

Perry/Willard City PWR Inspection Program

Used in Conjunction with the High Strength Waste and Oil and Grease Programs

PURPOSE

The following is the purpose of the Inspection Program:

1. Determine whether Users are complying with high strength waste and the sand, oil, and grease program.
2. Confirm suspected discharge problems.
3. Provide information to support additional charges and enforcement action.
4. Verify correction of problems.
5. Maintain information on User.

PROGRAM

There are three types of inspections:

1. Scheduled
2. Unannounced
3. Demand

Scheduled Inspections

These inspections are coordinated and planned with the Industrial User. A phone call should be made a month in advance to set up a time for the inspection. A letter should be sent immediately with a reminder phone call made two weeks prior to the inspection. Initial inspections are of the scheduled variety.

Unannounced Inspections

This type of inspection is done with no warning to the User. Its purpose is to verify compliance with discharge standards during normal operation periods. Most User will have one such inspection a year or as needed.

Demand Inspections

Demand inspections are done for one or more of the following reasons:

1. In response to known or suspected compliance problems.
2. Identify sources of slug loads.
3. Verification of corrective procedures required by the City and PWR.

Frequency of Inspection

For any User an initial inspection will be conducted. At the City and PWR discretion, any of the following circumstances could result in a User being inspected more frequently:

1. Quantity, type or concentration of pollutants.
2. History of non-compliance.
3. Causing or suspicion of causing upsets, pass-throughs, sludge contamination or operational problems at the treatment facility.
4. Inability to verify compliance with high strength waste or oil and grease requirements.

Scheduled and Unannounced inspections should be planned at the beginning of each year.

User Inspection Procedures

The inspector has many responsibilities both before and after an inspection. The *Compliance Inspection Checklist* details the entire inspection procedure. The *Compliance Inspection Checklist* should be completed for each inspection performed.

INSPECTION ACTIVITIES (*This section should be reviewed prior to the inspection and checked off after the inspection*).

Present credentials to the User contact person.

If entry is denied, contact City Manager or Public Works Director

Prior to the inspection, review the following items with the Industrial:

- a. Purpose of Inspection
- b. Information to be collected
- c. Intent to work cooperatively with User
- e. Review *Compliance Inspection Checklist* with User
- f. Request tour of plant or facility

Complete *Compliance Inspection Checklist*.

Tour Facility.

Discuss any concerns during the inspection with the contact person.

POST-INSPECTION ACTIVITIES

Review *Inspection Report* for accuracy and any violations.

Call User with any questions.

Initiate high strength waste surcharges/oil and grease fines as needed.

TESTING AND ANALYSIS OF USER SAMPLES

Samples collected from user discharges will be tested as follows:

COD Analysis:

COD analysis will be performed at the PWR laboratory using an approved method for analysis as allowed by 40 CFR Part 136 or the Utah Bureau of Laboratory Improvement. Usually this will be done with a HACH DR spectrophotometer using HACH 8000 method (included at end of section.)

TSS Analysis:

TSS analysis will be performed at the PWR laboratory using an approved method for analysis as allowed by 40 CFR Part 136 or the Utah Bureau of Laboratory Improvement. Usually this will be done using Standard Method 2540D (included at end of section.)

Oil and Grease Analysis:

Testing concentrations of oil and grease requires specialized equipment. For this reason, oil and grease samples will be sent to an environmental laboratory certified by the Utah Bureau of Laboratory Improvement as complying with standards set by the State and TNI requirements.

**Perry/Willard City and PWR
Oil and Grease and High Strength Waste**

Compliance Inspection Checklist

Date: _____ Inspector: _____

Establishment Name: _____

Address: _____

Contact Name: _____

Title _____

Phone: _____

Owner (If other than contact person): _____

Address: _____

Phone: _____

Time Inspection Started: _____

Time Inspection Completed: _____

Manager/Owner Signature _____

Inspector Signature _____

Notes and Comments (Describe Business):

