USEPA - REGION 8

TECHNICALLY-BASED LOCAL LIMITS DEVELOPMENT STRATEGY

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DISCLAIMER

The mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government. The statements in this document are intended to provide technical support on the development of local limits to protect the POTW and implement existing provisions of the Clean Water Act, 40 CFR Part 403, and the POTW's NPDES permit for EPA Region 8. This document is not intended, nor can it be relied on, to create any rights enforceable by any party in litigation with the United States. This document may be revised without public notice to reflect changes in EPA's policy and regulations.

EPA wishes to thank Carol Webb and the City of Fort Collins, Colorado for their assistance in the revision of this Strategy. In addition, EPA wishes to thank the POTWs and state representatives on the Region 8 Local Limits Workgroup for their review and input in the revision of this document.

This is intended as a working document. As the science improves and additional information becomes available, this document will be modified. Updates will be made available at: http://www.epa.gov/region08/water/wastewater/prethome/prethome.html

For further information, you may contact Pretreatment Coordinator (8P-W-P), USEPA - Region 8, Suite 300, 999 18th Street, Denver, Colorado 80202.

REGION 8

TECHNICALLY BASED LOCAL LIMITS DEVELOPMENT STRATEGY

I. BACKGROUND

POTWs (Publicly Owned Treatment Works) are responsible for limiting, where necessary, the character and volume of pollutants being discharged into their wastewater treatment system in order to protect the treatment facility against Pass Through and Interference, adverse receiving water quality impacts, and worker health and safety problems. POTWs must prevent conditions that would interfere with improving opportunities for beneficial use of sludge. POTWs control the discharge of toxic pollutants to their wastewater treatment facilities through the development and implementation of Pretreatment Standards, called local limits.

The General Pretreatment Regulations (40 CFR Part 403) require that **every** POTW develop and implement local limits to protect their treatment plant, the sewerage system, biosolids and receiving water from adverse impacts from industrial and commercial dischargers. POTWs develop and enforce local limits based upon the maximum loading of pollutants that can be accepted by their treatment facilities. These limits are initially developed by POTWs in Region 8 as a prerequisite to pretreatment program approval and are periodically reassessed to ensure that they are adequately protecting the environment from any adverse effects related to non-domestic discharges into each specific treatment facility. More POTWs without approved pretreatment programs are developing and implementing local limits to protect their plants and collection systems from Pass-Through or Interference.

Discharging to a POTW is a privilege for commercial and industrial customers (Users), as most if not all POTWs were designed for treating discharges of domestic wastewater. These Users must comply with all discharge limits and requirements or risk losing the privilege to discharge to the POTW, thus being required to obtain a direct discharge permit. In addition, government funding authorities do not provide funding to POTW expansion projects where the expansion is necessary due to high strength, non-domestic discharges to a POTW by a User. Industrial and commercial dischargers are expected to install adequate treatment prior to discharge to a POTW.

II. Legal Authority Citations

40 CFR 403.2: Objectives of the General Pretreatment Regulations are to prevent Pass Through, Interference, and improve opportunities to recycle and reclaim wastewater and sludges.

40 CFR 403.5(c)(1): Each POTW shall continue to develop local limits as necessary and effectively enforce these limits.

40 CFR 403.5(c)(2): All other POTWs shall develop and enforce local limits where Interference or Pass Through have been seen.

40 CFR 403.5(d): Local Limits shall be Pretreatment Standards for the purposes of the CWA.

40 CFR 403.8(f)(1)(iii)(C): Permits must contain effluent limits based on applicable categorical standards, local limits, and State and local law.

40 CFR 403.8(f)(1)(v): Carry out inspections and monitoring, independent of the IUs, to determine compliance with applicable Pretreatment Standards and Requirements.

40 CFR 403.8(f)(2)(v): Randomly sample and analyze the effluent from industrial users in order to identify non-compliance. Inspect and sample the effluent from each SIU at least once a year.

40 CFR 403.8(f)(4). "The POTW shall develop local limits as required in "403.5(c)(1), or demonstrate that they are not necessary").

III. Introduction

In order to establish or revise technically-based local limits POTWs must use the best available technical information to identify pollutants of concern and the maximum loading that can be accepted by each treatment facility. This Strategy will point out specific items and areas that should be considered in working through the process to arrive at technically-based local limits.

The purpose of this Guidance is to elaborate on the "Guidance Manual on the Development of Local Discharge Limitations Under the Pretreatment Program" and clarify what Region VIII will require, as a minimum, from POTWs developing revised or new technically-based local limits. This Strategy approaches the local limits development as a series of steps and the remaining sections will be structured as steps.

This Guidance is written around the use of the Region 8 Local Limits Spreadsheet for Local Limits (downloadable at the EPA Region 8 Web Site - www.epa.gov/region08/water/wastewater/ and follow the links to the Pretreatment web site).

Conceptually, the maximum daily loading of a pollutant that can be accepted is shown in Figure 1. The "pie" is the maximum quantity (pounds per day) of a pollutant or the Maximum Allowable Headworks Load (MAHL) that may enter a POTW. Pollutant loading that is greater than the MAHL, would be predicted to cause an impact, either in the receiving water or in the biosolids.

The "pie" or MAHL is composed of several pieces. These are shown in Figure 1.

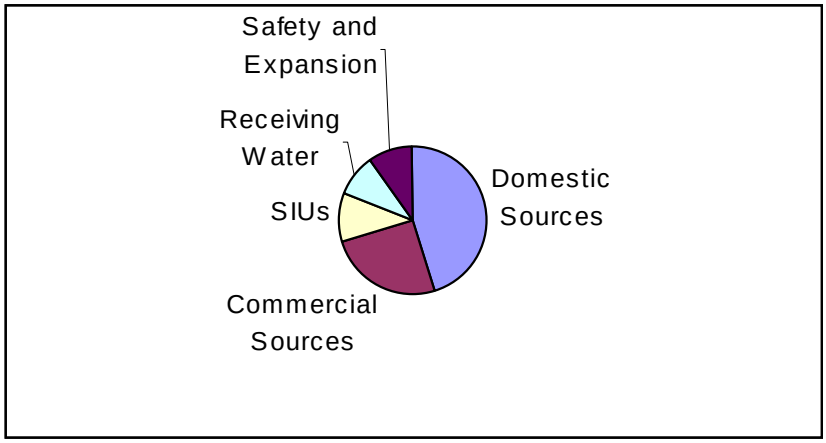

Figure 1. What makes up the total pollutant loading to a POTW?

The pieces of the "pie" or allocations are:

1. Domestic. This is the loading from domestic only sources. This would include homes, apartments, condos, etc. The POTW was specifically built to serve these customers and treat domestic quality waste.

2. Significant Industrial Users: These are the industrial users that are considered significant as defined at 40 CFR 403.3(t). The POTW must permit, inspect, and sample these SIUs. The allowable loading by all SIUs is the total amount allocated through permits (not the actual quantity that they discharge). This total loading is based upon the calculated Maximum Allowable Industrial Loading (MAIL) for each pollutant.

3. Non-Significant (Commercial) Industrial Users: This portion of the MAHL pie represents all of the non-domestic users, except for the SIUs listed above but does include commercial users. This class of Users may contribute significant loadings to POTWs and require significant efforts by the POTW to control. The most common users in this class are dental offices, photo processors, radiator shops, commercial laundries, etc. This will be referred to as the calculated Maximum Allowable Commercial Loading (MACL) for each pollutant throughout this Strategy.

4. Hauled Waste (NOT SHOWN): This portion of the MAHL pie is sometimes combined under the MAIL (SIU) portion and sometimes under the MACL (commercial, non-SIU) portion of the pie. However, because of the unique characteristics of this waste, the special needs for permitting and ensuring compliance, and the method of discharge have caused many pretreatment programs to treat these dischargers as their own slice of the MAHL pie.

5. Receiving Water: When calculating the MAHL the POTW must protect for violations of water quality standards. Part of the calculation requires that the POTW account for the existing contribution of the receiving water when evaluating the overall MAHL. The piece of the pie designated “Receiving Water” is included to alert the reader that where acute and chronic toxicity protection is considered, the upstream pollutant concentration should be considered. This is not applicable where an NPDES permit limit has already considered this through a wasteload allocation or TMDL

6. Safety and Expansion Factor: This is the amount set aside to account for growth in the sewerage system and to provide a margin of protection to the POTW against slug loads due to accidental discharges and population growth.

IV. When to Revise Local Limits

After the initial development of local limits, they will be periodically re-evaluated. POTWs should revise local limits when one or more of the following occurs:

1. Changes at the POTW: This may include revised NPDES permit conditions, revisions to water quality standards, changes at the POTW (construction), significant new discharges to the POTW, and changes in the loading over time (e.g. new taps).

2. Annual re-evaluation as part of the annual report: The annual report requires that the POTW evaluate whether the current MAHL is still acceptable based upon actual monitoring data.

3. At NPDES permit application for a renewed permit. This re-evaluation is required under 40 CFR Section 122.21(j)(4). In Region 8, the annual re-evaluations in the annual report are adequate to meet this requirement (unless specified otherwise by an authorized state).

4. Violations or exceedences of a NPDES permit effluent limit.

5. Automatic Triggers for initiating action by POTWs to revise/develop limits:

   A. For metals, ammonia, and toxic organics, where the headwork's loading is at or greater than 70% of applicable standards or controlling criteria, the following steps shall be implemented:

      1. Determine what percentage of the total headwork's loading is coming from domestic vs. non-domestic users. Determine if any IUs or groups of IUs are significant contributors of the pollutant in question. Document whether these IUs have treatment in place and whether the treatment is adequate (including any BMPs).

