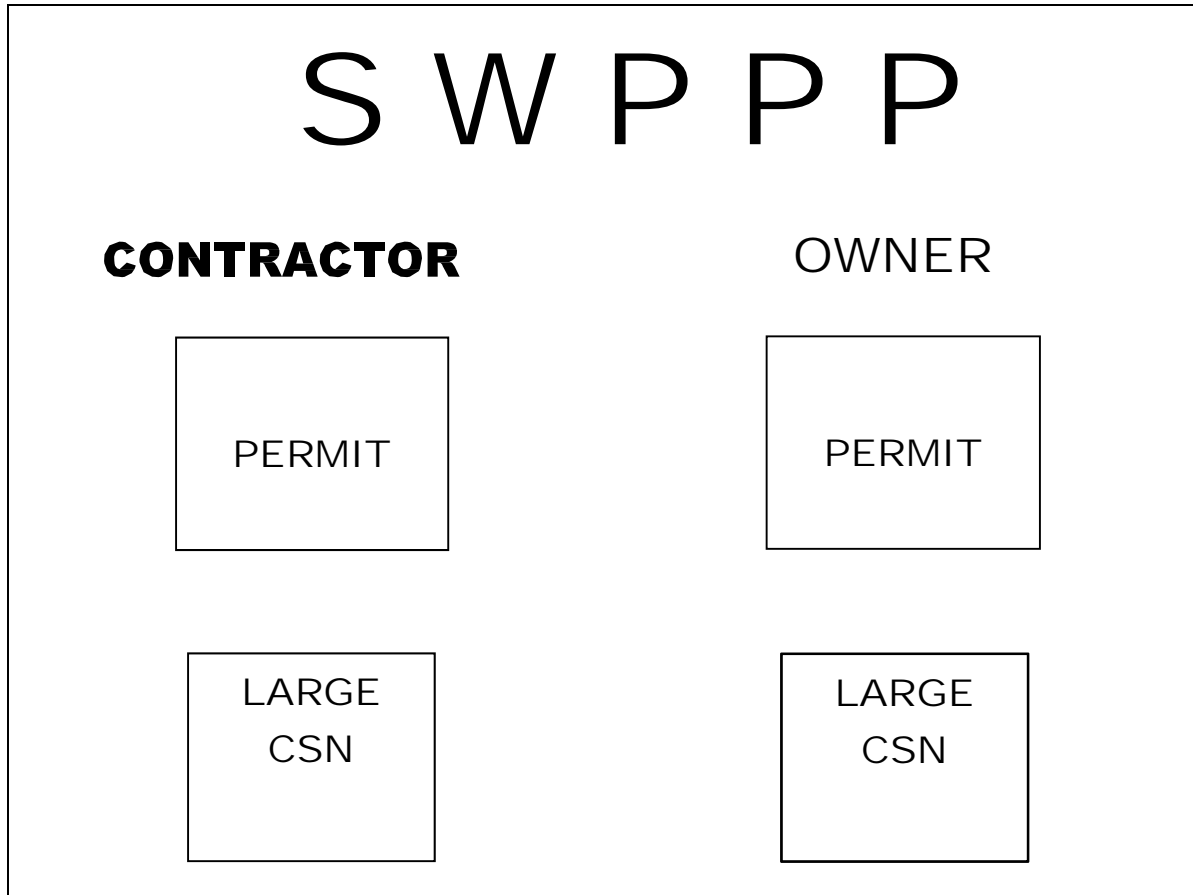
- A. SWPPP Posting Sign for Main Construction Entrance for large construction site 5 acres or greater.
- B. SWPPP Posting Sign for Main Construction Entrance for small construction site 1 to less than 5 acres.
- C. Sketches in Exhibit A through M.

**4.2 CONTACT THE ODR FOR ELECTRONIC COPIES OF THESE FORMS TO BE USED IN THE EXECUTION OF WORK IN THIS SECTION:**

- A. TCEQ TPDES Notice of Intent (NOI)
- B. TCEQ TPDES CSN (Large CSN or Small CSN)
- C. TCEQ TPDES Notice of Termination (NOT)
- D. Shared SWPPP Acceptance Certification form
- E. SWPPP Project Start-up Form
- F. Major Grading and Stabilization Log
- G. SWPPP Inspection form

**END OF SECTION 01 57 23**

## Sign for Large Construction Site



**MINIMUM SIGN SPECIFICATIONS: 5 Acre or Greater Sites**

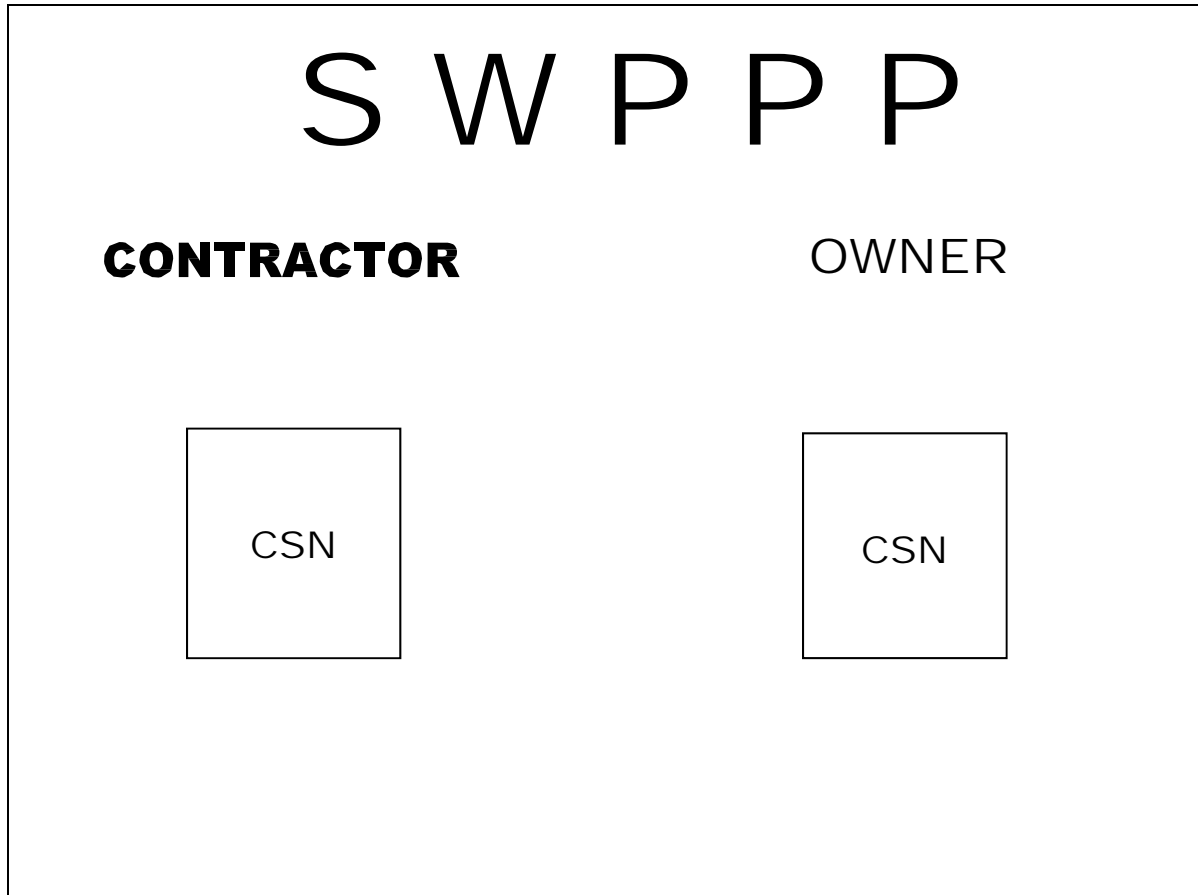
**SIGN: Exterior grade 3/4" plywood, cut 4' x 4', with red painted letters, background painted white – DISPLAY ON CONSTRUCTION FENCE AT MAIN ENTRANCE TO PROJECT SITE.**

**S W P P P: 10-inch painted letters, 3 inches from top of sign, centered**

**CONTRACTOR OWNER: 3 inch painted letters, 4 inches below SWPPP letters, centered on each half of sign**

**PERMIT, CSN: 8-1/2 X 11 TCEQ forms, laminated beyond edges of documents, stapled to plywood.**

## Sign for Small Construction Site



**MINIMUM SIGN SPECIFICATIONS: 1 to Less than 5 Acre Sites**

**SIGN: Exterior grade 3/4-inch plywood, cut 4' x 4', with red painted letters, background painted white -  
DISPLAY ON CONSTRUCTION FENCE AT MAIN ENTRANCE TO PROJECT SITE**

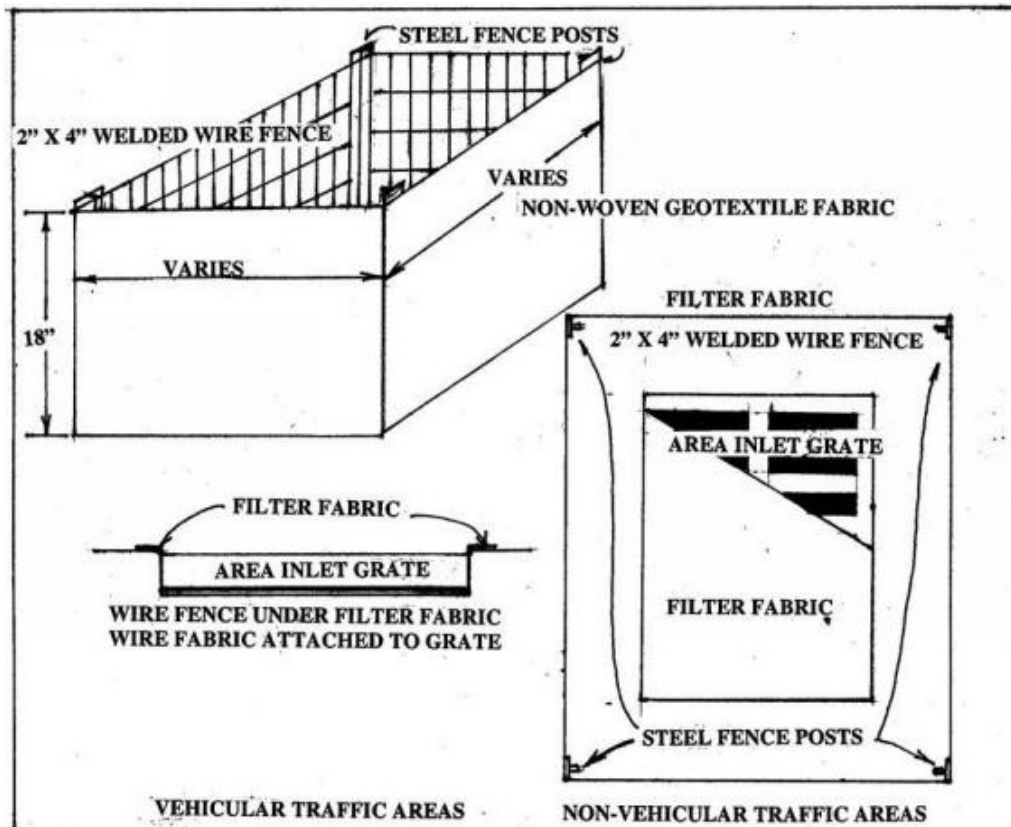
**S W P P P: 10-inch painted letters, 3 inches from top of sign, centered**

