

**DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY**

Policy E-1: USE OF TEMPORARY SEDIMENT SETTLING TANKS

Purpose

Temporary sediment settling (TSS) tanks are one mechanism to remove sediment from stormwater runoff and groundwater associated with construction activities. Common trade names for these facilities include “Baker Tanks” or “Rain For Rent” tanks. Alternative sediment retention facilities include in-ground sediment traps or ponds. TSS tanks are often a good option in cases where the building footprint covers a large portion of the site. The tanks are portable, so they can be moved to accommodate construction, and require less area than an in-ground sediment pond or trap.

FREQUENTLY ASKED QUESTIONS ASSOCIATED WITH TSS TANKS

Q: *Where can I get a TSS tank?*

A: If you are looking for a vendor to provide TSS tanks, search the internet and local telephone book, ask other contractors for recommendations, or look at the list below. The City of Kirkland provides this list for your convenience only and makes no recommendation whatsoever regarding these firms. If you would like your business added to this list, please contact a Surface Water Utility Engineer at (425) 587-3800.

BAKER TANKS

6100 – 238th St. SE
Woodinville, WA 98072
Phone: (425) 487-6503
Or 1-800-225-3712
www.bakercorp.com

RAIN FOR RENT

19430 – 59th Ave. NE
Arlington, WA 98223
Phone: (360) 403-3091
Or 1-800-742-7246
www.rainforrent.com

Q: *How do I determine what size TSS tank to use?*

A: There are several procedures used to size TSS tanks. The construction contractor may rely on the advice of the vendor’s product experts, use guidance from established sediment control procedures (like Appendix “D” in the King County Surface Water Design Manual), or the “trial and error” method of sizing beginning with a small tank and adding extra tanks until the desired settling threshold has been achieved.

Q: *How do I pump sediment-laden storm runoff into a TSS tank?*

A: Excavate a small “sump”, like a 4’x4’x4’ pit filled with cobbles, at the naturally occurring low elevation on-site. The inlet hose from the sump pump will then discharge storm/ground water collected within this sump into the TSS tank.

Q: *How do I determine where and when water in a TSS tank may be discharged?*

A: The contractor shall coordinate water quality sampling and discharge with the PW Inspector. Prior to discharge, the PW Inspector will verify water quality sampling results, and will determine whether runoff meets guidelines for discharge into a piped stormwater system or a natural drainage course, or for discharge to the sanitary sewer system.

Q: *What permits are needed to discharge to Sanitary Sewer?*

A: Prior to discharge to the sanitary sewer, the PW Inspector must be notified and the owner/developer must obtain a discharge permit from the King County Department of Natural Resources Industrial Waste Program. There is no fee for this permit; contact King County at (206) 263-3000 or review the information contained at the following website:

www.kingcounty.gov/environment/wastewater/IndustrialWaste/SpecialDischarges/Construction.aspx

The water must not have an odor of solvent gasoline or hydrogen sulfide (rotten egg odor), an oil sheen, or unusual color; and contain settleable solids less than 7mL/L.

Q: *Why does the TSS tank effluent need to be sampled for turbidity and/or total suspended solids prior to discharge?*

A: Sampling is used to determine whether storm/ground water meets the discharge guidelines outlined below. The purpose of the guidelines is to keep excess sediment and other contaminants out of natural waterways, the storm drainage system, and the sanitary sewer. The PW Inspector may require a sampling log¹ be kept for record keeping purposes.

WATER QUALITY GUIDELINES FOR CONSTRUCTION DEWATERING DISCHARGE	
< 25 NTUs	May be discharged to a piped stormwater system or “natural” discharge location.
> 25 NTUs	May be discharged to sanitary sewer based upon PW Inspector’s discretion. Discharge must be translucent, without odor or oil sheen.
> 7 ml/L*	Not allowed for discharge to Storm or Sanitary Sewer.
Notes: The discharge of construction dewatering runoff to the sanitary sewer system requires prior approval from King Co. Dept. of Natural Resources (Contact King Co. Industrial Waste Program, 206-587-3848). In addition, permission from the City of Kirkland Public Works Department is required (contact the PW inspector). *Units are based upon weight/volume ratio.	