      2. Develop/revise local limits and/or BMPs for the pollutant as needed. Apply local limits and/or BMPs to all dischargers, through an enforceable mechanism, as necessary to obtain reductions in headwork's loadings.

   B. This section is intended as guidance for POTWs not a specific requirement. EPA is providing this information to assist the POTW in understanding the process and decisions that EPA Region 8 will use when evaluating requirements regarding BOD and TSS local limits revisions.

      As a note: EPA and authorized states cannot approve any local limit that is based upon an allowable headwork's loading that exceeds that which the POTW's NPDES permit is based upon. Where the POTW believes that the allowable headwork's loading is greater than what the current NPDES permit is based upon, the POTW must get their NPDES state to incorporate the updated design limits into the permit **prior** to submitting their local limits for approval.

BOD and TSS loading at or greater than 80% of the organic design for the POTW (for the appropriate flow rate), the following steps shall be implemented:

1) Determine what percentage of the loading is coming from domestic vs non-domestic users.

2) Determine if any IUs, as defined at 40 CFR 403.3(t) are significant contributors of the pollutant in question. Document whether these IUs have treatment in place and whether the treatment is adequate (e.g. BAT or treatment that is typical for the pollutant of concern).

3) If any IUs are significant for these pollutants and they do not have adequate treatment, the POTW must require installation of adequate treatment. POTW must issue control mechanisms with specific enforceable limits (or equivalent) included.

STEP 1

Preliminary Data Collection

The first step towards developing technically-based local limits is to identify what information is needed for the development of your local limits. To assist the POTW, a checklist is provided in **Appendix A**. Much of this information can be obtained from the Statement of Basis for your NPDES permit, the State NPDES Permitting Authority, State Water Quality Standard people, and the POTW's own records. Data for the following items should be compiled:

a. Analyses on domestic, commercial, Industrial, hauled waste and sludge collected over the past two (2) years;

b. Receiving water data and hardness data. Hardness is used in the calculations of many of the metals. The POTW should obtain the hardness data for it's receiving water (85% percentile value). If hardness is <25 mg/l then use 25 mg/l and if the hardness is >400 mg/l then use 400 mg/l. If the hardness is equal to or greater than 25 mg/l or equal to or less than 400 mg/l then use the actual value.

c. Influent and Effluent Data:

All the POTWs have been performing priority pollutant scans as a condition of their NPDES permits since the early 1990's. This has allowed the POTW to track changes over time to the influent and effluent, as well as, increase the probability that if priority pollutants are present, they will have been detected. At a minimum, one influent priority pollutant scan shall be available for each treatment facility to determine those pollutants being contributed to the system (taken over the last 12 months prior to submission of the local limits package to the Approval Authority)

The POTW should review the data to ensure that the influent priority pollutant scan contains the following pollutants:

* Pollutants listed in 40 CFR Part 122, Appendix D, Table II (Organic Toxic Pollutants) and Table III (Metals, Cyanide, Phenol).

* Any pollutants identified in 40 CFR Part 122, Appendix D, Table V as being a constituent of any industrial discharge or suspected of being present.

* Any other additional toxic pollutants designated in your State Water Quality Standards and/or NPDES permit that apply to your stream segment or POTW effluent.

* Any pollutant identified through WET characterization studies as being present and suspected or responsible for toxicity.

* Any pollutant that is present that may cause a potential impact to the collection system, treatment works, worker health and safety or air quality (VOCs).

* Pollutants covered by drinking water standards if your receiving water is classified as a drinking water source either by the state or EPA. Many POTWs feel it is important to be protective of this designated use.

  If more than one pollutant scan was performed during the previous twelve (12) months, all scans must be looked at individually to identify pollutants of concern (DO NOT average the data to make this determination).

* Results of pollutant analyses that have been performed as a requirement of their NPDES permit, including effluent monitoring, pretreatment monitoring and other site specific monitoring.

The periodic scans required in your NPDES permit or that you performed may not have included all of the pollutants that must be evaluated. Because of this, you may need to review the list above and sample for the pollutants for which you have not already sampled. This may take you to Step 2 for a few pollutants for which you do not have adequate data.

The initial influent scan data is designed to minimize the cost of subsequent analyses on influent and effluent.

Identifying Pollutants of Concern from the Initial Data

Once the initial influent sample is analyzed you must evaluate the data to determine pollutants of concern. Pollutants of concern are the pollutants that must be carried through the complete local limits evaluation (sampling and data evaluation). Pollutants of concern are identified as any pollutants falling into the following categories:

1. Arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, silver, and zinc; AND

   - Chromium (total) and Chromium (VI), Or
   - Chromium (VI) and Chromium (III)

   Note: Most Water Quality Standards list Chromium (III) rather than Chromium (total).

2. Any pollutant listed in your State Water Quality Standards for your receiving water **or** are listed in your NPDES permit;

3. Any pollutant specified in 40 CFR 122 Appendix D, Tables II or V that was detected in an influent or effluent sample and its concentration was equal to or greater than 0.05 mg/l;

4. Any pollutant that is present at 0.01 mg/l or greater (above the method detection limit if MDL is >0.01 mg/l) <u>and</u> has a BCF of 300 or greater (see Appendix C).

5. Any other pollutant not covered by paragraph 3 or 4, that is determined to be present at equal to, or greater than, 0.1 mg/l in the influent or effluent samples and that may be toxic to the POTW, receiving waters, worker health or biosolids if discharged;

6. Any pollutant with a current average influent (headworks) loading greater than 70% of the POTW design loading.

7. Any pollutant identified through WET characterization studies as being present and suspected or responsible for toxicity.

8. Any pollutant identified in biosolids analytical results which is not a pollutant that would be expected or is at a concentration that would be considered atypical;

9. Any other pollutant specifically designated by the POTW Pretreatment Program and/or Approval Authority as a pollutant of concern.

If you identify pollutants of concern other than those listed above, it is advisable to provide a list of these to the Approval Authority prior to proceeding. There are a number of compounds that may show up and may be attributed to breakdown products of caffeine, tannins, etc. The Approval Authority does not intend for the Control Authority to invest money in sampling and analysis for compounds that have no environmental criteria or standard on which to base local limits unless there is an identified environmental or health concerns associated with the pollutant. In cases where there is an identified concern it may be necessary to develop site specific criteria on which to base local limits, if no other criteria are available.

Prior to eliminating a compound identified as a pollutant of concern based on the above criteria, the POTW must have approval from the Approval Authority.

Many POTWs have generated enough data for many of the pollutants specified above that no additional sampling may be needed, except for a few of the parameters. In this case, the POTW needs to identify which pollutant parameters they need to gather new or additional data for and develop a sampling plan for doing these pollutants.

Many POTWs do not have specific analytical data for all pollutants of concern for SIUs. Region 8 would recommend that the POTW have the IU monitor at least once per year for all of the pollutants of concern as identified in the latest local limits evaluation at those IUs where the potential for discharge of these pollutants exists. Without some minimum baseline of information, the POTW may find it difficult to allocate a particular loading to a SIU. Alternatively, the POTW may opt to sample the IUs for these pollutants.

Step 2

DEVELOPMENT OF A SAMPLING PLAN

The POTW must develop a sampling plan, where additional sampling is needed, that outlines how the POTW will collect and analyze samples to determine the appropriate local limits for their program. The sampling plan should include at a minimum the following:

* Identification of sampling locations (e.g. influent, effluent, biosolids, domestic, commercial, etc.)

  Influent Samples: Sampling location should enable collection of raw wastewater prior to mixing with any wastestreams that are returned to the headworks of the WWTP (e.g. sludge digester decant and waste activated sludge). If hauled wastes are discharged to the headworks, the sampling location should be located prior to introduction of these wastes. Trucked and hauled waste should be sampled separately. The POTW may also take internal WWTP samples to determine removal efficiencies across treatment units or to estimate pollutant inhibition levels.

  Effluent Samples: Sampling location should be after the final treatment provided (as specified in your NPDES permit).

  Biosolids: Sampling locations should be after all biosolids treatment, chemical addition, and dewatering processes. The sampling location for compliance determination is at the end of the treatment or last sludge handling process just prior to final use or disposal.

  Hauled Wastes: The POTW must account for trucked and hauled waste if it accepts this type of waste. These wastes are highly concentrated and may be highly variable. The POTW is referred to the Region 8 Strategy on the Control of Trucked and Hauled Waste, November 2001.

  Commercial: Sampling the commercial wastewater contribution may be accomplished by isolating and sampling an area(s) of the collection system known to only receive primarily commercial waste (non-SIU). An area of the collection system that contains photo finishers, medical offices, grocery stores, restaurants, labs, automotive garages, etc. may be representative of the total commercial contribution. It may require more than one sampling location and more than a few samples. This is potentially a very significant contribution to the total headworks load.

  Domestic Only: Sampling the wastewater contribution may be accomplished by isolating and sampling an area(s) of the collection system known to only receive domestic waste. Most POTWs have these areas that are primarily domestic and residential

SIUs: SIUs may need to be sampled for those pollutants of concern that the POTW has not sampled for in the past. It is not unusual for SIUs to be a less significant source for many pollutants than the commercial and/or domestic sources.

* Pollutants to be sampled for at each sampling location.

* Sample type for each pollutant (grab, composite, time-proportioned, flow proportioned). Pollutants requiring grab sampling techniques are pH, Cyanide, VOCs, chromium (VI), total phenols, oil and grease, TPH, sulfides, flashpoint, and temperature.

* Identification of containers, preservatives, holding times, and shipping/storage procedures for all samples.

* Identification of analytical methods required for the analysis of each pollutant including the required method detection limit. Some Method Detection Limits are included in **Appendix H**.