**CONTRACTOR OWNER: 3-inch painted letters, 4 inches below SWPPP letters, centered on each half of sign**

**CONSTRUCTION SITE NOTICE: 8-1/2-inch X 11-inch TCEQ forms, laminated beyond edges of documents,  
stapled to plywood**



EXHIBIT A  
Area Inlet Detail



Notes:

1. INSTALL STEEL POSTS THAT SUPPORT THE SILT FENCE AT EACH CORNER, AND ALSO BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 8 FEET BETWEEN CORNER POSTS.
2. USE SILT FENCE DETAIL FOR INSTALLATION OF THE SILT FENCE AROUND THE AREA INLET.
3. LIFT THE METAL AREA INLET GRATE, WRAP THE FILTER FABRIC AROUND IT, AND THEN REPLACE THE GRATE.
4. IN VEHICULAR TRAFFIC AREAS, LIFT THE METAL GRATE OUT AND PLACE WIRE FENCE MATERIAL UNDER IT WITH FILTER FABRIC PLACED BETWEEN THE GRATE AND THE WIRE FENCE. THEN ATTACH THE WIRE FENCE TO THE GRATE.
5. REMOVE ACCUMULATED SILT WHEN THE FILTER FABRIC OVER THE GRATE COMPLETELY COVERS THE GRATE AREA AND THE SILT AROUND THE SILT FENCE REACHES A HEIGHT OF 6 INCHES.
6. REMOVE AREA INLET PROTECTION WHEN THE SITE IS COMPLETELY STABILIZED.

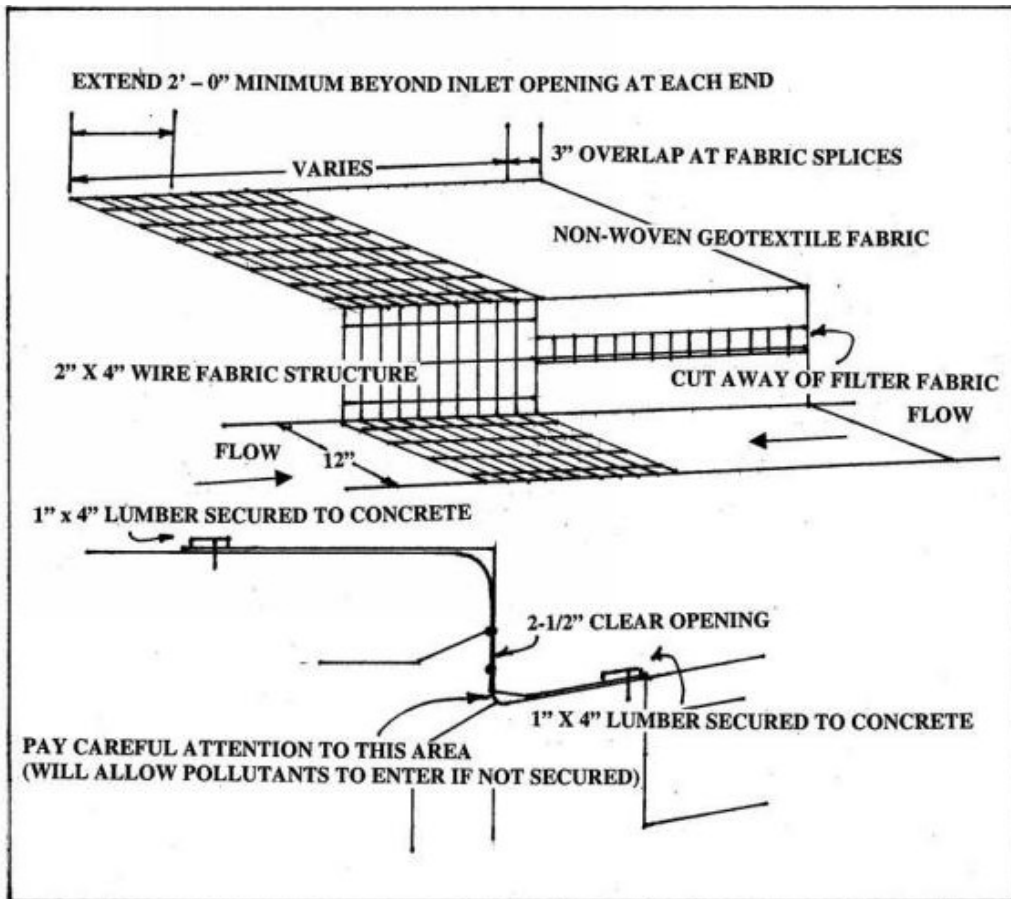
**Materials:**

1. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non-raveling edges. It shall be non-biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture and other weather conditions, and permeable to water while retaining sediment. Fabric shall be 36 inches wide, with a minimum weight of 4.5 oz./yd.
2. Wire Backing – a galvanized, 2"x4" welded wire fencing, 12.5-gauge minimum. Width shall be sufficient to support geotextile fabric 24 inches above adjacent grades. Chain link fences located along the same lines as silt fences may be used to support geotextile fabric. In this circumstance, the geotextile fabric shall be firmly attached to the fence.
3. Posts for area inlets and silt fences – steel fence posts shall be made of hot rolled steel, galvanized or painted, and installed per detail, with a Y-bar or TEE cross-section of sufficient strength to withstand forces implied.

**Execution:**

1. Area inlet fences shall consist of non-woven geotextile fabric attached to wire fabric backing to support the geotextile. Attach non-woven geotextile fabric to the fence with hog rings or standard cable/wire ties, leaving a toe of fabric at the bottom of the fence of not less than 6 inches. Steel posts as specified shall be driven to a depth of 1-foot minimum and spaced not more than 8 feet on center. Attach fencing to posts with standard cable/wire ties. Abutting ends of geotextile fabric shall be overlapped a minimum of 12 inches. Wrap grates with non-woven geotextile fabric.
2. Maintain silt fence daily as necessary to repair breaches in geotextile fabric. Maintain steel posts as specified in tilted condition. When siltation has occurred, it shall be removed when it has reached a depth of 6 inches. Silt that has been removed shall be disposed of offsite
3. Remove area inlet when the disturbed areas have been completely stabilized as specified. Minimize land disturbance while removing area inlet protection and posts

EXHIBIT B  
Curb Inlet Detail



NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, USE 1" BY 4" LUMBER SECURED WITH CONCRETE NAILS 3 FEET ON CENTER NAILED INTO THE CONCRETE. IF THERE IS PEDESTRIAN TRAFFIC ONLY, THE USE OF 20 LB. GRAVEL BAGS TO SECURE MATERIAL IS PERMITTED.
2. REMOVE SECTION OF FILTER FABRIC AS SHOWN IN THIS DETAIL. SECURE FABRIC TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. INSPECT DAILY AND REMOVE SILT ACCUMULATION WHEN THE DEPTH REACHES 2 INCHES.
4. MONITOR THE PERFORMANCE OF THE INLET PROTECTION DURING EACH RAINFALL EVENT AND REMOVE PROTECTION IMMEDIATELY IF THE STORM WATER BEGINS TO OVERTOP THE CURB.
5. REMOVE INLET PROTECTION AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

## TECHNICAL SPECIFICATION

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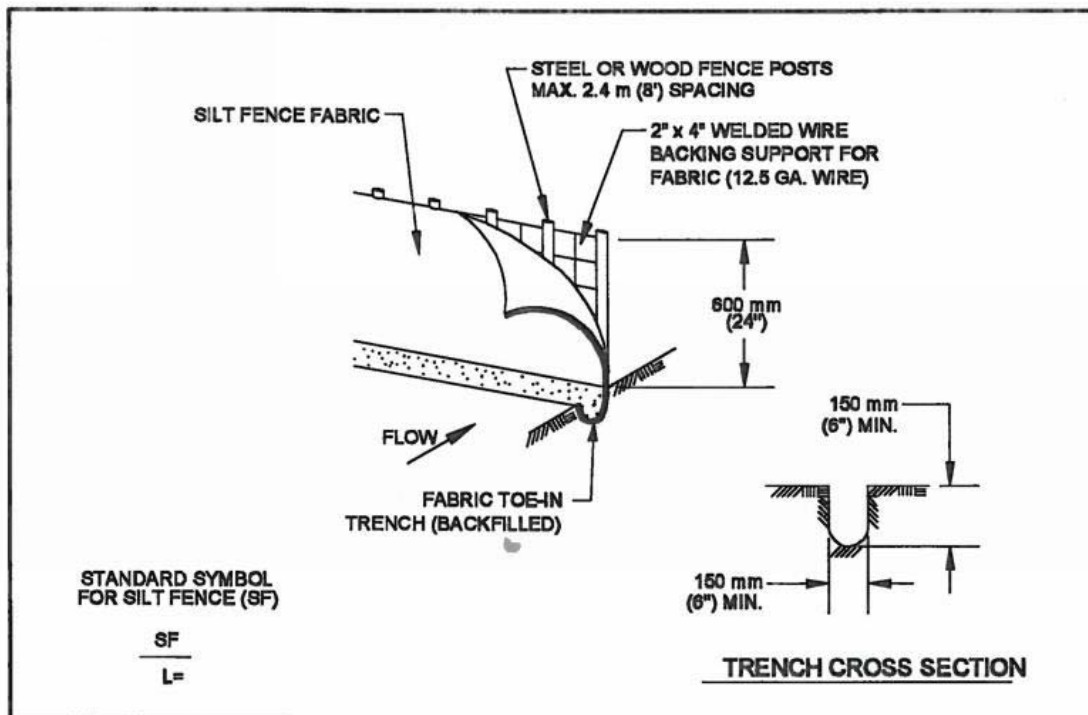
### Materials:

1. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non- raveling edges. It shall be non- biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture and other weather conditions, and permeable to water while retaining sediment. Fabric shall be 36 inches wide, with a minimum weight of 4.5 oz./yd.
2. Wire Backing – a galvanized, 2"x4" welded wire fencing, 12.5 -gauge minimum.