Number	Grease/Sand Trap (Interior)		Field Data (where appropriate)	Comments	Compliance Status
1.	Internal Grease/Sand Trap Present				Y N
2.	Grease/Sand trap is cleaned regularly. Note and record the frequency of cleaning.	<u>Frequency</u>		Y N	Y N
3.	Grease/Sand trap cleaning frequency is documented on a maintenance log (obtain a copy of the document).	<u>Documentation</u>		Y N	Y N
Number	Grease/Sand Interceptor (Exterior)		Field Data (where appropriate)	Comments	Compliance Status
4.	Grease/sand interceptor does not contain greater than 1/4 the depth in grease accumulation. Estimate and record amount of grease in interceptor.				Y N
5.	Grease/sand interceptor does not contain greater than 1/4 the depth in sediment accumulation. Estimate and record amount of sediment in interceptor if possible.				Y N
6.	Grease/sand interceptor is cleaned and maintained regularly. Note and record frequency of cleaning.				Y N
7.	Grease/sand interceptor cleaning and maintenance frequency is documented on a maintenance log (obtain a copy of the document).				Y N

Number	Grease Disposal	Field Data (where appropriate)	Comments	Compliance Status
8.	Outdoor grease and oil or sand storage containers are covered and do not show signs of overflowing.			Y N
9.	Grease and oil storage containers are protected from discharge to storm drains.			Y N
10.	Absorbent pads or other materials (not free flowing material such as cat litter) are used to clean up any spills or leakages that could reach the storm drain.			Y N
11.	Storm drain catch basins show no signs of grease or oil.			Y N
Number	High Strength Waste	Field Data (where appropriate)	Comments	Compliance Status
12.	Samples taken by City/PWR			Y N
13.	Samples taken by User/Business			Y N
14.	Results of Samples indicate that high strength waste is being discharged.			Y N
15.	Are controls in place to reduce the strength of waste being discharged?			Y N
16.	Is resampling scheduled?			Y N

17.	Is the flow from this industry known?			Y N
18.	If the flow is unknown, can it be estimated?			Y N
19.	If the discharge is high strength waste, has a surcharge been calculated?			Y N
20.	What processes are used that generate the high strength waste? Described below.			

Operations Description:

Oxygen Demand, Chemical

DOC316.53.01100

USEPA¹ Reactor Digestion Method²

Method 8000

3 to 150 mg/L COD (LR)

TNTplus™ 821/822

20 to 1500 mg/L COD (HR)

Scope and application: For water, wastewater; digestion is required.

¹ COD ranges 3–150 mg/L and 20–1500 mg/L COD are USEPA approved (5220 D) for wastewater analyses, Federal Register, April 21, 1980, 45(78), 26811–26812

² Jirka, A.M.; Carter, M.J., Analytical Chemistry, 1975, 47(8), 1397



Test preparation

Instrument-specific information

Table 1 shows all of the instruments that have the program for this test. The table also shows the adapter and light shield requirements for the applicable instruments that can use TNTplus vials.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information for TNTplus vials

Instrument	Adapters	Light shield
DR 6000, DR 5000	—	—
DR 3900	—	LZV849
DR 3800, DR 2800	—	LZV646
DR 1900	9609900 or 9609800 (A)	—

Before starting

DR 3900, DR 3800, DR 2800: Install the light shield in Cell Compartment #2 before this test is started.

Review the safety information and the expiration date on the package.

The recommended temperature for samples and reagents is 15–25 °C (59–77 °F).

The recommended temperature for reagent storage is 15–25 °C (59–77 °F).

The reagent that is used in this test is corrosive and toxic. Use protection for eyes and skin and be prepared to flush any spills with running water.

Spilled reagent will affect test accuracy and is hazardous to skin and other materials. Be prepared to wash spills with running water.

The reagents that are used in this test contain mercury. Collect the reacted samples for proper disposal.

Analyze reagent blanks as a quality check for accurate results at low concentrations or when the reagents were in storage for long periods of time. For the best results, analyze one blank (at minimum) per lot of reagents. Refer to Blanks for colorimetric determination on page 3. Run all tests (the samples and the blank) with the same lot of vials. The lot number is on the container label.

Keep unused (light sensitive) vials in a closed box.

Use the DRB reactor with 13-mm wells for the digestion. If the reactor has 16-mm wells, insert adapter sleeves into the wells.