* Date and number of samples to be collected at each sampling location.

* Designation of POTW unit process hydraulic detention times between the sampling of each sampling location to take into account detention time through the wastewater treatment facility. For example, if the detention time through the plant is 24 hours, the effluent sample should be collected 24 hours after the influent sample.

* Identification of data to be recorded for each sample. [date, time, initials of sampler, preservation, location, sample type, wastewater flow etc.]. Include a sample chain of custody form.

* Sludge flows to disposal, % solids of the sludge to disposal, and the density/specific gravity of sludge to disposal.

When evaluating the adequacy of sampling locations, a POTW should consider whether:

* Sampling locations are representative of the entire wastestream being sampled;

* Sampling locations provide for a well mixed wastestream;

* Wastestream flows can be measured;

* Automatic composite sampling techniques can be used, except where grab samples are required;

* Where flow is not consistent, whether automatic flow-proportioned samples can be collected;

* Sampling locations are readily accessible;

* Sampling locations are free from conditions that may bias sample results.

Much of the information in a sampling plan is conducive to incorporating into a tabular format. A sampling plan need not be a thick document. 5-10 pages should be adequate if data is well organized.

Special Sampling Considerations

When sampling the influent, grab samples, must be used for pH, cyanide, total phenols, oil and grease, flashpoint, TPH, temperature, sulfides, volatile organics and Chromium (VI). For all other pollutants, 24-hour composite samples must be obtained through flow-proportional composite sampling techniques. For pollutants requiring grab samples, collect at least three or four grab samples during a 24 hour period (workday) and composite the samples in the lab (if appropriate for the pollutant) prior to analysis or analyze each individual grab sample to obtain an arithmetic average. For further information on sampling, see 40 CFR Section 403, Appendix E. As a note: Federal regulations require four grabs under 40 CFR Section 403.12. The use of three grab samples are appropriate for local limits related sampling not necessarily for compliance with industrial user sampling. Contact your Approval Authority for further information.

NOTES on Chromium:

PARAMETER	ANALYTICAL METHOD	COLLECTION CONTAINER	PRESERVATIVE	HOLDING TIME	SAMPLE TYPE
Total Chromium	40 CFR 136.3	POLY/GLASS	acid<pH 2	6 mo	Composite
Chromium (VI)	40 CFR 136.3	POLY/GLASS	4 deg C	24 hr	Grab
Chromium (III)	BY CALCULATION		N/A	N/A	N/A

Laboratory Control

When sampling for the various types of contaminants the pretreatment personnel must talk to the analytical lab to ensure that appropriate analytical methods are used that achieve the required detection limits as specified in 40 CFR Part 136. One method that is recommended is to ensure that the lab certifies as to the quality of its work. All data collection and analyses will have to be performed in accordance with the procedures established in 40 CFR Part 136 and of such quality as to be legally defensible. Chain-of-custody (COC) records for all samples must be kept on file by the Control Authority for at least 3 years. However, EPA Region 8 recommends keeping the COC records for as long as the associated local limits are in effect.

The following certification is always recommended for each sample that is sent to the lab:

SAMPLE CERTIFICATION STATEMENT
I certify that these analyses and resulting report(s) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly analyze all samples and accurately report the results. I further certify that all analyses were performed in accordance with methods approved for wastewater under the latest revision to 40 CFR Part 136. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for analyzing the wastewater samples and generating the report(s), the analyses, report, and information submitted is, to the best of my knowledge and belief, true, accurate, and complete.
_____ _____ _____ Signature Title Date
This Certification Signed by (Type or Print Name): _____ _____ Name Title
Name of Laboratory: _____ Address of Laboratory: _____ _____ _____

Analytical Methods

All analyses shall be performed in accordance with procedures established by the Administrator pursuant to section 304(h) of the Act and contained in 40 CFR Part 136 and amendments thereto or with any other test procedure approved by the Administrator (see Sections 136.4 and 136.5). Sampling shall be performed in accordance with the techniques approved by the Administrator. Where 40 CFR Part 136 does not include sampling or analytical techniques for the pollutants in question, or where the Administrator determines that the Part 136 sampling and analytical techniques are inappropriate for the pollutant in question, sampling and analyses shall be performed using validated analytical methods or any other sampling and analytical procedures, including procedures suggested by the POTW or other parties, approved by the Administrator.

EPA requires that where a pollutant may have multiple methods approved under Part 136, the most sensitive method that is necessary is used. As a example, if the POTW is developing a local limit for mercury and the controlling criterion is their NPDES permit limit at 0.034 ug/l. In this case, Method 1631 would be the appropriate method to use with a MDL well below the permit limit. The less sensitive method has a MDL of 0.2 ug/l, preventing the POTW from assessing mercury concentrations down to the permit limit.

Step 3

Sampling Program for Pollutants of Concern

Now that you have identified the pollutants of concern in your influent, evaluated which pollutants for which you do not have adequate data, and have developed a sampling plan, the next step is to perform additional sampling for these specific pollutants to determine actual pollutant loadings at the treatment plant. This sampling will provide the necessary site specific data needed to calculate the maximum amount of each pollutant of concern that can be safely accepted at the headworks, the Maximum Allowable Headworks Load or MAHL.

Methods

All wastewater samples must be sampled and analyzed in accordance with the methods and procedures approved in 40 CFR Part 136. If no methods exists, then the POTW shall follow the requirements in 40 CFR Section 403.12(g)(4).

Analysis of biosolids must be completed in accordance with 40 CFR Section 503.8. Sampling and analysis of biosolids for pollutants of concern not addressed in 40 CFR Section 503.8 must be completed in accordance with the latest edition of, "Biosolids Management Handbook for Small to Medium Size POTWs - Regions VIII & X" or as required by Federal and state biosolids programs.

Number of Samples

The POTW should collect and analyze a minimum, six (6) influent, effluent, sludge, domestic, SIU, and commercial samples for the pollutants that you have identified as needing data (or additional data). When sampling for these wastestreams, the hydraulic detention time for processing wastewater should be considered (plant detention time and time of passage through the collection system). The purpose is to try to sample the influent and then the effluent and be sampling approximately the same event. Influent sampling should be prior to recirculating flows.

Several POTWs have used fewer sludge samples because operations result in detention times for sludge that exceed the one month intervals for sampling. The POTW must provide an explanation for using fewer than six analyses to obtain average data for sludge quality. In most cases, current sludge monitoring should provide sufficient data. However, the sludge results must have been performed within the previous eighteen (18) months. The sludge analysis must be reported in mg/kg dry weight.

Good Sampling Techniques

When sampling wastewaters some pollutants will be at very low levels. With any of the methods, clean sampling techniques will ensure the best and most reliable data. Some good techniques to use while collecting samples include:

1. Where possible, limit exposure of the sample and equipment in areas of higher contamination;

2. Minimize contact with airborne dust, dirt, particulate matter, or vapors from automotive exhaust; cigarette smoke, metal that has become corroded, nearby roads, and bare soil that may be picked up by wind;

3. Clean all the sampling tubing, and bottles with ultraclean reagents between sampling events, and minimize the time between cleaning and use;

4. Use metal free equipment;

5. Avoid sampling equipment, bottles, and tubing, that shows staining;

6. Avoid contamination carryover. Sampling a location that is high in a pollutant may cause contamination in the next sample if low in concentration;

7. Where possible do not collect, process or ship samples containing high concentrations of metals at the same time as samples being collected for trace metal analysis;

8. Wear clean, non-talc polyethylene or latex gloves during all operations involving handling of equipment, samples, and blanks. Change gloves if contaminated by dirt or foreign matter.

9. Fluoropolymer, conventional or or linear polyethylene, polycarbonate, polysulfone, polypropylene, or ultrapure quartz are preferred materials for coming into contact with samples. Fluoropolymer or glass are preferred for mercury. Pyrex, Kimax, methacrylate, PVC, nylon, Vycor, and other materials have been found to contain trace metals;

10. Use highest grade of chemicals for preservation or have lab provide precleaned bottles containing high grade preservatives.

POTW's may also be concerned with the national trend of State NPDES permits incorporating trace metal limits utilizing the freshwater chronic water quality criteria established in the National Toxics Rule (57 FR 60848). In some cases these water quality criteria concentrations are as much as 280 times lower than those achievable using existing EPA methods. In order develop local limits for these parameters, particularly Mercury, it may be necessary to sample and analyze the POTW influent and effluent using clean sampling and analysis techniques. The protocol from EPA Method 1669, Sampling Ambient Water for Determination of Metals at EPA Water Quality Criteria Levels can be used.

Sampling Equipment

Samples can be collected with an inexpensive PVC sampling dipper that holds the teflon sampling bottles. The teflon sampling bottles can be held in the dipper cup by a tight fit or attached to the dipper pole with plastic ties. Examples of other sampling devices are provided in EPA Method 1669, Sampling Ambient Water for Determination of Metals at EPA Water Quality Criteria Levels. The teflon sampling bottles must be pre-cleaned at the laboratory performing the analysis and scheduled for return shipping not later than one week prior to the sampling episode. This will reduce possible contamination by minimizing exposure to atmospheric conditions. All cleaned sampling equipment must be double bagged, wrapped in plastic, and stored in a clean nonmetallic cooler with a white interior.

If there are any indications that the sampling equipment is not clean (ripped bag), an assessment of likelihood of contamination must be made. Sampling must not proceed if it is possible that the equipment is contaminated. Contaminated equipment must be returned to the laboratory for cleaning before any sampling occurs.