### Execution:

1. Cover curb storm inlet with non-woven geotextile fabric covered wire backing. Extend fabric 2 feet beyond inlet opening at each end and 12 inches in front of opening in the gutter. Remove 2.5" strip of filter fabric near the top of the inlet for the length of the protection to act as overflow. Extend fabric over the top of opening to allow placement of gravel bags. Anchor fabric with 20 lb. gravel bags placed 3 feet on center.
2. Maintain inlet protection daily as necessary to repair breaches in geotextile fabric. When siltation has occurred, it shall be removed when it has reached a depth of 2 inches. Silt that has been removed shall be disposed of offsite.

EXHIBIT C  
Silt Fence Detail



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 INCHES) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 INCHES) DEEP AND 150 mm (6 INCHES) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 INCHES). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

<p>CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT</p>	<p>SILT FENCE</p>	
<p><i>Nancy S. Rupp</i> 9/1/2011 ADOPTED</p>	<p>THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.</p>	<p>STANDARD NO. 642S-1</p>



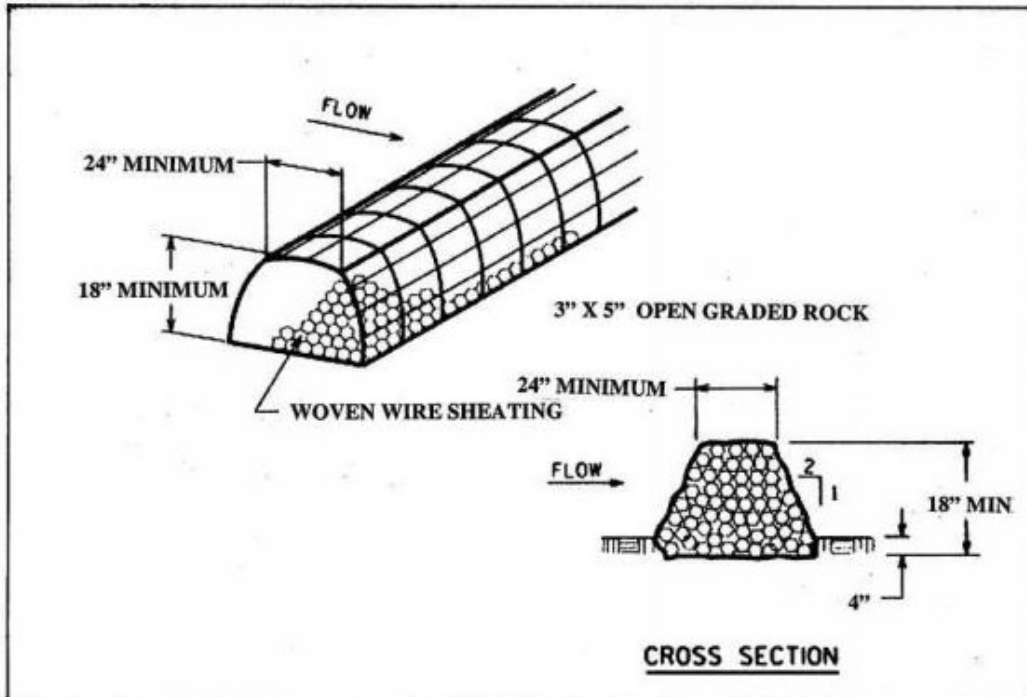
**Materials:**

1. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non-raveling edges. It shall be non-biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture and other weather conditions, and permeable to water while retaining sediment. Fabric shall be 36 inches wide, with a minimum weight of 4.5 oz./yd.
2. Wire Backing – a galvanized, 2"x4" welded wire fencing, 12.5-gauge minimum. Width shall be sufficient to support geotextile fabric 24 inches above adjacent grades. Chain link fences located along the same lines as silt fences may be used to support geotextile fabric. In this circumstance, the geotextile fabric shall be firmly attached to the fence.
3. Posts for area inlets and silt fences – steel fence posts shall be made of hot rolled steel, galvanized or painted, and installed per detail, with a Y-bar or TEE cross-section of sufficient strength to withstand forces implied.

**Execution:**

1. Silt fences shall consist of non-woven geotextile fabric, attached to wire fabric backing to support the geotextile. Attach non-woven geotextile fabric to fence with hog rings or standard cable/wire ties, leaving a toe of fabric at the bottom of the fence of not less than 6 inches. Steel posts as specified shall be driven to a depth of 1-foot minimum and spaced not more than 8 feet on center. Tilt posts slightly, in an uphill direction for additional strength. Attach fencing to posts with standard cable/wire ties. Dig a 6-inch deep by 6-inch wide trench on the disturbed side of the fence, bury geotextile fabric in trench, backfill and tamp. Abutting ends of geotextile fabric shall be overlapped.
2. Maintain silt fence daily as necessary to repair breaches in geotextile fabric. Maintain steel posts as specified in tilted condition. When siltation has occurred, it shall be removed when it has reached a depth of 6 inches. Silt that has been removed shall be disposed of offsite.
3. Remove silt fence when the disturbed areas protected by silt fence have been completely stabilized as specified. Minimize land disturbance while removing silt fence and posts.

EXHIBIT D  
Rock Berm Detail



NOTES:

1. USE ONLY OPEN GRADED 4" X 8" ROCK FOR STREAM FLOW CONDITIONS. USE 3" X 5" OPEN GRADED ROCK FOR OTHER CONDITIONS.
2. SECURE THE ROCK BERM WITH A WOVEN WIRE SHEATHING HAVING A MAXIMUM 1 INCH OPENING AND A MINIMUM 20-GAUGE WIRE DIAMETER. ANCHOR ROCK BERMS IN CHANNEL APPLICATIONS FIRMLY INTO THE SUBSTRATE A MINIMUM OF 6 INCHES WITH TEE POSTS OR WITH #5 OR #6 REBAR WITH A MAXIMUM SPACING OF 48 INCHES ON CENTER.
3. INSPECT THE ROCK BERM WEEKLY. REPLACE THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 6 INCHES, WHICHEVER IS LESS, REMOVE THE SILT AND DISPOSE OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SILTRATION PROBLEM.
5. INSPECT SEVERE SERVICE ROCK BERMS DAILY, AND REMOVE SILT WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, REMOVE THE ROCK BERM AND ACCUMULATED SILT AND DISPOSE OF IN AN APPROVED MANNER.

**Materials:**

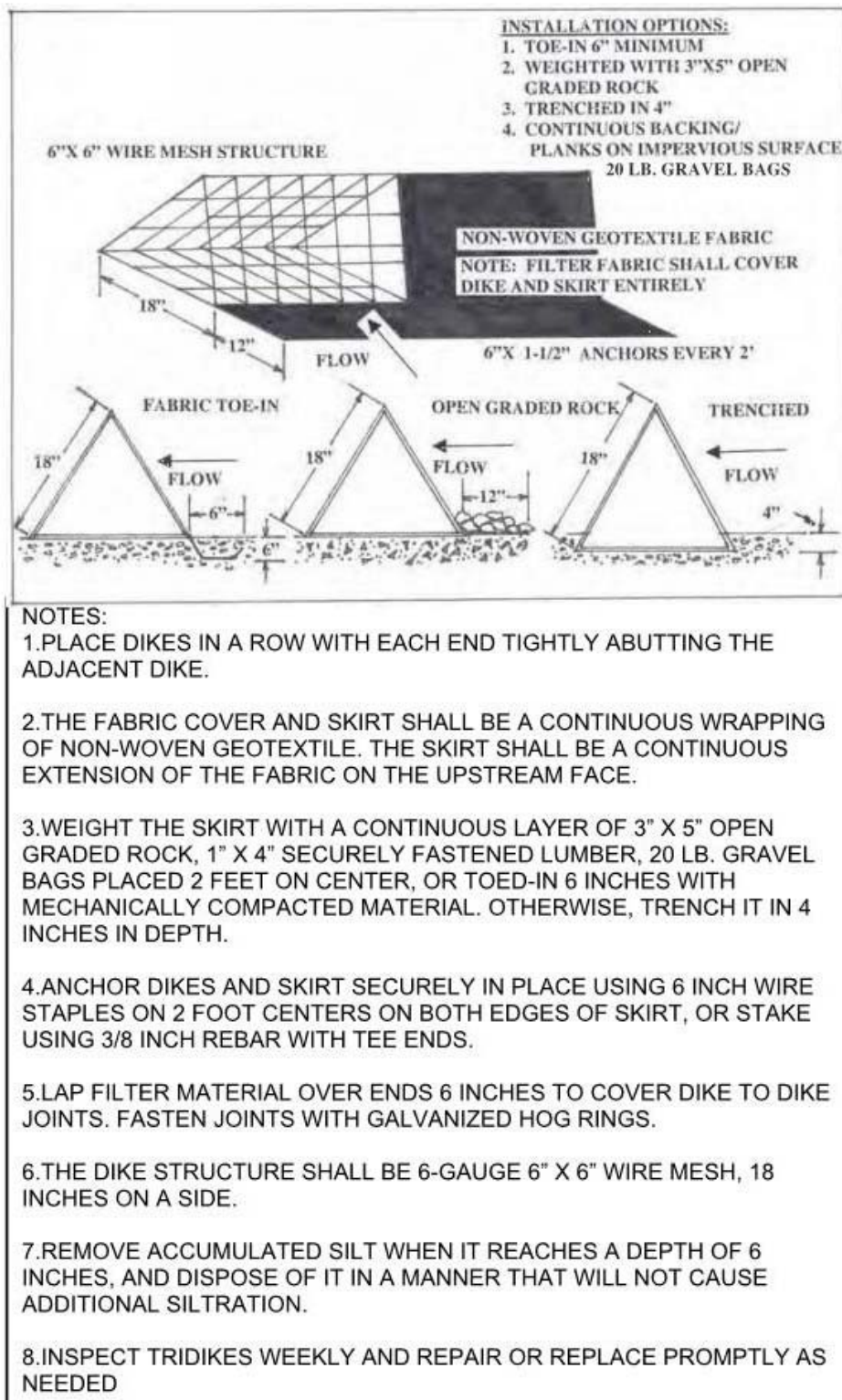
1. Rock – clean open graded rock. Use open graded 4" X 8" rock for stream flow conditions. Use 3" X 5" open graded rock for other conditions.
2. Wire Mesh Support – a galvanized, woven wire sheathing having a maximum opening size of 1 inch, and a minimum wire diameter of 20 gauge
3. Ties – metal hog rings or standard wire/cable ties. No plastic ties.