DR 1900: Go to All Programs>LCK or TNTplus Methods>Options to select the TNTplus number for the test. Other instruments automatically select the method from the barcode on the vial.

Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

Description	Quantity
COD TNTplus™ Reagent Set, LR or HR	1
DRB200 reactor with 13-mm wells	1
Blender, 2-speed	1
Pipet, adjustable volume, 1.0–5.0 mL	1
Pipet tips, for 1.0–5.0 mL pipet	1
Test tube rack	1

Refer to Consumables and replacement items on page 5 for order information.

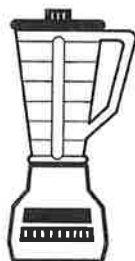
Sample collection and storage

- Collect samples in clean glass bottles. Use plastic bottles only if they are known to be free of organic contamination.
- Test biologically active samples as soon as possible.
- Homogenize samples that contain solids to get a representative sample.
- To preserve samples for later analysis, adjust the sample pH to less than 2 with concentrated sulfuric acid (about 2 mL per liter). No acid addition is necessary if the sample is tested immediately.
- Keep the preserved samples at or below 6 °C (43 °F) for up to 28 days.
- Correct the test result for the dilution caused by the volume additions.

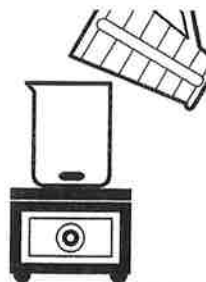
Test procedure



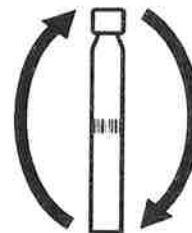
1. Set the DRB200 reactor power to on. Set the temperature to 150 °C.



2. Measure 100 mL of sample in a blender. Blend for 30 seconds or until homogenized.
If the sample does not have suspended solids, ignore this step.



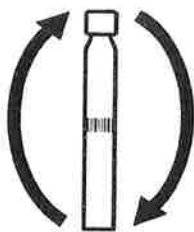
3. Pour the homogenized sample into a 250-mL beaker and stir slowly with a magnetic stir plate.
If the sample does not have suspended solids, ignore this step.



4. Invert a test vial several times to mix.



5. Use a pipet to add 2.0 mL of sample to the test vial.



6. Hold the vial by the cap, over a sink. Invert gently several times to mix. **The vial gets very hot during mixing.**

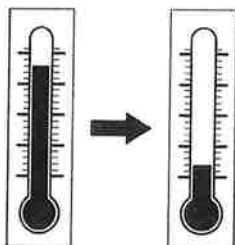


7. Insert the vial in the preheated DRB200 reactor. Close the lid.



02:00:00

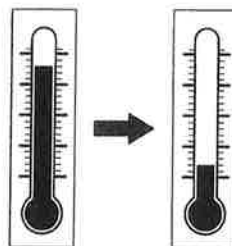
8. Keep the vial in the reactor for 2 hours.



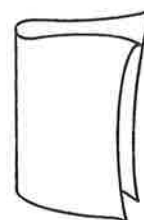
9. When the timer expires, set the reactor power to off. Let the temperature decrease for about 20 minutes to 120 °C or less.



10. Hold the vial by the cap and invert gently several times while the vial is still hot.



11. Put the vial in a test tube rack. Let the temperature of the vial decrease to room temperature.



12. Clean the vial.

Start



13. DR 1900 only: Select program 821 (LR) or 822 (HR). Refer to Before starting on page 1.

14. Insert the vial into the cell holder. DR 1900 only: Push **READ**. Results show in mg/L COD.

Blanks for colorimetric determination

Analyze reagent blanks as a quality check for accurate results at low concentrations or when the reagents were in storage for long periods of time. For the best results, analyze one blank (at minimum) per lot of reagents. Replace the sample with deionized water in the test procedure to determine the reagent blank value. Subtract the reagent blank value from the sample results automatically with the reagent blank adjust option. Use the blank again for other measurements with the same lot of vials. For storage, keep the blanks in a dark location. Monitor the decomposition of the blanks by periodically measuring its concentration. Measure the reagent blank value when a new lot of reagent is used.