Clean, non-talc, polyethylene gloves must be worn during all operations involving handling of the sampling apparatus, samples and blanks. Only clean gloves may touch the apparatus. If another object or substance is touched, the gloves must be changed before again handling the apparatus. Wearing multiple layers of clean gloves will allow the old pair to be quickly stripped with minimal disruption of work activity. "Clean hands" must wear shoulder length gloves. Since Mercury concentrations are elevated in the atmosphere and can be absorbed in cotton, the sampling team must wear nylon or polyolefin, long sleeved suits.

A portable glove box constructed of a PVC pipe frame and a cover made of inexpensive disposable polyethylene thin walled bags is useful for preventing airborne contamination while preparing the sampling device and bottle in the field

Sampling Equipment

Site	Sample Type	Sampling Equipment	Notes
Influent	Flow Proportioned Composite	PVC sampling dipper 500 mL or 1 Liter Bottle	Teflon bottle
Effluent	Flow Proportioned Composite	PVC sampling dipper 500 mL or 1 Liter Bottle	Teflon bottle
All others	Flow Proportioned Composite	Gloves: PVC and Shoulder length polyethylene. Wind suit. Portable Glove Box	

Sampling Sequence

The sampling occurs with the influent samples collected first, and the effluent samples collected later based upon the wastewater detention time through the POTW.

Sampling Methodology

Samples are collected into separate bottles as a series of grab samples collected over a 24 hour period. A separate sampling apparatus for influent and effluent samples is recommended. To reduce the risk of sample contamination, the multiple bottles are composited at the laboratory. The flow at the time of sampling must be recorded and provided to the laboratory for flow proportional compositing. A field/equipment blank must be performed during each separate sampling event.

Sampling Protocol

Extreme care must be taken during all sampling operations to minimize exposure of the sample to human, atmospheric, and other sources of contamination. Care must be taken to avoid breathing directly on the sample.

All operations involving contact with the sample bottle and with transfer of the sample from the sample collection device are handled inside the portable glove box by the individual designated as "clean hands". "Dirty hands" is responsible for all activities that do not involve direct contact with the sample.

To minimize unnecessary confusion, it is recommended that a third team member performs sample documentation (recording of time, date, conditions, etc.).

The protocol is:

- The sampling team puts on gloves and wind suits.

- The sampling team should ideally approach the site from down current and down wind to prevent contamination of the sample. If it is not possible to approach from both, then the site should be approached from down current.

- If it is necessary to attach a bottle in the field then "Dirty hands" must open cooler and remove the double-bagged sample bottle from storage, and unzip outer bag.

- "Clean hands" takes the inner bag containing the sample bottle to the portable glove box. "Clean Hands" opens the inner bag, removes the bottle and removes the cap and places cap inside inner bag, and reseals the inner bag.

- "Clean hands" attaches the bottle to the sampling device inside the portable glove box.

- "Dirty hands" submerges the sampling device and bottle into the water stream until the bottle is filled, and dumps the sample out to rinse the bottle. "Dirty hands" again submerges the sampling device into the water stream until the bottle is filled.

- When the bottle is full "Dirty hands" transfers the sampling apparatus near the portable glove box. Then while using the portable glove box, "Clean hands" removes the bottle from the sampling device. "Clean hands" opens the inner bag, caps the bottle, places the bottle inside the inner bag and seals the inner bag. "Clean hands "places the inner bag into the outer bag. "Dirty hands" seals the outer bag, and places the sample bottle into a clean cooler for immediate storage under refrigeration.

- Sampling of the remaining grabs follows all of the proceeding steps.

Preservation

Samples must be shipped on ice by overnight courier and preservation completed on site or at lab, as required.

Quality Assurance/Quality Control

Before using any equipment in the field, the laboratory should generate bottle blanks and sampling equipment blanks to demonstrate that the equipment is free from contamination. To demonstrate that sample contamination has not occurred during field sampling at least 1 field blank must be generated for each sampling event at a given site. Field blanks are collected before sample collection.

Field/equipment blanks are generated by obtaining reagent water from the laboratory, transferring the container to the sampling site, processing the water through each of the sampling steps and equipment, that will be used in the field, collecting the field blank in one of the sample bottles, and shipping the bottle to the laboratory for analysis. Since ultra pure water is used with an equipment blank, then the equipment can be used for sampling.

Special Case: Lagoons

If a POTW has a lagoon treatment system, the influent monitoring data must be collected as stated above. If the detention time is greater than 24 hrs the effluent may be collected as 4 grabs collected at equal time intervals over a 24-hour period and composited according to flow. Depending on the sludge management practices, facilities with lagoon systems may not be required to collect sludge data and/or evaluate local limits based on sludge criteria. The POTW must evaluate local limits based upon what sludge disposal option the POTW anticipates it will choose, at such time as sludge is disposed, or if the POTW specified a sludge disposal option when obtaining funding for the POTW. If the POTW may dredge **ANY** of it's lagoons, it must consider sludge quality in the local limits evaluation.

If the lagoon is expected to be abandoned and closed in place (capped), then the POTW must contact the state and determine if there are any groundwater standards that will need to be considered. Additionally, the state may also require MCLs for drinking water to be evaluated.

Step 4

COMPILING NEEDED INFORMATION

The next step in local limit development is compiling information which will be used to determine the maximum allowable plant loading of each pollutant of concern. Make sure you have all the information before trying to complete the local limits analysis. The Local Limits Spreadsheet (See Step 5) requires much of the data you will be collecting to be entered in a meaningful way. Some of the considerations that will face your data manipulation are discussed here.

HANDLING DATA MEASURED AT BELOW DETECTION LIMIT

Many programs will find that one or more pollutant measurements will result in a Below Detection Limit (BDL) result. The POTW must make a decision on how best to handle these values. There are several areas that BDL values may require interpretation. These are:

1. Individual influent or effluent raw data;
2. Measurements for the domestic contribution;
3. Measurements for the commercial or SIU contribution;
4. Measurements of in-stream (receiving water) contributions; and
5. Biosolids analyses.

The POTW is required to make assumptions on this data. The assumptions must be rational, consistent and documented. The method by which the POTW chooses to handle the BLD data, will depend on how many of the sampling points are BLD. To address the first three areas identified above, there are two possibilities:

1. Use a literature value for the pollutant (commonly used where most or all of the data is BLD). Data for typical literature data is included in **Appendix K**.

2. Probability plotting (MR) methods.

   MR method: All MR methods use some type of regression analysis. The primary goal of regression analysis is to obtain predictions of one variable using the known values of another. The MR method accounts for multiple detection limits. Reference and a description of the MR method is presented in **Appendix E**. MR methods are slightly more accurate when the BDL values represent 30 percent or more of the data set.

BDL values for Receiving Water

The BDL data for the receiving water can be very influential in how some MAILs and MACLs are derived. Where the controlling criterion for a pollutant is stringent (e.g. mercury), the POTW needs to clearly evaluate what assumptions to make. Region 8 has provided guidance on the issue of receiving water quality data:

A. Only use data that you know or are reasonably certain is accurate;

B. If the data shows BDL, assume zero (0) until sampling data is generated showing the presence.

BDL Biosolids Data

Biosolids data that comes back as "less than" may be reported at the ½ the MDL or using the probability (MR) plotting method. However, there is often insufficient data points to allow statistical data modeling for biosolids numbers. The biosolids data is only used to screen the values against existing biosolids disposal limits and to provide an estimate of the POTW removal efficiency based on the biosolids concentration and POTW flows. (Note: the removal efficiency is generally calculated from the influent and effluent samples because of the large quantity of monitoring data required to calculate removal efficiencies from biosolids data). Using ½ the MDL should not cause a problem for most programs.

Removal Efficiencies

Removal efficiencies: The influent and effluent data is used to calculate a removal efficiency for each pollutant. **Appendix K** provides more information on each of these methods. **Appendix R** provides literature values for various POTWs for many of the pollutants that may be identified.

The spreadsheet will allow you to enter the removal efficiencies using one of the methods below:

1. **Mean Removal Efficiency (MRE) method**: estimates the percent change between the average influent value and the average effluent value. Preferred when removals are fairly consistent over time.

MRE = 100 * (Average influent - Average effluent)/Average influent

Where average influent (effluent) = mean influent (effluent) value of the daily sample values.

2. **Average Daily Removal Efficiency (ADRE)**: takes the arithmetic average of individual daily removal efficiencies. Weights all daily removal efficiencies equally. Preferred when removals are fairly consistent over time. This may be a little more accurate than the MRE method.

ADRE = (Σ Daily Removal Efficiencies)/Total # of Daily Removal Efficiencies

Where Daily Removal Efficiency = 100 * (Influent-Effluent)/Influent

3**. Decile Approach**: requires at least 9 daily removal values and provides an estimate of how frequently the actual daily removal efficiency will be above or below a specified value. May be preferable when removal efficiencies are inconsistent.

4. **From Biosolids Data**: Biosolids data may be used in place of effluent data when a POTW has influent data above detection but does not have adequate effluent data above detection or believes that the biosolids is more representative of the removal rates. This may require significantly more biosolids data and knowledge on the partitioning of pollutants throughout the POTW over time. Many POTWs may not have enough data to perform this calculation. This is something to design into a long term sampling program. Review of removal efficiencies has not produced very good data in most local limits submittals. Insufficient data seems to be the biggest concern.

MRE = 100 * Average sludge/Average influent

Daily Removal Efficiency = 100 * Sludge/Influent

5. **From Literature Values: Appendix D** contains POTW removal efficiencies from local limits submittals in Region 8 and elsewhere. It is broken out by POTW type.