**Execution:**

1. Rock berm shall consist of rip-rap type rock, secured within a wire sheathing as specified, and installed at the toe of slopes, or at the perimeter of developing or disturbed areas. Height of berm shall be a minimum of 18 inches from top of berm to uphill toe of berm. Top width shall be a minimum of 24 inches, with side slopes of 2:1 or flatter. Uphill toe of berm shall be buried a minimum of 4 inches into existing grade. Rock berm shall have a minimum flow-through rate of 60 gallons per minute per square foot of berm face.
2. Maintain rock berm in a condition that allows the sediment to be removed, when the depth of sediment has reached 1/3 the height of the berm. Berm shall be reshaped as needed, and silt buildup removed, to maintain specified flow through berm.
3. Rock berm shall be removed when the disturbed areas served have been stabilized as specified



EXHIBIT E  
Triangular Filter Dike Detail



**NOTES:**

1. PLACE DIKES IN A ROW WITH EACH END TIGHTLY ABUTTING THE ADJACENT DIKE.
2. THE FABRIC COVER AND SKIRT SHALL BE A CONTINUOUS WRAPPING OF NON-WOVEN GEOTEXTILE. THE SKIRT SHALL BE A CONTINUOUS EXTENSION OF THE FABRIC ON THE UPSTREAM FACE.
3. WEIGHT THE SKIRT WITH A CONTINUOUS LAYER OF 3" X 5" OPEN GRADED ROCK, 1" X 4" SECURELY FASTENED LUMBER, 20 LB. GRAVEL BAGS PLACED 2 FEET ON CENTER, OR TOED-IN 6 INCHES WITH MECHANICALLY COMPACTED MATERIAL. OTHERWISE, TRENCH IT IN 4 INCHES IN DEPTH.
4. ANCHOR DIKES AND SKIRT SECURELY IN PLACE USING 6 INCH WIRE STAPLES ON 2 FOOT CENTERS ON BOTH EDGES OF SKIRT, OR STAKE USING 3/8 INCH REBAR WITH TEE ENDS.
5. LAP FILTER MATERIAL OVER ENDS 6 INCHES TO COVER DIKE TO DIKE JOINTS. FASTEN JOINTS WITH GALVANIZED HOG RINGS.
6. THE DIKE STRUCTURE SHALL BE 6-GAUGE 6" X 6" WIRE MESH, 18 INCHES ON A SIDE.
7. REMOVE ACCUMULATED SILT WHEN IT REACHES A DEPTH OF 6 INCHES, AND DISPOSE OF IT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTRATION.
8. INSPECT TRIDIKES WEEKLY AND REPAIR OR REPLACE PROMPTLY AS NEEDED

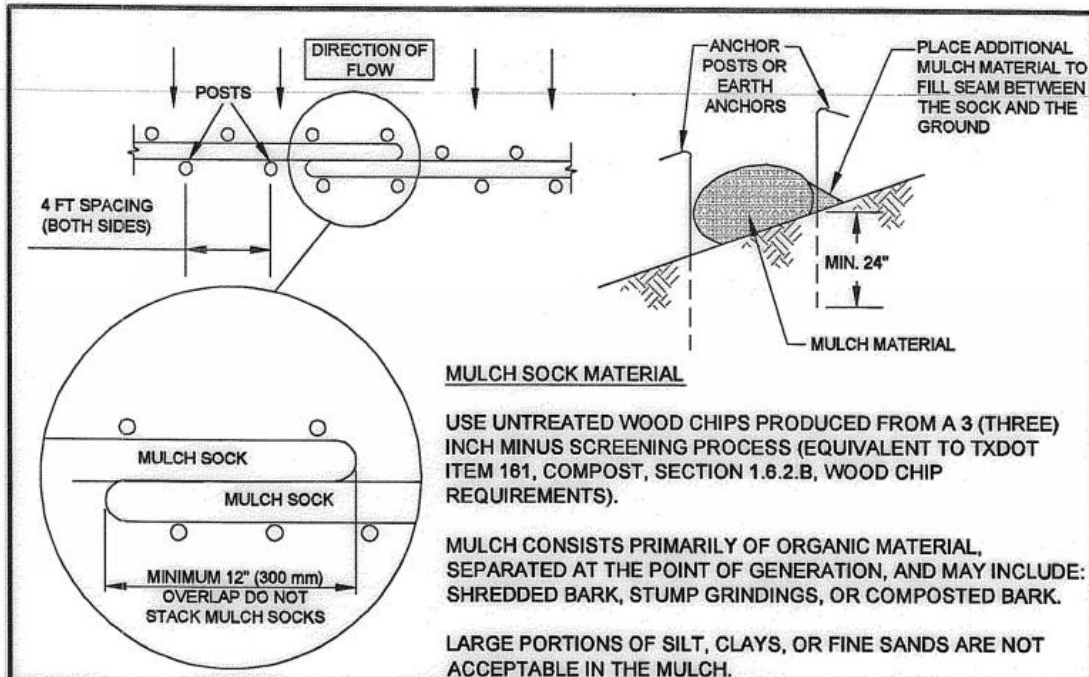
**Materials:**

1. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non-raveling edges, with a minimum width of 60 inches
2. Dike Structure – 6-gauge, 6" x 6" welded wire mesh, 60 inches wide, folded into a triangular form. Each side shall be 18 inches with an overlap of 6 inches
3. Ties – metal hog rings or standard wire/cable ties for attachment of wire mesh to itself, and for attachment of geotextile fabric to wire mesh

**Execution:**

1. Filters shall be placed with ends tightly abutting the adjacent filter. Each filter and skirt shall be securely anchored in place using 6 inch staples on 2 foot centers.
2. Anchoring on impervious areas shall be accomplished with gravel bags placed at 2 feet on center or with a nominal 1" X 4" board nailed at 2 feet on center.
3. Silt accumulation behind triangular filter dikes shall be removed at a maximum depth of 6 inches or when the structure ceases to work as intended.
4. After completion of construction, the dike shall be removed and the site re-graded to the final grades. Any depression shall be filled and any accumulation of silt shall be spread or removed to a permitted disposal area.

EXHIBIT F  
Mulch Sock Detail



**NOTES:**

1. STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.
2. THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OF MULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).
3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.
4. SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.
5. MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.
6. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

<b>CITY OF AUSTIN</b> WATERSHED PROTECTION DEPARTMENT	<b>MULCH SOCK</b>	
<i>Megan S. Ryan, P.E.</i> 08/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. <b>648S-1</b>

**Materials:**

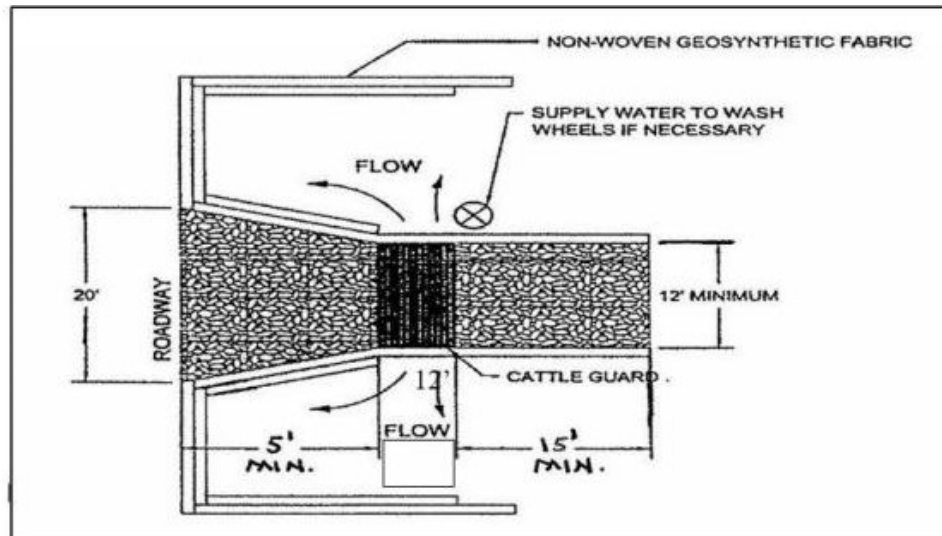
1. Mulching material can be manufactured on or off the project site and may consist of shredded bark, stump grindings, or composted bark.
2. The mulch shall have the following composition:
  - a. Wood chips shall be produced from a 3-inch minus screen process (equivalent to TxDOT item 161, Compost, Section 1.6.2.B Wood Chip Requirements).
  - b. Large portions of silts, clays, or fine sands are not acceptable
  - c. The pH of the mulch shall be between 5.5 and 8.5.
  - d. The organic matter content shall be greater than or equal to 25% on a dry weight basis.
3. Mulch material must be free of refuse, physical contaminants, and material toxic to plant growth. It is not acceptable for the mulch material to contain ground construction debris, biosolids, manure, or recyclable material.
4. The sock material mesh opening shall be equal to or less than 3/8 inch (10 mm) and the material tensile strength shall be equal to or greater than 202 psi (14.2 kg/cm<sup>2</sup>).

**Execution:**

1. Use 12 or 18-inch diameter mulch socks for all sediment control applications. This diameter of mulch sock material has proven to be the most consistent for all sediment control applications. (TxDOT, April 2006)
2. Install as shown in above figure.
3. Mulch socks should be used at the base of slopes no steeper than 2:1
4. Place mulch socks at a 5' or greater distance away from the toe of the slopes to maximize space available for sediment deposition.
5. When placed on level contours, sheet flow of water should be perpendicular to the mulch sock at impact and unconcentrated.
6. Install mulch socks using rebar (#5 minimum with safety caps) a minimum of 48" in length placed on 2' centers. In order to prevent the movement or floating of the mulch sock during rain events or construction operations, install steel posts on alternating sides of the sock. Drive the posts into the ground a minimum depth of 24", leaving less than 12" of post above the exposed mulch sock.
7. In order to prevent water flowing around the ends of the mulch socks, point the ends of the socks up slope. To prevent water from flowing between the gaps at adjacent ends of mulch socks, overlap the ends of adjacent mulch socks a minimum of 12". Never stack mulch socks on top of each other.
8. Socks should be placed using "smiles" and "j-hooks".
9. For steeper slopes, an additional mulch sock can be constructed on the top of the slope and within the slope area as determined by specific field conditions. Multiple mulch socks are recommended on steeper slopes.
10. Do not use mulch socks in area of concentrated flow as they are intended to control sheet flow only.