To subtract the value of the blanks from a series of measurements:

1. Replace the sample with deionized water in the test procedure to determine the reagent blank value. Clean the vial, then put it in the cell holder. Close the lid.
2. Set the reagent blank function to on. The measured value of the reagent blank is shown.

Note: As an alternative, record or enter the reagent blank value at a different time. Push the highlighted reagent blank box and use the keypad to enter the value.

Interferences

Chloride is the primary interference in this test method and results in a positive interference. Each COD vial contains mercuric sulfate that will eliminate chloride interference to a maximum of 2000 mg/L Cl^- .

Accuracy check

Standard solution method—LR

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- COD Standard Solution, 1000-mg/L COD
- 100-mL volumetric flask, Class A
- 10.0-mL volumetric pipet, Class A and pipet filler safety bulb
- Deionized water

1. Prepare a 100-mg/L COD standard solution as follows:
 - a. Use a pipet to add 10.0 mL of a 1000-mg/L COD standard solution into the volumetric flask.
 - b. Dilute to the mark with deionized water. Mix well. Prepare this solution daily.
2. Use the test procedure to measure the concentration of the prepared standard solution.
3. Compare the expected result to the actual result.

Note: The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are slight variations in the reagents or instruments.

Standard solution method—HR

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- COD Standard Solution, 300-mg/L, 800-mg/L or 1000-mg/L COD or Oxygen Demand Standard (contains 617-mg/L COD) or Wastewater Influent Standard Solution, Mixed Parameter (contains 500-mg/L COD)
1. Use the test procedure to measure the concentration of the standard solution.
 2. Compare the expected result to the actual result.

Note: The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are slight variations in the reagents or instruments.

Method performance

The method performance data that follows was derived from laboratory tests that were measured on a spectrophotometer during ideal test conditions. Users can get different results under different test conditions.

Program	Standard	Precision (95% Confidence Interval)	Sensitivity Concentration change per 0.010 Abs change
barcode (TNTplus 821, LR)	75 mg/L COD	72–78 mg/L COD	—
barcode (TNTplus 822, HR)	750 mg/L COD	736–764 mg/L COD	—

Summary of Method

The mg/L COD results are defined as the mg of O₂ consumed per liter of sample under conditions of this procedure. In this procedure, the sample is heated for 2 hours with a strong oxidizing agent, potassium dichromate. Oxidizable organic compounds react, reducing the dichromate ion (Cr₂O₇²⁻) to green chromic ion (Cr³⁺). With this method, the amount of yellow Cr⁶⁺ that remains is determined. The COD reagent also contains silver and mercury ions. Silver is a catalyst, and mercury is used to complex chloride interferences. The measurement wavelength is 420 nm for the LR or 620 nm for the HR.

Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
COD TNTplus™ Reagent Set, LR, 3 to 150 mg/L COD	1–2 vials	25/pkg	TNT821
COD TNTplus™ Reagent Set, HR, 20 to 1500 mg/L COD	1–2 vials	25/pkg	TNT822

Required apparatus

Description	Quantity/test	Unit	Item no.
Blender, 2-speed, 120 VAC option	1	each	2616100
Blender, 2-speed, 240 VAC option	1	each	2616102
DRB 200 Reactor, 115 VAC option, 9 x 13 mm + 2 x 20 mm, 1 block	1	each	DRB20001
DRB 200 Reactor, 230 VAC option, 9 x 13 mm + 2 x 20 mm, 1 block	1	each	DRB20005
Pipet, adjustable volume, 1.0–5.0 mL	1	each	BBP065
Pipet tips, for 1.0–5.0 mL pipet	1	75/pkg	BBP068
Light shield, DR 3800, DR 2800, DR 2700	1	each	LZV646
Light shield, DR 3900	1	each	LZV849