STEP 5

Technically-Based Local Limits Calculation

You have now completed the data collection portion of the local limits development process. The calculation of local limits may now begin. The December, 1987, "Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program" provides basis and formulas for calculating technically based local limits. The anticipated revised National Local Limits Guidance Manual will provide significant updates to the older manual.

Region 8 has provided a spreadsheet in Microsoft Excel format to provide the POTW with established method to calculate local limits. It is set up to allow easy documentation of the methods and assumption of the local limits evaluation.

The next section of this Guidance is based upon use of the Local Limits Spreadsheet (and its tables) for discussion purposes. If the reader is interested in the specific formulas being used, they are referred to in **Appendix C** and may also be viewed in the National Local Limits Guidance.

Calculating Daily or Daily and Monthly Local Limits

The POTW may calculate either daily-only local limits or local limits to be applied as daily and limits to be applied as monthly.

Basis for Local Limits		
Daily-Only	Daily and Monthly Local Limits	
	Daily Limits Basis	Monthly Limits Basis
Acute State/EPA WQS Chronic State/EPA WQS NPDES Permit Limits (Mo and Daily) State/EPA Human Health Criteria Biosolids Drinking Water	Acute State/EPA WQS Daily or 7 day NPDES permit limits Drinking Water	Chronic State/EPA WQS Monthly NPDES Permit Limits State/EPA Human Health Criteria Biosolids

Region 8 Spreadsheet

The discussion that follows will use the Spreadsheet tables as the guideline. The spreadsheet can be downloaded from:

http://www.epa.gov/region08/water/wastewater/prethome/prethome.html and go to the document download area.

Rules:

1. Columns that are shaded in blue are for the User to enter data. These appear as grey shaded areas in the following tables.

2. Columns that are shaded in purple indicate that a "blue" column exists for this data entry, but the purple column allows for user generated data to be entered in as a different format. These appear as grey shaded areas in the following tables.

3. Columns that have no shading should not be modified or any data entry performed. Changing the formulas or data in these columns may adversely affect other portions of the spreadsheet. Save the spreadsheet and back up periodically.

4. Columns that are in Yellow (MACL and MAIL) are done so to allow you to "see" these columns more easily. Do not enter data into these columns.

Table 1: General Data Entry (see next page)

This table is used to enter in general information that is not necessarily pollutant specific.

POTW NAME: Enter in the name of your POTW(s) in this area.

POTW Highest Monthly Average Flow: From the data over at least the last 12-18 months, the highest monthly average flow should be entered. This data is in mgd.

Domestic Flow: The POTW must enter the Domestic Flow that enters it's POTW. This may require some estimation of flows by the POTW and may be easier to determine after entering in the subsequent flows. Entered in as mgd.

SIU Flow: Enter in the permitted flow (allowed flow) from the SIUs in the POTWs Pretreatment Program. Enter as mgd.

Commercial Flow: Enter in the Commercial Flow (Total Flow - Domestic - SIU flow) in this space. The Commercial flow may be estimated. Enter as mgd.

Trucked and Hauled Waste Flow: Enter in the daily flow (in mgd) that the POTW accepts from these sources. It is best to estimate this flow from the highest daily flow that it accepts (worst case) because of the concentrated nature of these pollutants and wastestreams.

Data Analysis: Table 1 lists several items that are used for data analysis and provides information on pollutant loading and relative contributions.

> **COMMERCIAL FLOW AS A % OF ALL NON-DOMESTIC:** This calculates the relative contribution of commercial flows as a percentage of all non-domestic flows. This will be used when the POTW is considering how to allocated pollutants.
>
> TOTAL **COMMERCIAL** FLOW AS A % OF TOTAL POTW FLOW: This provides information on the relative contribution of the commercial flow as it relates to the total POTW flow.
>
> **TOTAL NON-DOMESTIC** FLOW AS A % OF TOTAL POTW FLOW: This is the percentage of all non-domestic flow as a percentage of the total POTW flow.

Insert the General Data Entry Table here

Specific Gravity of Sludge to disposal: See Appendix M.

Sludge Flow to Disposal: This number is in MGD.

% Solids to Disposal: The percent solids in the sludge as it is taken to disposal.

Biosolids Table: Enter in Table 1 or 3 here if you are using either of these sludge criteria for the sludge criteria. **DO NOT** Enter Table 2 here. If you are using Table 2, enter O for Other in this space.

Are you using Table 2?: Enter **Y** for yes and **N** for no (default).

Site Area: If you are using Table 2, enter in the site area of your active disposal site (in acres).

Site Life: If you are using Table 2, enter in the site life of your active disposal area (in years).

Chronic Receiving Water Flow: This is the flow that is used for determining compliance with chronic WQS protection. See the Rationale for your NPDES permit.

Acute Receiving Water Flow: This is the flow that is used for determining compliance with acute WQS protection. See the Rationale for your NPDES permit.

Hardness for Metals Calculations: Enter in the 90th percentile value for hardness (minimum 90th percentile). This will be supplied by your permit issuing authority and will usually be found in your Fact Sheet or Statement of Basis for the NPDES permit issued to your POTW.

Is your receiving water a drinking water supply?: Enter **Y** for yes or **N** for no. You can get this information from the Statement of Basis for your NPDES permit or from the permit issuing authority.

Applicable Standards (Acute, Chronic, Both): This is what applies to your receiving water. It is usually both standards. There is mixing zone policies that each state is adopting. The POTW must consider these. They will be incorporated into this spreadsheet as they are approved and provided by the states. Enter **A** for Acute, **C** for Chronic and **B** for Both. **B is the default**.

Table 2 – Daily Criteria and Standards

Column B, Pollutant: This is a listing of the basic pollutants.

Column C, Daily Max Permit Limits/7 Day Permit Limits: From your NPDES permit. Enter as mg/l.

Column D, State Acute Water Quality Standards: From your Statement of Basis or permit issuing authority. Enter as mg/l.

Column E, EPA Acute Water Quality Criteria: This number will be used except where you have entered in a State Water Quality Standard. For additional pollutants, the program allows you to enter acute criteria data. Enter as mg/l.

Column F, Final Acute Criteria: This column shows the applicable final acute criteria.

Column G, MCLs: If you entered a Y in Table 1, indicating that your receiving water is a drinking water supply, then these values will show up automatically.

Column H, Other Criteria: Allows the User to enter a criterion that is not otherwise listed.

Column I, Pollutant: A listing of the pollutants.

Table 2 Insert Table - Criteria and Standards here

Table 3 – Monthly Criteria and Standards

Column B, Pollutant: This is a listing of the basic pollutants.

Column C, Monthly NPDES Permit Limits: From your NPDES permit. Enter as mg/l.

Column D, State Chronic Water Quality Standards: From your Statement of Basis or permit issuing authority. Enter as mg/l.

Column E, EPA Chronic Water Quality Criteria: This number will be used except where you have entered in a State Water Quality Standard. For additional pollutants, the program allow you to enter chronic criteria data. Enter as mg/l.

Column F, Final Chronic Criteria: This column shows the applicable final chronic criteria

Column G, Pollutant: Repeated to allow you to see which line is which pollutant.

Column H, State Human Health Criteria: Enter in the number from the water quality standards for human health. It may be listed as Water Consumption or Water and Fish Consumption. Enter as mg/l.

Column I, EPA Human Health Criteria: Enter Water and Fish Consumption numbers for pollutants you have added.

Column J, Final Human Health Criteria: Determines the final Human Health Criteria number to use, giving preference to the state's criteria.

Column K, Other Criteria: Allows the User to enter a criterion that is not otherwise listed.

Column L, Pollutant: A listing of the pollutants.

Table 3 - Insert Table – monthly Criteria and Standards here

Table 4: Influent and Effluent Data

Column B, Pollutant: A listing of the pollutants.

Column C, Average Influent Concentration in mg/l

Column D, POTW flow in mgd

Column E, Comments and notes: Document assumptions here

Column F, Calculated lbs/day for influent loading

Column G, Average Effluent Concentration in mg/l

Column H, POTW flow in mgd

Column I, Comments and notes: Document assumptions here

Column J, Calculated lbs/day for Effuent loading

Table 4 – Influent/Effluent Data

Spreadsheet Table - Sewerage System and Receiving Water

Column B, Pollutant: A listing of the pollutants.

Column C, SIU Loading to POTW: User entered data. From the POTW records. lbs/day.

Column D, Nothing in this column

Column E, Domestic Contribution: User entered data. From sampling data. mg/l. Can enter this column or Column F if you have lbs/day.

Column F, Domestic Loading: User entered data. lbs/day. Optional if you entered Column E.

Column G, Nothing in this column

Column H, Calculated Domestic Loading: This is the final number used from columns E and F. It calculates the lbs/day if you entered data in column D.

Column I: A listing of the pollutants

Column J, Nothing in this column

Column K, Commercial Contribution: User entered data. From sampling data. mg/l. Can enter this column or Column L if you have lbs/day.

Column L, Commercial Loading: User entered data. lbs/day. Optional if you entered Column K.

Column M, Nothing in this column

Column N, Calculated Commercial Loading: This is the final number used from columns K and L. It calculates the lbs/day if you entered data in column K.

Column O, Total Domestic plus Commercial Loading: Calculated total for use in spreadsheet.

Column P, Trucked and Hauled Waste: User entered data. If you accept hauled waste and have the data, you can enter it here.

Column Q, Receiving Water: Enter the mg/l value for the receiving water pollutant concentration above the POTW discharge.

Column R: A listing of the pollutants

Table 5 - Sewerage System and Receiving Water

Spreadsheet Table - Biosolids

Column B, Pollutant: A listing of the pollutants.

Column C, POTW Biosolids to Disposal: User entered data. This is entered as mg/kg dry weight.