EXHIBIT G  
Stabilized Construction Exit –  
Bull Rock and Cattle Guard Detail



NOTES:

1. THE GRID CONSISTS OF PIPES OR TUBES WITH A MINIMUM DIAMETER OF 3 INCHES, SPACED SUCH THAT THERE IS A MINIMUM CLEAR DISTANCE OF 4 1/2 INCHES BETWEEN THEM. ELEVATE THE GRID ABOVE THE GROUND SURFACE A MINIMUM OF 8 INCHES TO ALLOW WATER, DEBRIS AND SOIL TO DRAIN.
2. THE GRID SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF ANY AND ALL VEHICLES ENTERING AND LEAVING THE CONSTRUCTION SITE.
3. THE GRID SHALL BE FIRMLY PLACED IN THE GROUND AT THE EXIT, AND SHALL BE OF SUFFICIENT LENGTH THAT THE AGITATION WILL REMOVE THE SOIL FROM THE TIRES, OR A MINIMUM OF 12 FEET.
4. AT THE STREET SIDE APPROACH OF THE GRID, THERE SHALL BE AN IMPERVIOUS SURFACE OR IT SHALL CONSIST OF 3" X 5" ANGULAR CRUSHED STONE/ROCK 5 FEET IN LENGTH MINIMUM, AND 8 INCHES DEEP, MINIMUM. ON THE JOB SITE SIDE OF THE GRID, THERE SHALL BE 3" X 5" ANGULAR CRUSHED STONE/ROCK 15 FEET IN LENGTH, MINIMUM, 8 INCHES DEEP, MINIMUM. THE STEEL GRID WILL BE BETWEEN THE STREET SIDE APPROACH AND THE JOB SITE CRUSHED STONE/ROCK. ALL CRUSHED STONE/ROCK SHALL HAVE FILTER FABRIC PLACED BENEATH IT.
5. THE STEEL GRID AREA SHALL BE USED AS THE TIRE WASH AREA. WHEN TIRE WASH IS IN USE (RAINY OR MUDDY DAYS), THE AREA SHALL BE MANNED AND THE TIRES SHALL BE WASHED USING A HIGH PRESSURE HOSE/NOZZLE.
6. THE AREA BENEATH THE GRID SHALL BE SLOPED SUCH THAT DEBRIS, SOIL AND WATER SHALL BE DIVERTED BACK ON TO THE CONSTRUCTION SITE OR TO A SEDIMENT BASIN. NO WATER, SOIL OR DEBRIS SHALL LEAVE THE CONSTRUCTION SITE, AND THE RESULTING DISCHARGE SHALL BE DISPOSED OF PROPERLY.

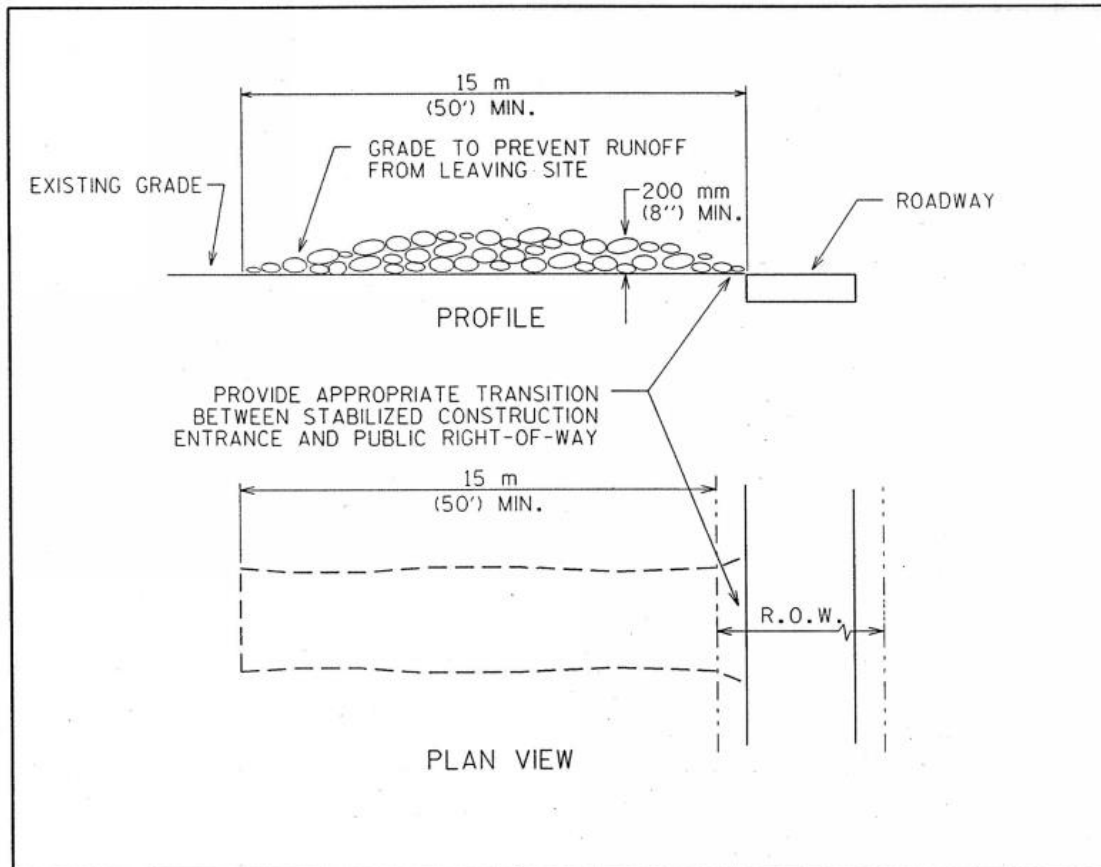
**Materials:**

1. It shall consist of pipes or tubes spaced such that there is a minimum clear distance between the pipes or tubes of 4½ inches.
2. Minimum diameter of pipe or tube shall be 3 inches.
3. It shall be of sufficient length so that the agitation will remove the soil from the tires, or a minimum of 12 feet.
4. Rock – Use 3" X 5" diameter angular crushed stone/rock.

**Execution:**

1. It shall be elevated above the ground surface a minimum of 8 inches to allow water, debris and soil to drain.
2. It shall be designed to support any and all vehicles entering and leaving the construction site.
3. It shall be firmly placed in the ground at the exit.
4. At the street side approach of the grid there shall be an impervious surface or it shall consist angular crushed stone/rock approximately 5 feet in length, minimum, and 8 inches deep, minimum. On the job site side of the grid, there shall angular crushed stone/rock 15 feet in length, a minimum of 8 inches deep. The steel grid will be between the street side approach and the job site crushed stone/rock. All crushed stone/rock shall have filter fabric beneath the stone/rock.
5. Steel grid area shall be used as the tire wash area. When tire wash is in use (rainy or muddy days), the area shall be manned and the tires shall be washed using a high pressure hose/nozzle.
6. The area beneath the grid shall be sloped such that debris, soil and water shall be diverted back onto the construction site or to a sediment basin. No water, soil, or debris shall leave the construction site. The resulting discharge shall be disposed of properly.
7. The stabilized construction exit shall be properly maintained throughout the entire construction process until removal is approved by UT Austin

EXHIBIT H  
Stabilized Construction Exit - Bull Rock Detail



NOTES:

1. STONE SIZE: 75-125 mm (3-5'') OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8'').
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

<p>CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT</p>	<p>STABILIZED CONSTRUCTION ENTRANCE</p>	
<p><i>Leon Barba</i> 5/23/00 ADOPTED</p>	<p>THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.</p>	<p>STANDARD NO. 641S-1</p>

**Materials:**

1. Stone/Rock – use 3" X 5" clean open graded stone/rock

**Execution:**

1. All trees, brush, stumps, obstructions and other objectionable material shall be removed and disposed of in a manner that will not interfere with the excavation and construction of the entrance. The entrance shall not drain onto the public right of way or shall not allow surface water runoff to exit the construction site.
2. When necessary, vehicle wheels shall be cleaned to removed sediment prior to entrance onto public right of way. When vehicle washing is required, it shall be done on an area stabilized with crushed stone, which drains into an approved sediment trap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse through use of gravel bags, silt fence, or other methods approved by the Engineer or designated representative.
3. The entrance shall be maintained in a condition that will prevent tracking or disposition of sediment onto public right of way. This restriction may require periodic top dressing with additional stone as conditions demand, as well as the repair and/or cleanout of any measures used to trap sediment. All sediment that is dripped, spilled, washed, or tracked onto public right of way must be removed immediately.



**EXHIBIT I**

**Stabilized Construction Exit – Tracking Control Mat Detail**



**GENERAL INFORMATION**

The FODS Composite trackout control system is designed to be used as a temporary construction entrance which provides site access while minimizing sediment leaving the site. The top surface of the FODS mat is a geometric pattern formed in the shape of pyramids. The mats are unidirectional and are meant to have the staggered pyramids in the direction of travel. Individual mats are connected together with hardware to form various configurations to fit your jobsite.

- Mat Size: 12'(w) x 7' (l) x 3 3/4" (t) (2 7/8" pyramid height)
- Mat Weight: 430lbs
- Pallet Size: 8-Mats
- Truck-Load: 96-Mats
- Hardware boxes are contained within the palletized mats

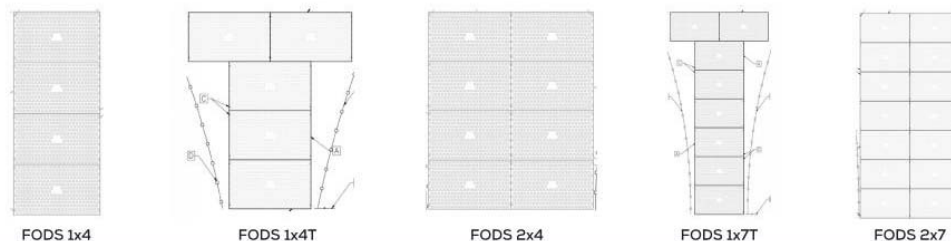


**FEATURES & BENEFITS**

- Re-Usable
- Increased Effectiveness at Reducing Site Trackout
- U/V Stable
- Highly Visible
- Easy to Clean
- Economical
- Recyclable / Reduces Waste
- Extreme Durability
- Rapid Installation & Removal
- Excavation not required
- Chemical Resistant
- Rock-less
- Reduces Waste
- Easy and efficient to transport from site-site

**TYPICAL INSTALLATION LAYOUTS**

Each site must be evaluated to determine the proper layout, width, and duration of the FODS Trackout Control System (FTCS) based site conditions, entry and exit egress, traffic levels, site soil conditions, and ability to the maintain trackout system. Outlined below are a number of common layouts, the mats are unidirectional and due to the versatility of the mats design the FTCS can be engineered to fit the needs of any site:



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### COMMON USERS

- Heavy Civil Construction
- Urban Construction / Urban In-Fill
- Bridge & Highway Projects
- Residential Construction
- Land Development
- Forestry
- Energy Exploration
- Oil & Gas Pipeline
- Electrical Power-line
- Temporary Event Access
- Landfill & Waste Management
- Mining



### SUITABLE INSTALLATION SUBSTRATE

- Un-Excavated Soil
- Excavated Soil (Min CBR: 4)
- Asphalt
- Concrete

FODS Trackout Control System should be installed near the site exit point, as close to the location where vehicles enter the roadway as is safely as possible. FODS mats should not be installed at a low point on the site where water will pool.