Recommended standards

Description	Unit	Item no.
COD Standard Solution, 300-mg/L	200 mL	1218629
COD Standard Solution, 800-mg/L	200 mL	2672629
COD Standard Solution, 1000-mg/L	200 mL	2253929
Oxygen Demand Standard (BOD, COD, TOC), 10-mL ampules	16/pkg	2833510
Wastewater Effluent Standard Solution, Mixed Parameter, for NH ₃ -N, NO ₃ -N, PO ₄ ³⁻ , COD, SO ₄ ²⁻ , TOC	500 mL	2833249
Wastewater Influent Standard Solution, Mixed Parameter, for NH ₃ -N, NO ₃ -N, PO ₄ , COD, SO ₄ , TOC	500 mL	2833149

Optional reagents and apparatus

Description	Unit	Item no.
Flask, volumetric, Class A, 100-mL glass	each	1457442
Reactor adapter sleeves, 16 mm to 13 mm diameter, for TNTplus vials	5/pkg	2895805
Sampling bottle with cap, low density polyethylene, 500-mL	12/pkg	2087079
Sulfuric Acid, concentrated, ACS	500 mL	97949
Test tube rack, polyethylene, for 13-mm OD vials, 90 holes	each	2497900
Water, deionized	4 L	27256



FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:

In the U.S.A. – Call toll-free 800-227-4224

Outside the U.S.A. – Contact the HACH office or distributor serving you.

On the Worldwide Web – www.hach.com; E-mail – techhelp@hach.com

HACH COMPANY
WORLD HEADQUARTERS
Telephone: (970) 669-3050
FAX: (970) 669-2932

2540 D. Total Suspended Solids Dried at 103–105°C

1. General Discussion

a. Principle: A well-mixed sample is filtered through a weighed standard glass-fiber filter and the residue retained on the filter is dried to a constant weight at 103 to 105°C. The increase in weight of the filter represents the total suspended solids. If the suspended material clogs the filter and prolongs filtration, it may be necessary to increase the diameter of the filter or decrease the sample volume. To obtain an estimate of total suspended solids, calculate the difference between total dissolved solids and total solids.

b. Interferences: See 2540A.2 and 2540B.1. Exclude large floating particles or submerged agglomerates of nonhomogeneous materials from the sample if it is determined that their inclusion is not representative. Because excessive residue on the filter may form a water-entrapping crust, limit the sample size to that yielding no more than 200 mg residue. For samples high in dissolved solids thoroughly wash the filter to ensure removal of dissolved material. Prolonged filtration times resulting from filter clogging may produce high results owing to increased colloidal materials captured on the clogged filter.

2. Apparatus

Apparatus listed in Sections 2540B.2 and 2540C.2 is required, except for evaporating dishes, steam bath, and 180°C drying oven. In addition:

Aluminum weighing dishes.

3. Procedure

a. Preparation of glass-fiber filter disk: If pre-prepared glass fiber filter disks are used, eliminate this step. Insert disk with wrinkled side up in filtration apparatus. Apply vacuum and wash disk with three successive 20-mL portions of reagent-grade water. Continue suction to remove all traces of water, turn vacuum off, and discard washings. Remove filter from filtration apparatus and transfer to an inert aluminum weighing dish. If a Gooch crucible is used, remove crucible and filter combination. Dry in an oven at 103 to 105°C for 1 h. If volatile solids are to be measured, ignite at 550°C for 15 min in a muffle furnace. Cool in desiccator to balance temperature and weigh. Repeat cycle of drying or igniting, cooling, desiccating, and weighing until a constant weight is obtained or until weight change is less than 4% of the previous weighing or 0.5 mg, whichever is less. Store in desiccator until needed.

b. Selection of filter and sample sizes: Choose sample volume to yield between 2.5 and 200 mg dried residue. If volume filtered fails to meet minimum yield, increase sample volume up to 1 L. If complete filtration takes more than 10 min, increase filter diameter or decrease sample volume.