Column D, Table 1: If you entered 1 in Table 1 for biosolids, numbers will show up here.

Column E, Table 3: If you entered 3 in Table 1 for biosolids, numbers will show up here.

Column F, Table 2: If you entered Y in Table 1 for using Table 2 biosolids, numbers will show up here, otherwise N/A.

Column G, Table 2, Calculated Biosolids Criteria: If you entered information in Table 1 for using Biosolids Table 2, the calculated numbers will show here, otherwise N/A.

Column H, Default Biosolids Criteria: There are times when the POTW may want to use existing sludge quality (more protective) than one of the tables. That number may be entered here. Document this in the submittal.

Column I, Final Sludge Criteria: Automatically lists the final Criteria to be used for biosolids calculations.

Column J, Pollutant: A listing of the pollutants.

Notes on Sludge Quality

Applicable sludge criteria will vary depending on a facilities sludge disposal practices. However, Region 8 encourages all facilities to use the values in Table 3 (the Clean Sludge Numbers) of 40 CFR Part 503.13 for the development of local limits. These criteria most meet the Objectives of the Pretreatment Regulations at 40 CFR Section 403.2. One of the objectives of the Pretreatment Regulations is to improve opportunities to recycle and reclaim municipal sludges. The use of Table 3 values will promote this objective. If other sludge criteria are chosen for the basis of local limits, it is important to evaluate the basis of the limit to determine how the resulting local limit will be applied to industries.

Table 6 - Biosolids

Table 7 - Removal Efficiency (See Appendix L)

Column B, Pollutant: A listing of the pollutants

Column C, Influent – Effluent Method for Removal Efficiency: This is automatically calculated from the influent and effluent data entered in Table 4.

Column D, ADRE Method, Removal Efficiency: User entered data.

Column E, MRE Method Removal Efficiency: User Entered Data.

Column F, Decile Method: User entered data.

Column G, Literature Removal Efficiency: User Entered Data.

Column H, Source of Default Data: A descriptive word for where the default data was obtained and must be further documented in the local limits submittal.

Column I, Enter Removal Efficiency to be Used (INFEFF, ADRE, MRE, Decile, or Lit: Removal Efficiency based upon the influent and effluent data that is entered.

Column J, Nothing in this column

Column K, User Entered Sludge Removal Efficiency: Calculated from the data. Usually this number is not real good due to a lack of data.

Column L, Use Sludge Removal Efficiency?: If the POTW is going to use the sludge removal efficiency, Y must be entered for each pollutant where this will be used. Further documentation will be required in the local limits submittal.

Column M, Nothing in this column

Column N, Final POTW Removal: This is the calculated removal efficiency that will be used through out the calculations.

Column O Pollutant: A listing of the pollutants

Insert Table - Removal Efficiency

Table 8 – Daily MAHL Calculations

No data entry in this Table.

Column B, Pollutant: A listing of the pollutants

Column C, NPDES Loading: MAHL calculations.

Column D, Acute Water Quality Criteria Loading: MAHL calculations.

Column E, MCL (Drinking Water) Loading: MAHL calculations.

Column F, Other Criteria from Table 2, Column H: MAHL calculations

Column G, Most Stringent Criteria: Calculates which criterion is most stringent.

Column H, Name of MAHL for Daily Max Limits

Column I, Pollutant: Lists the pollutants.

Note: Where a criteria is not calculated or available, the program inserts a default value of 999999.

insert Table 8 – Daily MAHL Calculations

Table 9 – Monthly MAHL Calculations

No data entry in this Table.

Column B, Pollutant: A listing of the pollutants

Column C, NPDES Loading: MAHL calculations.

Column D, Chronic Water Quality Criteria Loading: MAHL calculations.

Column E, Human Health Loading: MAHL calculations.

Column F, Other Criteria from Table 2, Column J: MAHL calculations

Column G, Sludge Loading Criteria for Monthly limit: Takes the final sludge criteria from Table 6 to get MAHL for monthly local limit.

Column H, Most Stringent Criteria: Calculates which criterion is most stringent.

Column I, Name of Most Stringent MAHL: This lists the name of the most stringent criteria.

Column J, Pollutant: Lists the pollutants.

Note: Where a criteria is not calculated or available, the program inserts a default value of 999999.

Table 9 – Monthly MAHL Calculations

Table 10 – Daily Local Limits (ADOPTING ONLY DAILY MAX LIMITS)

This Table is N/A if you are only adopting Daily Maximum Limits

Column B, Pollutant: A listing of the pollutants

Column C, Most Stringent MAHL for Daily Limits: Calculates the most stringent criteria from Tables 8 and 9.

Column D, Final MAHL for Daily Limits: Repeats previous column, but evaluates data type.

Column E, Name of Most Stringent Criteria: Carried down from Tables 8 or 9, depending on what criterion was the most stringent.

Column F, Safety/Expansion Factor: User entered data. Notes on Safety and Expansion Factors

Maximum allowable industrial loadings are calculated by applying a safety/growth factor to the maximum allowable headworks loading and subtracting the domestic/commercial contributions to the headworks. Region 8 requires a safety + growth factor of at least ten (10) percent. Further, where communities are still experiencing growth or are underdeveloped, it may be necessary to increase the growth component. The safety/growth factors provided above are minimum values. These values may be increased at the POTWs option should the POTW desire to reserve future pollutant loadings for new industrial users and/or growth.

Column G, MAHL after Safety/Expansion Factor: The MAHL after subtracting out the Safety/Expansion Factor.

Column H: This column specifies whether you are adopting a MACL AND MAIL for each pollutant. If you are developing a MACL and MAIL for each pollutant, enter a "Y", otherwise enter a "N".

Column I, MAHL minus Domestic or Domestic Comm Loading: This is the MAHL after the domestic loading from Table 3, Column F.

Column J, Maximum Allowable Loading (MAL) for all Non-Domestic Users: This is the Allowable loading for all non-domestic users (SIUs, Commercial, Industrial, Hauled Waste).

Column K: This column reflects whether you are developing a MACL and/or MAIL.

Column L, Mass for Trucked Waste: If you are regulating trucked and hauled waste separately from SIUs and Commercial Users and want to reserve pollutant loading, enter that loading here.

Column M, Max Allowable Loading (MAL) for Commercial and SIUs (minus Hauled Waste): If you entered in a mass for trucked and hauled waste, this is the resulting amount left over.

Column N, Pollutant: A listing of the pollutants

Column O, Percentage of SIU Loading: This allows the user to enter a percentage that will be used to calculate how much of the MAL to give to the SIUs.

Column P, % of MAL for Commercial: Based on your data entry in Column M, this is the % of the MAL to allocate for the commercial (non-SIU) dischargers.

Column Q, MAIL - Allocation for SIUs

Column R, Calculated Uniform Limits: This is the uniform concentration limits for SIUs.

Column S, MACL - Allocation for Commercial Users: Maximum allowable commercial loading. This is the mass left over after subtracting out the receiving water, domestic, trucked and hauled waste (if entered), and SIU loading.

Column T, Pollutant: A listing of the pollutants

Table 10 – Daily Local Limits

Table 11 – Daily Maximum Local Limits Summary

Use Table 14 if you are developing Daily AND Monthly Local Limits

Column B: Listing of pollutants.

Column C: MAIL for SIUs in lbs per day. Automatically Entered Here.

Column D: Uniform Concentration Local Limits for SIUs automatically entered here.

Column E: MACL for Commercial Users. Automatically Entered Here

Column F: User Entered Proposed limits.

Column G: User Entered Proposed limits.

Column H: Listing of pollutants.

Table 11 – Daily Maximum Local Limits Summary

Table 12 – Daily Local Limits (Where you are also adopting Monthly Limits)

This Table is N/A if you are only adopting Daily Maximum Limits

Column B, Pollutant: A listing of the pollutants

Column C, MAHL for Daily Limits: Carried down from Table 8, column G

Column D, Final MAHL for Daily Limits: Repeats previous column, but evaluates data type.

Column E, Name of Most Stringent Criteria: Carried down from Column H, Table 8.

Column F, Safety/Expansion Factor: User entered data. Notes on Safety and Expansion Factors

Maximum allowable industrial loadings are calculated by applying a safety/growth factor to the maximum allowable headworks loading and subtracting the domestic/commercial contributions to the headworks. Region 8 requires a safety + growth factor of at least ten (10) percent. Further, where communities are still experiencing growth or are underdeveloped, it may be necessary to increase the growth component. The safety/growth factors provided above are minimum values. These values may be increased at the POTWs option should the POTW desire to reserve future pollutant loadings for new industrial users and/or growth.

Column G, MAHL after Safety/Expansion Factor: The MAHL after subtracting out the Safety/Expansion Factor.

Column H: This column specifies whether you are adopting a MACL AND MAIL for each pollutant. If you are developing a MACL and MAIL for each pollutant, enter a "Y", otherwise enter a "N".

Column I, MAHL minus Domestic or Domestic + Comm Loading: This is the MAHL after the domestic loading.

Column J, Maximum Allowable Loading (MAL): This is the Allowable loading for all non-domestic users (SIUs, Commercial, Industrial, Hauled Waste).

Column K: This column reflects whether you are developing a MACL and/or MAIL.

Column L, Mass for Trucked Waste: If you are regulating trucked and hauled waste separately from SIUs and Commercial Users and want to reserve pollutant loading, enter that loading here.

Column M, Max Allowable Loading (MAL) for Commercial and SIUs (minus Hauled Waste): If you entered in a mass for trucked and hauled waste, this is the resulting amount left over.

Column N, Pollutant: A listing of the pollutants

Column O, Percentage of SIU Loading: This allows the user to enter a percentage that will be used to calculate how much of the MAL to give to the SIUs.