### FODS ANCHORING SYSTEMS

- Form-Stakes (18" or 24")
- Cable Earth Anchor
- All-Thread Earth Anchor
- Concrete Sleeve Anchor (asphalt)

### CLEANING / MAINTENANCE

Mats should be cleaned once 2.5" of sediment has built up in the lane of travel.

- Skid-steer broom attachment
- FODS Shovel
- Street Sweeper (requires adjusted bristle head)
- Pressure Washer (must have ability to contain water)
- Water Truck (must have ability to contain water)

### WARNINGS

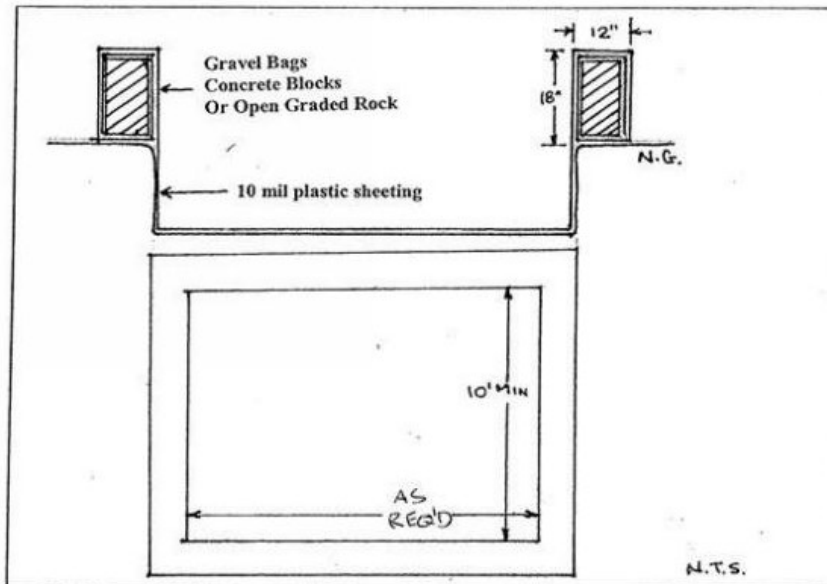
- Caution is to be used when crossing mats with metal tracked equipment.
- Equipment with aggressive metal tracks should not cross mats
- Do not drag metal equipment across mats
- Do not use mats for bridging

**\*\*\*Before using earth anchors, call 811 for locates to mark underground utilities\*\*\***



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EXHIBIT J  
Concrete, Paint and Stucco Washout Detail



NOTES:

1. THE EXCAVATION FOR THE CONCRETE TRUCK WASHOUT SHALL BE A MINIMUM OF 10 FEET WIDE AND OF SUFFICIENT LENGTH AND DEPTH TO ACCOMMODATE 7 GALLONS OF WASHOUT WATER AND CONCRETE PER TRUCK PER DAY AND/OR 50 GALLONS OF WASHOUT WATER AND CONCRETE PER PUMP TRUCK PER DAY.

2. IN THE EVENT THAT THE CONCRETE TRUCK WASHOUT IS CONSTRUCTED ABOVE GROUND, IT SHALL BE 10 FEET WIDE AND 10 FEET LONG, WITH THE SAME REQUIREMENTS FOR CONTAINMENT AS DESCRIBED IN ITEM 1.

3. THE CONTAINMENT AREA SHALL BE LINED WITH 10 MIL PLASTIC SHEETING WITHOUT HOLES OR TEARS. WHERE THERE ARE SEAMS, THESE SHALL BE SECURED ACCORDING TO MANUFACTURERS' DIRECTIONS.

4. THE BERM CONSISTING OF GRAVEL BAGS, CONCRETE BLOCKS OR OPEN GRADED ROCK SHALL BE NO LESS THAN 18 INCHES HIGH AND NO LESS THAN 12 INCHES WIDE.

5. THE PLASTIC SHEETING SHALL BE OF SUFFICIENT SIZE SO THAT IT WILL OVERLAP THE TOP OF THE CONTAINMENT AREA AND BE WRAPPED AROUND THE GRAVEL BAGS, CONCRETE BLOCKS OR OPEN GRADED ROCK AT LEAST 2 TIMES.

6. THE GRAVEL BAGS OR CONCRETE BLOCKS SHALL BE PLACED ABUTTING EACH OTHER TO FORM A CONTINUOUS BERM AROUND THE OUTER PERIMETER OF THE CONTAINMENT AREA.

7. THE WASHOUT MATERIAL IN THE CONTAINMENT AREA SHALL NOT EXCEED 50% OF CAPACITY AT ANY ONE TIME.

8. SOLIDS SHALL BE REMOVED FROM CONTAINMENT AREA AND DISPOSED OF PROPERLY. ANY DAMAGE TO THE PLASTIC SHEETING SHALL BE REPAIRED OR SHEETING REPLACED BEFORE THE NEXT.



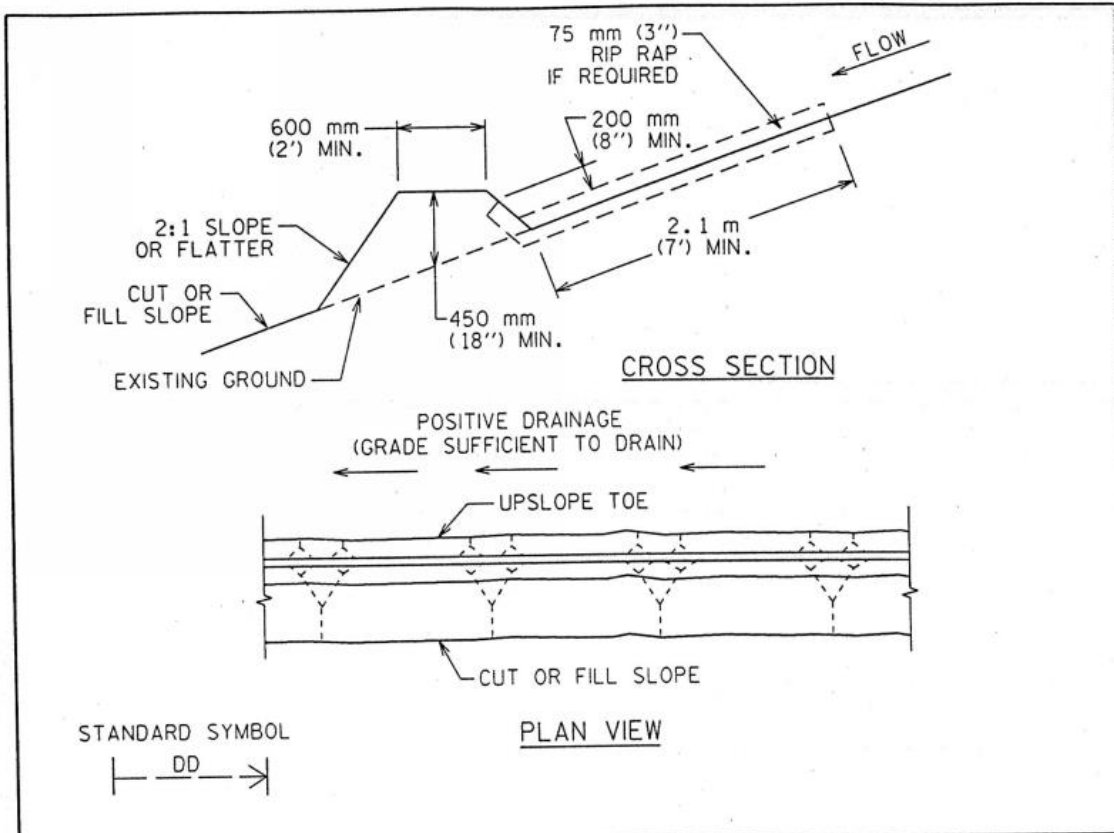
**Materials:**

1. Gravel bags, concrete blocks or open graded rock
2. 10 mil plastic sheeting without any holes or tears. Seams shall be sealed according to manufacturer's recommendations.

**Execution:**


1. Concrete Truck Washout (self-installed) shall be constructed so that it will be able to accommodate the maximum number of anticipated concrete trucks that will be cleaned on any given day at any given time using 7 gallons of water for washout per truck or 50 gallons of water to wash out pump trucks. The area utilized to contain the wash water and concrete solids cleaned from the trucks will be a minimum of 10 feet in width. The containment area will be covered with 10 mil plastic sheeting. The gravel bags, concrete blocks or open graded rocks shall line the outside perimeter and shall be double wrapped with the 10 mil plastic sheeting to prevent any potential for runoff from the containment area.
2. The concrete truck washout containment area shall be maintained in a condition that will not allow concrete buildup within the containment area to exceed 50% of the storage capacity.
3. The concrete truck washout area will be removed when it is no longer necessary to wash out concrete trucks on the site.
4. Equipment Cleaning: Clean equipment in a manner that does not create any discharge of cleaning agents, paints, oil or solvents to a storm sewer, waterway or onto the ground. Soaps and detergents must never be discharged to the ground. Cement handling equipment must be rinsed in a contained area and there must be no drainage off-site or onto to ground.
5. When rinsing painting equipment/tools outside, rinse water must be contained in a bucket or other container for appropriate disposal. Water based or latex paint rinse water may be discharged to the sanitary sewer only with permission/approval from EHS.
6. Oil based paint wastes, including solvents and thinners, must not be disposed of in the sanitary sewer; they must be collected and disposed of through the contractor's disposal company in accordance with applicable laws and regulations.
7. Discharges from pressure washing using soaps or chemicals must not be allowed to enter a storm sewer. The wastewater will need to be collected with a berm and vacuumed (transported to appropriate disposal site). If the rinse only contains water and dirt (sediment) it may be spread on a grass area or contained/filtered with clean water allowed to enter storm sewer. In some cases, it may also be possible to discharge to a sanitary sewer with permission from EHS.