c. Sample analysis: Assemble filtering apparatus and filter and begin suction. Wet filter with a small volume of reagent-grade water to seat it. Stir sample with a magnetic stirrer at a speed to shear larger particles, if practical, to obtain a more uniform (preferably homogeneous) particle size. Centrifugal force may separate particles by size and density, resulting in poor precision when point of sample withdrawal is varied. While stirring, pipet a measured vol-

ume onto the seated glass-fiber filter. For homogeneous samples, pipet from the approximate midpoint of container but not in vortex. Choose a point both middepth and midway between wall and vortex. Wash filter with three successive 10-mL volumes of reagent-grade water, allowing complete drainage between washings, and continue suction for about 3 min after filtration is complete. Samples with high dissolved solids may require additional washings. Carefully remove filter from filtration apparatus and transfer to an aluminum weighing dish as a support. Alternatively, remove the crucible and filter combination from the crucible adapter if a Gooch crucible is used. Dry for at least 1 h at 103 to 105°C in an oven, cool in a desiccator to balance temperature, and weigh. Repeat the cycle of drying, cooling, desiccating, and weighing until a constant weight is obtained or until the weight change is less than 4% of the previous weight or 0.5 mg, whichever is less. Analyze at least 10% of all samples in duplicate. Duplicate determinations should agree within 5% of their average weight. If volatile solids are to be determined, treat the residue according to 2540E.

4. Calculation

$$\text{mg total suspended solids/L} = \frac{(A - B) \times 1000}{\text{sample volume, mL}}$$

where:

A = weight of filter + dried residue, mg, and

B = weight of filter, mg.

5. Precision

The standard deviation was 5.2 mg/L (coefficient of variation 33%) at 15 mg/L, 24 mg/L (10%) at 242 mg/L, and 13 mg/L (0.76%) at 1707 mg/L in studies by two analysts of four sets of 10 determinations each.

Single-laboratory duplicate analyses of 50 samples of water and wastewater were made with a standard deviation of differences of 2.8 mg/L.

6. Bibliography

- DEGEN, J. & F.E. NUSSBERGER. 1956. Notes on the determination of suspended solids. *Sewage Ind. Wastes* 28:237.
- CHANIN, G., E.H. CHOW, R.B. ALEXANDER & J. POWERS. 1958. Use of glass fiber filter medium in the suspended solids determination. *Sewage Ind. Wastes* 30:1062.
- NUSBAUM, I. 1958. New method for determination of suspended solids. *Sewage Ind. Wastes* 30:1066.
- SMITH, A.L. & A.E. GREENBERG. 1963. Evaluation of methods for determining suspended solids in wastewater. *J. Water Pollut. Control Fed.* 35:940.
- WYCKOFF, B.M. 1964. Rapid solids determination using glass fiber filters. *Water Sewage Works* 111:277.
- NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT. 1975. A Preliminary Review of Analytical Methods for the Determination of Suspended Solids in Paper Industry Effluents for Compliance with EPA-NPDES Permit Terms. Spec. Rep. No. 75-01. National Council of the Paper Industry for Air & Stream Improvement, New York, N.Y.
- NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT. 1977. A Study of the Effect of Alternate Procedures on

Effluent Suspended Solids Measurement. Stream Improvement Tech. Bull. No. 291, National Council of the Paper Industry for Air & Stream Improvement, New York, N.Y.

TREES, C.C. 1978. Analytical analysis of the effect of dissolved solids on suspended solids determination. *J. Water Pollut. Control Fed.* 50: 2370.

2540 E. Fixed and Volatile Solids Ignited at 550°C

1. General Discussion

a. Principle: The residue from Method B, C, or D is ignited to constant weight at 550°C. The remaining solids represent the fixed total, dissolved, or suspended solids while the weight lost on ignition is the volatile solids. The determination is useful in control of wastewater treatment plant operation because it offers a rough approximation of the amount of organic matter present in the solid fraction of wastewater, activated sludge, and industrial wastes.

b. Interferences: Negative errors in the volatile solids may be produced by loss of volatile matter during drying. Determination of low concentrations of volatile solids in the presence of high fixed solids concentrations may be subject to considerable error. In such cases, measure for suspect volatile components by another test, for example, total organic carbon (Section 5310). Highly alkaline residues may react with silica in sample or silica-containing crucibles.

2. Apparatus

See Sections 2540B.2, 2540C.2, and 2540D.2.