Q: *What is the difference between Total Suspended Solids and Turbidity?*

A: Total suspended solids concentrations and turbidity both indicate the amount of solids suspended in the water. The total suspended solids test measures an actual weight of material per volume of water, while turbidity measures the amount of light scattered from a sample (more suspended particles cause greater scattering). Although the correlation between turbidity and total suspended solids is inexact and depends on site soils, the City has found that turbidity is a reasonable indicator of the magnitude of the total suspended solids load in the water.

Q: *What can I do if the TSS tank effluent sample fails to meet construction dewatering discharge guidelines?*

A: When it is determined that temporary sediment storage tank effluent exceeds the thresholds identified in the construction dewatering discharge guidelines, the effluent will require either additional settling time and/or the implementation and approval of additional water quality filtration Best Management Practices, to bring the effluent within the stated guidelines.

¹ Appendix “A” – Temporary Sediment Settling Tank Sampling Log Example

APPENDIX "A"
TEMPORARY SEDIMENT SETTLING TANK
SAMPLING LOG EXAMPLE

This TSS Tank Sampling Log example has been prepared to assist construction contractors and PW Inspectors. City policy provides the PW Inspector with discretion to require the use and maintenance of a TSS Tank Sampling Log to document the effectiveness of this Best Management Practice. In addition to the log, the City will continue to rely upon Federal, State, and municipal regulations to insure water quality requirements have been achieved.

TEMPORARY SEDIMENT SETTLING TANK SAMPLING LOG					
C.E.S.C.L. Name: _____					
24 Hour Emergency Contact Number: _____					
Applicant: _____ Permit No.: _____ - _____					
Site Address: _____					
	Activity Date	Turbidity Reading (NTUs)	Imhoff Cone Reading (ml/L)	Discharge Location (Storm, Stream, or Sanitary sewer)	Total Discharge Volume - Estimated
Tank Installation:	_/_/_				
Water Quality Sample Verification #1	_/_/_	___ NTUs	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Water Quality Sample Verification #2	_/_/_	___ NTUs	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Water Quality Sample Verification #3	_/_/_	_/_/_	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Water Quality Sample Verification #4	_/_/_	_/_/_	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Water Quality Sample Verification #5	_/_/_	_/_/_	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Water Quality Sample Verification #6	_/_/_	_/_/_	___ ml/L	Storm system, Stream, or Sanitary sewer	___ Gal's.
Tank Removal	_/_/_				
Notes/Comments: _____ _____ _____					

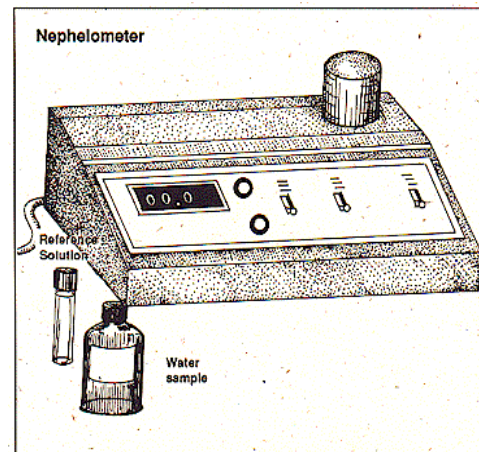
Total Suspended Solids and Turbidity

Total suspended solids concentrations and turbidity both indicate the amount of solids suspended in the water, whether mineral (like soil particles) or organic (like algae). However, the total suspended solids test measures an actual weight of material per volume of water, while turbidity measures the amount of light scattered from a sample (more suspended particles cause greater scattering).

Total suspended solids concentrations are reported in units of milligrams of suspended solids per liters of water (mg/L). Turbidity is reported as nephelometric turbidity units (NTUs).

Nephelometer Sampling Process

Turbidity measurement does not require any sample preparation, other than shaking the sample bottle well before analysis. The sample is simply poured into a glass tube, placed inside the instrument with a reference solution and the result is read directly from the instrument.



Imhoff Cone Sampling Process

A wastewater sample is being poured into an Imhoff cone for settleable solids analysis. The sample is added to the 1-liter mark. After 45 minutes, the cone will be turned to loosen material which has stuck to the sides during settling. After another 15 minutes, the volume of collected material will be read, in milliliters, from graduations marked near the bottom of the cone.