EXHIBIT K  
Diversion Dike Detail



GENERAL NOTES :

1. ALL DIKES SHALL BE MACHINE COMPACTED.
2. ALL DIVERSION DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. a. DIVERTED RUNOFF FROM A PROTECTED OR STABILIZED AREA SHALL HAVE ITS OUTLET FLOW DIRECTED TO AN UNDISTURBED STABILIZED AREA OR INTO A LEVEL SPREADER OR GRADE STABILIZATION STRUCTURE.
- b. DIVERTED RUNOFF FROM A DISTURBED OR EXPOSED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE, SUCH AS A ROCK BERM, BRUSH BERM, STONE OUTLET STRUCTURE, SEDIMENT TRAP OR SEDIMENT BASIN OR TO AN AREA PROTECTED BY ANY OF THESE PRACTICES.
4. UNLESS OTHERWISE SPECIFIED, EROSION STABILIZATION SHALL BE OPEN GRADED ROCK 75 TO 125 mm (3 TO 5 inches) IN DIAMETER EMBEDDED IN SOIL SURFACE.
5. INSPECTION SHALL BE CONDUCTED WEEKLY OR AFTER EACH RAINFALL EVENT.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	DIVERSION DIKE	
 3.27.00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 622S-1

**Materials:**

1. Stone stabilization (required for velocities in excess of 6 fps) should consist of riprap placed in a layer at least 3 inches thick and should extend a minimum height of 3 inches above the design water surface up the existing slope and the upstream face of the dike. Stabilization riprap should conform to the following specifications.

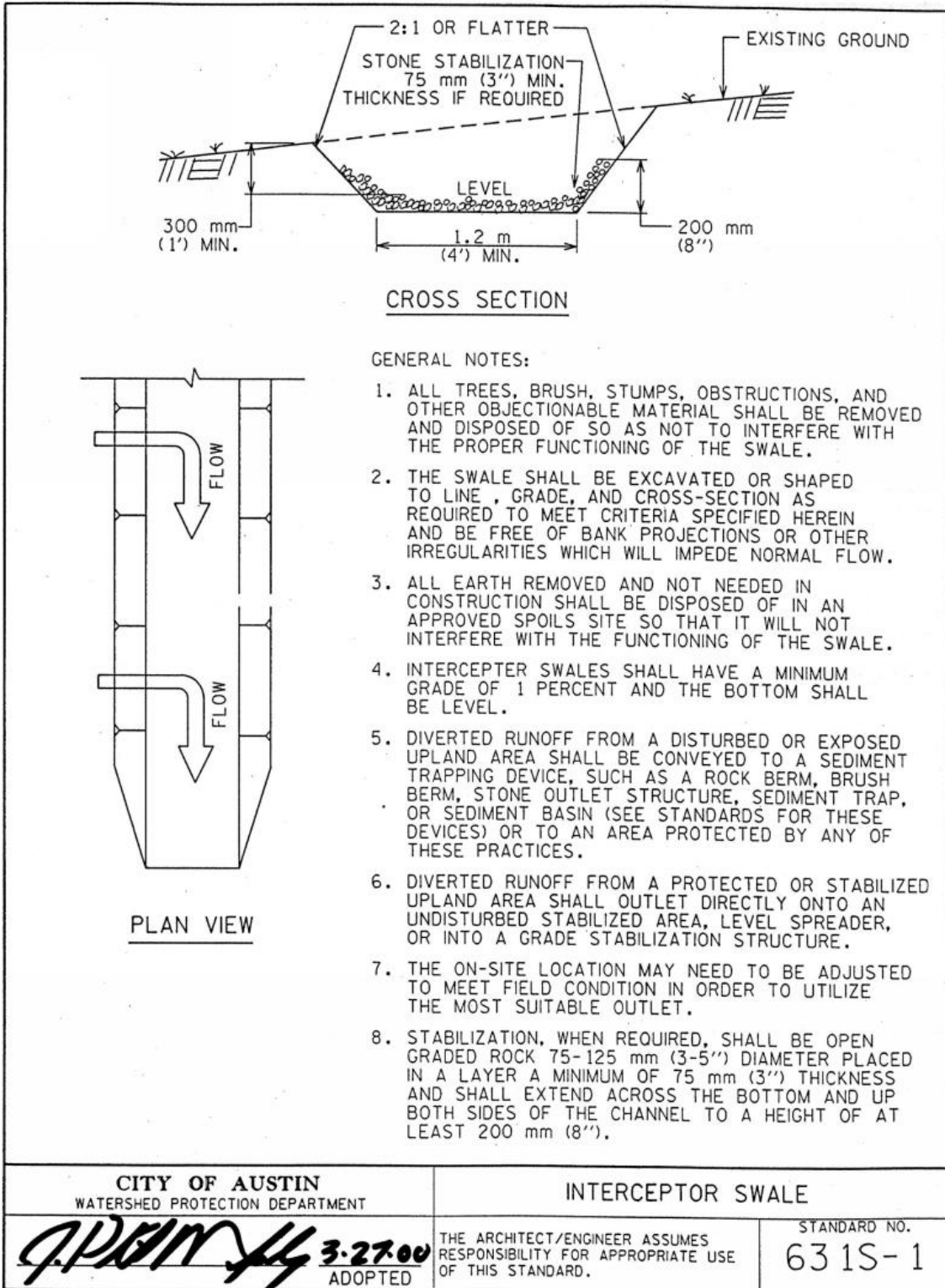
<i>Channel Grade</i>	<i>Riprap Stabilization</i>
0.5-1%	4 inch rock
1.1-2%	6 inch rock
2.1-4%	8 inch rock
4.1-5%	8-12 inch riprap

2. Geotextile fabric should be a non-woven polypropylene fabric designed specifically for use as a soil filtration media with an approximate weight of 6oz/yd<sup>2</sup>, a Mullen burst rating of 140 psi, and having an equivalent opening size (EOS) greater than #50 sieve.

**Execution:**

1. Diversion dikes shall be formed and shaped using compacted fill, and shall not intercept runoff from more than 10 acres. The dike shall have a minimum top width of 2 feet, and a minimum height of 18 inches. Soil shall have side slopes of 2.1 or flatter, and shall be placed in 8-inch lifts. Compact soil to 95% standard proctor density. Where protected slopes exceed 2 percent, the uphill side of diversion dike shall be stabilized with crushed stone or erosion control matting to a distance of not less than 7 feet from toe of dike. The channel that is formed by the diversion dike must have positive drainage for its entire length to a stabilized outlet, such as a rock berm, sandbag berm, or stone outlet structure. Storm water shall not be allowed to overflow the top of diversion dike at any point other than the stabilized outlet.
2. Maintain the diversion dike in a condition that allows the storm water runoff to be diverted away from exposed slopes. Repair any failures at top of dike and remove sediment as necessary behind the dike to allow positive drainage to a stabilized outlet.
3. Remove diversion dike when the exposed slopes being protected are stabilized with vegetation or other permanent cover

EXHIBIT L  
Interceptor Swale Detail



**Materials:**

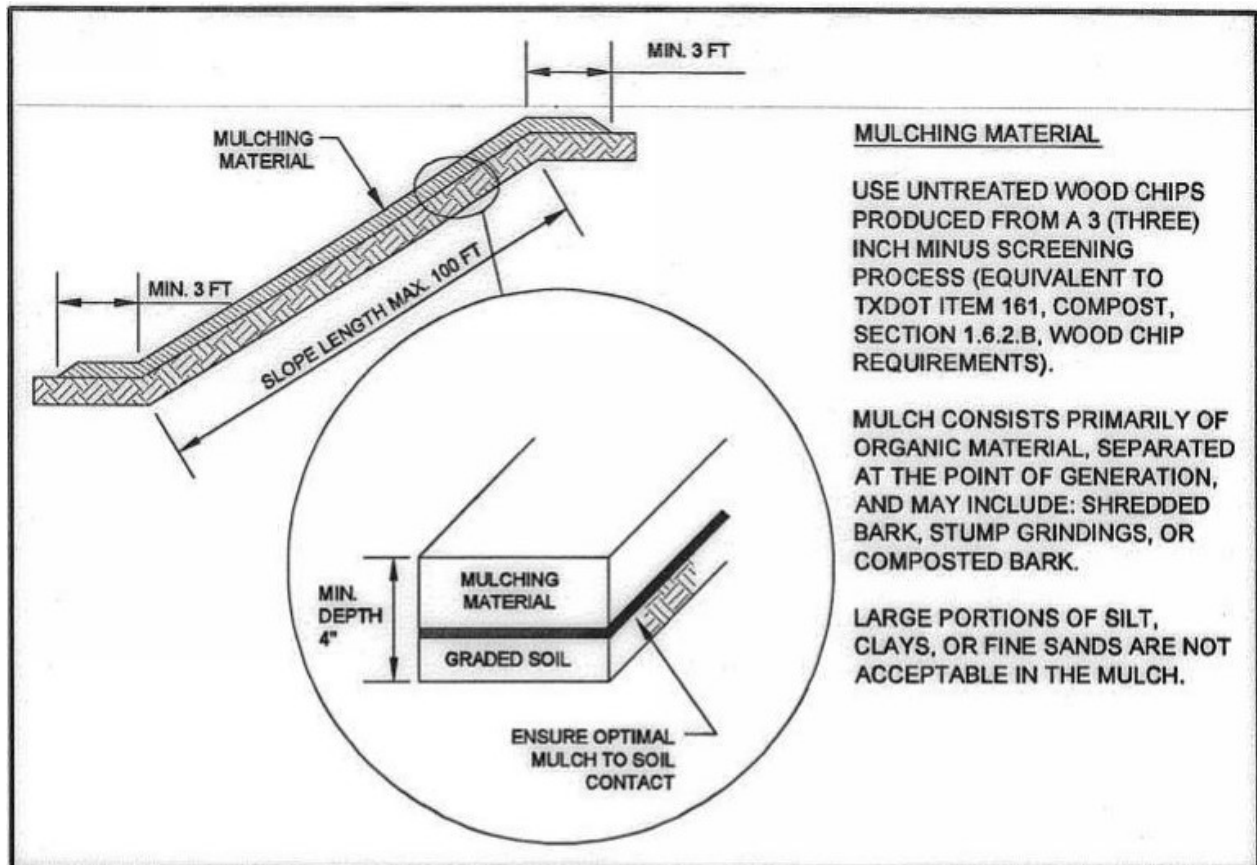
1. Stone stabilization should be used when grades exceed 2% or velocities exceed 6 feet per second and should consist of a layer of crushed stone 3" thick, riprap or high velocity erosion control mats.
2. Stabilization should extend across the bottom of the swale and up both sides of the channel to a minimum height of 3" above the design water surface election based on a 2-year, 24-hour storm.