Column P, % of MAL for Commerical: Based on your data entry in Column M, this is the % of the MAL to allocate for the commercial (non-SIU) dischargers.

Column Q, MAIL - Allocation for SIUs

Column R, Calculated Uniform Limits: This is the uniform concentration limits for SIUs.

Column S, MACL - Allocation for Commercial Users: Maximum allowable commercial loading. This is the mass left over after subtracting out the receiving water, domestic, trucked and hauled waste (if entered), and SIU loading.

Column T, Pollutant: A listing of the pollutants

Table 12 – Daily Local Limits where you are also adopting monthly

Table 13 – Monthly Local Limits

This Table is N/A if you are only adopting Daily Maximum Limits

Column B, Pollutant: A listing of the pollutants

Column C, Monthly MAHL: Carried down from Column H, Table 9.

Column D, Final MAHL for Monthly Limits: Repeats previous column, but evaluates data type.

Column E, Name of Most Stringent Criteria: Carried down from Column I, Table 9.

Column F, Safety/Expansion Factor: User entered data. Notes on Safety and Expansion Factors

Maximum allowable industrial loadings are calculated by applying a safety/growth factor to the maximum allowable headworks loading and subtracting the domestic/commercial contributions to the headworks. Region 8 requires a safety + growth factor of at least ten (10) percent. Further, where communities are still experiencing growth or are underdeveloped, it may be necessary to increase the growth component. The safety/growth factors provided above are minimum values. These values may be increased at the POTWs option should the POTW desire to reserve future pollutant loadings for new industrial users and/or growth.

Column G, MAHL after Safety/Expansion Factor: The MAHL after subtracting out the Safety/Expansion Factor.

Column H, MAHL minus Domestic: This is the MAHL after the domestic loading.

Column I, Allowable Loading for All Non-Domestic Users: This is the Allowable loading for all non-domestic users (SIUs, commercial, industrial, hauled waste).

Column J, Pollutant: A listing of the pollutants

Column K, Percentage of SIU Loading: This allows the user to enter a percentage that will be used to calculate how much of the MAL to give to the SIUs.

Column L, % of MAL for Commercial: Based on your data entry in Column M, this is the % of the MAL to allocate for the commercial (non-SIU) dischargers.

Column M, MAIL - Allocation for SIUs

Column N, Calculated Uniform Limits: This is the uniform concentration limits for SIUs.

Column O, MACL - Allocation for Commercial Users: Maximum allowable commercial loading. This is the mass left over after subtracting out the receiving water, domestic, trucked and hauled waste (if entered), and SIU loading.

Column P, Pollutant: A listing of the pollutants

Table 13 – Monthly Local Limits

Table 14 – Daily and Monthly Local Limits Summary

Use Table 12 if you are only developing Daily Maximum Local Limits

Column B: Listing of pollutants.

Column C: MAIL for SIUs in lbs per day. Automatically Entered Here.

Column D: Uniform Concentration Local Limits for SIUs automatically entered here.

Column E: MACL for Commercial Users. Automatically Entered Here

Column F: User Entered Proposed limits.

Column G: User Entered Proposed limits.

Column H: Listing of pollutants.

Column I: Monthly MAIL for SIUs in lbs per day. Automatically Entered Here.

Column J: Monthly Uniform Concentration Local Limits for SIUs automatically entered here.

Column K: Monthly MACL for Commercial Users. Automatically Entered Here

Column L: User Entered Monthly Proposed limits.

Column M: User Entered Monthly MACL Proposed limits.

Column N: Listing of pollutants.

Table 14 – Daily and Monthly Local Limits Summary

ADDITIONAL CONSIDERATIONS

Chromium

Local limits for Chromium must protect against adverse effects due to Chromium (VI) and Chromium (III). These are the species of chromium that water quality standards are based upon. Region 8 recommends setting local limits for Total Chromium based upon the Chromium (III) water quality standard and a separate local limit for Chromium (VI). The POTW may also set a local limit for Chromium (III) and Chromium (VI). If the POTW only wants a limit for Total Chromium, it must establish this number based upon the Chromium (VI) standard. This approach will be a very stringent local limit.

1. Process Inhibition

The inclusion of process inhibition criteria in the local limits development process is optional unless inhibition was identified as a problem in the past and/or is currently a problem. Region 8 expects that if process inhibition occurs, the POTW will take immediate and decisive steps to control these problem and control any pollutants that may be causing the inhibition. This is a requirement of the POTW's NPDES permit and a required through 40 CFR Part 403.

For specific formulas related to inhibition refer to pages 3-8 through 3-10 of the National EPA Guidance Manual (1987). Please note that corrections to this manual need to be made as follows:

Page 3-44, Table 3-2:

Lead: 0.1 should be 1.0 mg/l (see 1st 2 columns of data).
Zinc: 0.08 should be 0.3 mg/l (see 1st 2 columns of data).

Page 3-47, Table 3-4:

Zinc: 0.08 should be 0.3 mg/l (see 1st 2 columns of data).

2. Worker Safety and Fume Toxicity

Establishment of Local Limits for Organics

Local limits for organics may be established using the same procedures as for metals and other non-organic pollutants. In addition to the evaluation of water quality, sludge, and inhibition, worker health and safety must be evaluated. EPA Guidance to Protect POTW Workers from Toxic and Reactive Gases and Vapors, June 1992 contains detailed information on the evaluation of worker health and safety.

Any pollutant concentration in the wastewater treatment plant collection system which exceeds the respective screening level, listed in Table B-1 the Guidance to Protect POTW Workers from Toxic and Reactive Gases and Vapors, June 1992), has the potential to cause adverse effects on worker health and safety. This Table is also included in **Appendix P** of this document. Therefore, pollutant concentrations in the collection system that are near or above the screening levels must be controlled.

All areas of the collection system that are suspected of receiving discharges of organic pollutants that may approach the screening levels should be evaluated on the basis of protecting worker health and safety. If there are no suspected areas in the collection system then the pollutant concentration in the total influent must be compared to the screening criteria.

3. BTEX Local Limits

The POTW may establish local limits for BTEX on a variety of criteria including fume toxicity, aquatic life protection, etc. An additional alternative exists for the POTW. This includes establishing technically-based limits for BTEX based on treatment technology. Information on this may be found in the EPA publication "Model NPDES Permit for Discharges Resulting from the Cleanup of Gasoline Released from Underground Storage Tanks", June, 1989. The Technology based limits for POTWs to accept ground water cleanup wastes are:

Benzene: 50 ug/l and BTEX: 750 ug/l

Both sets of these limits are achievable by current technology. The overall technology assumed approximately 15 mg/l of dissolved product is treated to a removal efficiency of 95% (commercially available stripper unit).

STEP 6

Determining if a POC Should have a Local Limit

The POTW has now carried all Pollutants Of Concern (POC) through the local limits process. This does not mean that local limits must be developed for all POCs. The requirements are as follows:

REQUIRED LOCAL LIMITS:	Arsenic	Cadmium
	Chromium (total or III)	Chromium (VI)
	Copper	Lead
	Mercury	Molybdenum
	Nickel	Selenium
	Silver	Zinc

Any contaminant that is present at 0.01 mg/l or greater (above method detection limit if MDL is >0.01 mg/l) and has a BCF of 300 or greater.

Any POCs that meet the criteria in Section IV, When to Revise Local Limits.

Development of local limits for the pollutants specified above makes greatest use of the resources allocated for the sampling and analysis during the local limits study. Because pretreatment programs are only required to include local limits expected to be present in significant industrial user permits the development and adoption of all local limits provides the POTW with the maximum flexibility and only seems to make sense. There is no identified reason that the POTW should not adopt a local limit once it has expended the resources to develop that limit.

It takes resources to carry a pollutant through the sampling, analysis, and data evaluation phase. In addition, it takes resources for the Approval Authority to review, public notice and approve the local limits. Where a POTW desires to make an argument for not adopting a particular pollutant now that the POTW has expended significant resources, EPA as the Approval Authority will require that the Signatory Official provide a written statement recognizing that where a POTW fails to adopt local limits and later needs to develop a limit, the POTW will be required to redo its entire local limits study for that pollutant.

Should the POTW then need the limit at a later time, the time required to collect and analyze the data, as well as, get approval for the new local limit, an industrial user may be delayed in its attempts to discharge to the POTW until such limits are in-place.

STEP 7

Establishing Local Limits

There are two significant activities at this point: The first is identifying the daily or daily and monthly local limits to be set for the SIUs and the commercial dischargers; and secondly, whether to set the local limits as mass-based or uniform concentration, or both.

The allocation of maximum allowable industrial loadings (MAILs) and maximum allowable commercial loadings (MACL's) is a local decision. However, the procedure by which this will be accomplished needs to ensure that the maximum allowable **headworks** loadings (MAHLs) will not be exceeded at any time. Therefore, a clear description of these procedures will need to be submitted with your local limit development package.

The Approval Authority must only ensure that the industrial limits are based on a technical rationale and protect against Pass Through and Interference and the specific prohibitions listed in 40 CFR Section 403.5 **are protected.**

Legal Authority Language

Below are a few examples of how the local limits may look in the legal authority.

Example 1: Mass-Based Limits

Pollutant	Daily Maximum SIU Loading (lbs/day)*	Monthly Average SIU Loading (lbs/day)*	Daily Maximum Commercial Loading (lbs/day)*	Monthly Average Commercial Loading (lbs/day)*
Arsenic				
Cadmium				
Total Chromium				
Chromium (III)				
Chromium (VI)				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Silver				
Zinc				

* The Loading specified above is the total loading for each pollutant that is available to the non-domestic dischargers listed above. The City shall not allocate more pollutant loading through control mechanisms than is available for discharge as specified above.