3. Procedure

Ignite residue produced by Method 2540B, C, or D to constant weight in a muffle furnace at a temperature of 550°C. Ignite a blank glass fiber filter along with samples. Have furnace up to temperature before inserting sample. Usually, 15 to 20 min ignition are required for 200 mg residue. However, more than

one sample and/or heavier residues may overtax the furnace and necessitate longer ignition times. Let dish or filter disk cool partially in air until most of the heat has been dissipated. Transfer to a desiccator for final cooling in a dry atmosphere. Do not overload desiccator. Weigh dish or disk as soon as it has cooled to balance temperature. Repeat cycle of igniting, cooling, desiccating, and weighing until a constant weight is obtained or until weight change is less than 4% or 0.5 mg, whichever is less. Analyze at least 10% of all samples in duplicate. Duplicate determinations should agree within 5% of their average weight. Weight loss of the blank filter is an indication of unsuitability of a particular brand or type of filter for this analysis.

4. Calculation

$$\text{mg volatile solids/L} = \frac{(A - B) \times 1000}{\text{sample volume, mL}}$$

$$\text{mg fixed solids/L} = \frac{(B - C) \times 1000}{\text{sample volume, mL}}$$

where:

A = weight of residue + dish before ignition, mg,

B = weight of residue + dish or filter after ignition, mg, and

C = weight of dish or filter, mg.

5. Precision

The standard deviation was 11 mg/L at 170 mg/L volatile total solids in studies by three laboratories on four samples and 10 replicates. Bias data on actual samples cannot be obtained.

2540 F. Settleable Solids

1. General Discussion

Settleable solids in surface and saline waters as well as domestic and industrial wastes may be determined and reported on either a volume (mL/L) or a weight (mg/L) basis.

2. Apparatus

The volumetric test requires only an Imhoff cone. The gravimetric test requires all the apparatus listed in Section 2540D.2 and a glass vessel with a minimum diameter of 9 cm.

3. Procedure

a. Volumetric: Fill an Imhoff cone to the 1-L mark with a well-mixed sample. Settle for 45 min, gently agitate sample near

the sides of the cone with a rod or by spinning, settle 15 min longer, and record volume of settleable solids in the cone as milliliters per liter. If the settled matter contains pockets of liquid between large settled particles, estimate volume of these and subtract from volume of settled solids. The practical lower limit of measurement depends on sample composition and generally is in the range of 0.1 to 1.0 mL/L. Where a separation of settleable and floating materials occurs, do not estimate the floating material as settleable matter. Replicates usually are not required.

Where biological or chemical floc is present, the gravimetric method (3b) is preferred.

b. Gravimetric:

1) Determine total suspended solids as in Section 2540D.

2) Pour a well-mixed sample into a glass vessel of not less than 9 cm diam using not less than 1 L and sufficient sample to

PERRY/WILLARD CITY AND PERRY/WILLARD REGIONAL WASTEWATER TREATMENT PLANT (PWR) SEWER SYSTEM

COST RECOVERY PROGRAM FOR HIGH STRENGTH WASTE

POLICY

It is the Perry/Willard City and PWR policy to charge all wastewater dischargers an equitable fee based on the services received. This fee shall be uniform in determination between residential and commercial/industrial dischargers and shall be in keeping with the revenue requirements of the sewer system. High strength wastes consume wastewater treatment facility capacity and cause additional operating and maintenance costs to occur. In order to offset these additional costs, the following high strength surcharges are established. Periodic discharges will be charged these fees. If an entity discharges high strength on a continuous basis (six or more months within a twelve-month period) the City will also evaluate the need to charge the entity an additional impact fee that shall be used to offset the costs of the centralized treatment facilities.

Basic Service Fee:

Basic service fees include operations, maintenance and debt service of domestic wastewater treatment. Also included in the basic service fee is the maintenance and debt service of the collection system.

Surcharges:

In addition to the Basic Service Fee as defined above, surcharges shall be levied for specific conditions. These are given below:

1. High Organic Strength Waste:

High strength wastes shall be defined as any discharge to the system where the chemical oxygen demand (COD) exceeds 400 mg/L and/or the total suspended solids (TSS) exceeds 200 mg/L in concentration. High strength wastes shall be charged a surcharge as specified below:

COD over 400 mg/L	\$0.40 per pound
TSS over 250 mg/L	\$0.80 per pound