**Execution:**

1. An interceptor swale shall be implemented to prevent on or off- site storm water from entering a disturbed area, or prevent sediment-laden runoff from leaving the site or disturbed area. The interceptor swale shall be excavated as required by the SWPPP drawings, with side slopes of 2:1 or flatter. This shall include all labor and equipment associated with the installation and maintenance of the swale as shown on the construction documents. Constructed swale may be v-shaped or trapezoidal with a flat bottom, depending on the volume of water being channeled. Sediment laden runoff from swale shall be directed to a stabilized outlet or sediment- trapping device. Flow line of swale shall have a continuous fall for its entire length and shall not be allowed to overflow at any other points along its length.
2. Maintain interceptor swale in a condition that allows the storm water runoff to be channeled away from disturbed areas. Remove sediment in swale as necessary to maintain positive drainage to a stabilized outlet
3. Fill in or remove swale after the disturbed area/s being protected is completely stabilized as specified.



EXHIBIT M  
Organic Mulches Detail



**NOTES:**

1. MULCHING IS PERFORMED AFTER GRADING AND SOIL SURFACE PREPARATION IS COMPLETED. THE EFFECTIVENESS OF THE MULCHING MATERIAL DEPENDS ON GOOD CONTACT BETWEEN THE SOIL AND MULCHING MATERIAL. PROVIDE A SMOOTH MULCHING APPLICATION SURFACE BY TRACKING, ROLLING, RAKING, ETC. TO ENSURE OPTIMAL MULCH TO SOIL CONTACT.
2. APPLY MULCHING MATERIAL A MINIMUM OF THREE (3) FEET OVER THE SHOULDER AND BEYOND THE BASE OF THE SLOPE OR INTO EXISTING VEGETATION WHERE POSSIBLE TO PREVENT RILL FORMATION AND TRANSPORT OF THE MATERIAL. THE MULCHING MATERIAL SHALL BE PLACED EVENLY AND UNIFORMLY TO PROVIDE 100% COVERAGE.
3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.
4. THE MULCHED AREA SHALL BE INSPECTED REGULARLY AND AFTER EACH LARGE RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY, WITH ADDITIONAL MULCHING MATERIAL PLACED ON TOP OF THE MULCH TO REACH THE RECOMMENDED THICKNESS.
5. WHEN THE MULCH IS DECOMPOSED, CLOGGED WITH SEDIMENT, ERODED OR INEFFECTIVE, IT MUST BE REPLACED OR REPAIRED.

Image adopted from City of Austin Standards Manual, Notes tailored to the University of Texas at Austin

**Materials:** Mulch shall be one or more of the following:

1. Straw – from broken straw bales that are free of weed and grass seed where the grass from the seed is not desired vegetation for the area to be protected
2. Wood Chips – from chipped limbs of cleared trees on site, or delivered in chipped form, in bulk quantities of pine, cedar or cypress. Wood chips of all species shall be partially decomposed to alleviate nitrogen depletion of the soil in areas where existing vegetation is to be preserved and protected. In addition, wood chips are not to be used on slope greater than 4 percent.
3. Shredded Mulches – from cedar, mechanically shredded, and capable of forming an interlocking mat following placement, and after sufficient wetting and drying has taken place naturally.

**Execution:**

1. Apply mulching a minimum of three feet over the shoulder and beyond the base of the slope or into existing vegetation where possible to prevent rill formation and transport of the material. The mulching material shall be placed evenly and uniformly to provide 100% cover.
2. When the mulch is decomposed, clogged with sediment, eroded or ineffective, it must be replaced or repaired.



The University of Texas at Austin  
Environmental Health & Safety

## **Appendix D: UT Austin Storm Water Management Design Standard**



## **Standard for Storm Water Management Design Parameters**

### **Basis for Design Requirements**

The University of Texas (UT) holds a Municipal Separate Storm Sewer System (MS4) Permit which requires UT to do the following:

- Limit the increase in erosion and discharge of pollutants in stormwater as a result of new development or re-development
- Implement a comprehensive master planning process to include all new development and re-development
- Provide resources for the long term maintenance and operation of the best management practices

### **Design Parameters**

The following are design and construction parameters that help meet the required objectives. These are pre-requisites from the Sustainable Sites Initiative (SITES) Version 2. Designs for stormwater management must be implemented and must meet these requirements.

The prerequisites are as follows:

*Context P1.1: Limit development on farmland*

*Context P1.2: Protect floodplain functions*

*Context P1.3: Conserve aquatic ecosystems*

*Context P1.4: Conserve habitats for threatened and endangered species*

*Pre-Design P2.1: Use an integrative design process*

*Pre-Design P2.2: Conduct a pre-design site assessment*

*Pre-Design P2.3: Designate and communicate Vegetation and Soil Protection Zones*

*Water P3.1: Manage precipitation on site*

*Water P3.2: Reduce water use for landscape irrigation*

*Soil+Veg P4.1: Create and communicate a soil management plan*

*Soil+Veg P4.2: Control and manage invasive plants*

*Soil+Veg P4.3: Use appropriate plants*

*Materials P5.1: Eliminate the use of wood from threatened tree species*

*Construction P7.1: Communicate and verify sustainable construction practices*

*Construction P7.2: Control and retain construction pollutants*

*Construction P7.3: Restore soils disturbed during construction*

*O+M P8.1: Plan for sustainable site maintenance*

*O+M P8.2: Provide for storage and collection of recyclables*



## **Standard for Storm Water Management Design Parameters**

Note the following regarding particular pre-requisites.

### ***Pre-Design P2.3 Designate and communicate Vegetation and Soil Protection Zones (VSPZ)***

Not all sites will meet the criteria for designating a VSPZ. Those sites that meet the Site Context are required to designate a VSPZ.

### ***Water P3.1 Manage Precipitation on site***

Retain the precipitation volume from the 60th percentile precipitation event as defined by the U.S. EPA in the Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (or local equivalent for projects outside the United States).

### **Engineered Design Requirements**

Detailed design drawings must be provided for stormwater management. The drawings must be signed and sealed by a Professional Engineer registered in Texas.

The maximum permissible velocity for conveying stormwater runoff for the one hundred (100) year storm is six (6) feet per second and includes all transitions to or from channels and waterways with similar or different materials. In all cases, the velocity for the one hundred (100) year storm must be non-erosive. The minimum permissible velocity for the two (2) year storm is two (2) feet per second.

For the complete SITES Rating System document contact UT Environmental Health and Safety at 512-471-3511 or [EHS-Environmentalops@austin.utexas.edu](mailto:EHS-Environmentalops@austin.utexas.edu)



The University of Texas at Austin  
Environmental Health & Safety

## **Appendix E: Public Education and Outreach, Storm Drain Labeling Program**



UT Austin, as part of the Public Education and Outreach control measure from the original MS4 permit had implemented a storm drain stenciling or labeling program in an effort to educate students, staff, faculty, and campus visitors that storm drains discharge directly to surface water without treatment. Labeling storm drains assists to educate campus users which drains on campus drain directly to surface water and are not to be used for dumping potential pollutants into them for disposal.

The original program was implemented in 2000 and consisted of UT Austin EHS staff or student workers conducting reconnaissance surveys of campus buildings in order to identify and determine the type, and location of storm drains needing labels. Over the past almost two decades, various staff members, and student workers have maintained the drain labels to replace broken or removed labels and to label new storm drains due to new or redevelopment construction projects.

UT Austin utilizes different types of labels depending on the location, size and type of drain.



Clay tile drain markers are used for area drains in landscaping, curb and gutter inlets, and other areas that high pedestrian traffic is not likely to occur.



Large plastic decal type markers are also used on larger storm drains where high visibility is needed but due to pedestrian activity a flatter marker is needed to avoid a tripping hazard.



Small plastic decal markers are used for area drains in mall areas, interior floor drains, or other areas where a marker is needed but aesthetics need to be taken into account.



Metal tags are also used for smaller area drains in mall areas, or trench drains near building egresses.



EHS employees monitor campus regularly to ensure storm drains are marked. A program to document the drains that have been labeled and the type has been re-implemented in 2019.

This is an ongoing control measure as drain markers wear out due to elemental exposure, and vehicular and pedestrian traffic. EHS staff makes every effort to install markers on newly constructed inlets and maintain those that wear out. The efforts are tracked through the use of storm drain utility maps and survey forms of areas of the campus.





The University of Texas at Austin  
**Environmental Health & Safety**

## **Appendix F: Wet Weather Screening Observation Form**

## Wet Weather Screening Program Field Observation Form

Date: \_\_\_\_\_ Watershed: **Waller Creek** Campus Designation: **Main**

Quarter: \_\_\_\_\_ of year: \_\_\_\_\_

Signature: \_\_\_\_\_

Location Description: **Speedway (Southeast, Bridge on Hemphill Branch)**  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected:		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

Location Description: **Dean Keaton (South, Bridge on East Fork)**  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris:	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected :		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

Location Description: **24<sup>th</sup> St. (Bridge)**  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris:	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected:		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

## Wet Weather Screening Program Field Observation Form

Watershed: Waller Creek      Campus Designation: Main

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Location Description: 21<sup>st</sup> St. (Bridge)  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected:		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

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Location Description: Martin Luther King Blvd. (Bridge)  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected:		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

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Location Description: 15<sup>th</sup> St. (Bridge)  
Level of Concern

Oily sheen:	0	1	2	3	Comments: _____
Discolored Water:	0	1	2	3	Comments: _____
Turbid Water:	0	1	2	3	Comments: _____
Trash or Debris	0	1	2	3	Comments: _____
Odor Detected:		Y	N		Comments: _____
Aquatic Life Affected:		Y	N		Comments: _____
Other Observations:		Y	N		Comments: _____

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**Level of Concern Legend:** 0=No impact evident 1=Minimal impact evident 2=Moderate impact evident 3=Severe impact evident

Were the field conditions recorded above observed within 24 hours of a storm event?    Y            N