The POTW must apply the mass based local limits in the SIU permits as a loading (lbs/day) and flow measurement. The flow measurement is required in the permit because the SIU will need the data to calculated the loading from it's analytical data. The SIU would take it's lab data in mg/l and calculate the mass:

lab analysis (mg/L) x flow (MGD) x 8.34 = Daily Load (lbs/day)

This daily load would be compared to the permit specified mass limit.

Alternatively, the POTW may apply the loading as a concentration-based limit in the permit:

permitted load (lbs/day) / flow(mgd) / 8.34 = concentration-based local limit (mg/l)

. This also requires that flow monitoring be performed and reported. A mass based limit that is converted to a concentration based limit is based upon a specified flow. The SIU must be limited on flow when the POTW is allocating mass and converting that mass to a concentration based limit.

Example 2: Uniform Concentration Based Limits (See Mercury for what has typically been submitted by POTWs. A uniform concentration limit may be adopted).

Pollutant	Daily Maximum for SIU (mg/l)	Monthly Average for SIUs (mg/l)	Daily Maximum Commercial Loading (lbs/day)*	Monthly Average Commercial Loading (lbs/day)*
Arsenic				
Cadmium				
Total Chromium				
Chromium (III)				
Chromium (VI)				
Copper				
Lead				
Mercury*	0.02 lbs/day	0.12 lbs/day	0.04 lbs/day	0.22 lbs/day
Molybdenum				
Nickel				
Selenium				
Silver				
Zinc				

* The Loading specified above is the total loading for each pollutant that is available to the non-domestic dischargers listed above. The City shall not allocate more pollutant loading through control mechanisms than is available for discharge as specified above.

Adoption of Local Limits

There are two methods by which pollutant local limits are set: adoption of mass loadings and/or uniform concentration limits. Based upon the submittals over the last 8 years, these are the two that are easiest to implement, track and enforce.

Adoption of mass-loadings: This is probably the preferred method, but is done much less frequently for SIUs. Most POTWs find that uniform allocation is easiest to manage. However, POTWs should evaluate whether uniform allocation is appropriate for mercury. The POTW should use the mass method when adopting limits for commercial users (MACL). There is no requirement that industrial users be given the total available industrial loadings. When non-uniform methods of allocation are used, e.g. mass-based or IU specific, the POTW must adopt the maximum allowable industrial loading (e.g. lbs/day) for each pollutant of concern into its ordinance.

There are instances where pollutants will be identified in the future (e.g. endocrine disruptors, nonylphenols, radionuclides, etc.). Some of these pollutants may be more appropriately implemented as a permit specific limit rather than a local limit. There are very specific requirements when using permit specific requirements, so please contact your Approval Authority if this ever becomes an issue.

Adoption of uniform concentration: This has been the preferred form of local limit for most POTWs. The ease of application has been most important. The downside is that there is no flexibility in applying the limit. When a POTW allocates pollutants on a uniform concentration basis, the ordinance will contain listed concentrations for each pollutant of concern.

Adoption of Daily and Monthly Limits

The adoption of a monthly average local limit does not relieve a facility from establishing a daily maximum local limit for the same pollutant. After a monthly average limitation is established based on sludge criteria it is necessary to establish a daily maximum limitation. The spreadsheet calculated this for you.

Data Handling and Significant Figures

The term "significant figure" is used, sometimes loosely, to describe a judgment of the reportable digits in the final local limits value. Poor judgment may result in the loss of meaningful accuracy in the number being used, or that meaningless digits are reported. Proper use of significant figures gives an indication of the reliability of the analytical method being used or the accuracy of a local limit. In some cases, local limits submittals have given numbers that are very precise (e.g. a cadmium local limit of 0.25678 mg/l, when the evaluation of significant figures would indicate the proper local limits should be 0.257 mg/l. In addition, some submittals have be given as 2.3000 mg/l, whereas, the correct precise value may be 2.30 mg/l. The unnecessary us of 0's can result in a number that is not supported. Here are a few rules that are generally applied to determining significant figures:

1. Final zeros after a decimal point are always intended to be significant: 1.200 mg/l this number indicates that the permittee must achieve compliance to the nearest thousandths of a mg/l.

2. Rounding: If the figure <u>following those to be retained</u> is less than 5, the figure is dropped, and the retained figures are kept unchanged (e.g. 11.443 is rounded to 11.44).

3. Rounding: If the figure <u>following those to be retained</u> is greater than 5, the figure is dropped, and the last retained figure is raised by one. (e.g. 11.446 is rounded to 11.45).

4. Rounding: If the figure <u>following those to be retained</u> is 5, and if there are no figures other than zeros beyond the five, the figure 5 is dropped and the last-place figure is retained is increased by one if it is an odd number (e.g. 11.435 is rounded to 11.44) or it is kept unchanged if an even number (e.g. 11.425 is rounded to 11.42).

5. Rounding off arithmetic operations: When a series of numbers is added, the sum should be rounded off to the same number of decimal places as the addend with the smallest number of places. Only round after the addition has occurred. In addition, only use data that was generated using an appropriate MDL (do not use a number that generated a MDL that was not approved for the method and results in fewer significant figures by the mere fact that the MDL was not sensitive as required).

$$\begin{array}{r} 11.1 \\ 11.12 \\ \underline{+11.15} \\ 33.37 \end{array}$$ should be rounded to 33.4

For subtraction, multiplication, division, and most statistical operations the same concept is used (e.g. use the actual numbers and do not round until after the operation has been completed).

This information was summarized from: EPA Handbook for Analytical Quality Control in Water and Wastewater Laboratories. March 1979. EPA-600/4-79-019.

STEP 8

Preliminary Submittal Package

The POTW shall submit an initial local limits package to the Approval Authority (where EPA is the Approval Authority, otherwise contact the state).

The following information must be submitted with the local limits modification request regardless of which allocation procedure is used.

- A description of the allocation method employed;

For non-uniform methods of allocation (includes mass allocation situations, where certain industrial flows may not be included for a pollutant in the calculations, etc:), the POTW must include

- a listing of each industrial user and the mass of each pollutant of concern that will be allocated to each user.

- A description of the tracking/methodology to be used to demonstrate that maximum allowable industrial loadings are not exceeded.

This information will be public noticed with the ordinance submittal and will become part of the approved program upon approval by EPA or the State as appropriate.

Local Limits Approval Request Package

The POTW must submit to the Approval Authority sufficient information to allow a determination of the adequacy of data collection and analysis. At a minimum, the following information must be submitted:

1. A simple (1 page) schematic showing the POTW layout including all treatment units, narrative designations of the treatment processes, sampling locations for influent, effluent and sludge.

2. Initial Influent scan and other data used to identify the pollutants of concern.

3. A list of the Pollutants of Concern.

4. A statement that the POTW has all chain of custody information on-file and that the records will be maintained on-file as long as the current local limits are in effect.

5. An explanation must be included concerning why a limit was not developed for

any pollutant of concern.

6. An explanation must be included of any decisions made that may deviate from this Strategy.

7. Supply an explanation for all abbreviations used on data sheets and in calculations if these abbreviations are not those listed in this document.

8. The calculated local limits and spreadsheet.

9. The items listed above must be submitted to the Approval Authority (i.e. EPA or NPDES delegated State) by the authorized signatory official for the POTW.

10. An attorney statement.

11. Other data as requested by the Approval Authority.

V. QUESTIONS AND ANSWERS

Q: Do I have to establish a local limit for the commercial sector for every pollutant?

A: Not necessarily. The intent of the commercial MACL is to provide the POTW with an alternative to converting commercial users to SIUs to local limits can be applied. EPA believes that when an MACL is established, the POTW then has the flexibility to apply a portion of the MACL to specific dischargers (e.g. dentists, photo finishers, etc) without having to meet the specific requirements that SIUs are required to meet. This allows the more flexible use of BMPs to control discharges. In addition, where POTWs see the immediate need to revise local limits because of a pending enforcement action or actual impact to the POTW or discharge from the POTW, EPA may be unable to process and approve changes in the timeframe desired by the POTW. It is unclear as to why the POTW would choose not to adopt a MACL when it is developing local limits. Since it only has to apply limits as needed, there is no identified downside to doing so. In addition, where a POTW does not adopt these MACLs when the local limits evaluations occur, it is likely that EPA will require substantially more sampling data to be generated to support a future request.

Q: Once I establish a local limit, will I ever be able to drop it?

A: Where local limits were developed based upon protection of Water Quality Standards, NPDES permit limits or biosolids, there would be little advantage to dropping the local limit. Local Limits are applied as needed. The rationale for dropping a limit that may be needed is not clear. However, many POTWs have developed local limits for organic pollutants that were identified in their discharge or they had otherwise adopted many TTOs. In these cases, the POTWs have often opted to discontinue the local limit. The advantage that the pretreatment program has, is that local limits can be adjusted up or down depending on local conditions. Backsliding or antidegradation does not apply to the limits, only to the receiving water the POTW discharge into.

Q: Do local limits have to be developed individually for multiple treatment works? Is it necessary that identical numeric local limits be established?

A: Although there is no regulatory requirement that a Control Authority (CA) develop local limits that are specific to a single treatment works, it is recommended that the CA perform a separate evaluation for each works to determine if each plant is being protective and not subject to pass through or interference problems. After completing these independent evaluations, the CA can determine whether individual local limits should be provided to the IUs that discharge into the parts of the system served by a particular treatment works. The only regulatory requirement is that there be local limits developed that are enforceable on a technical basis. The preferred method is to establish MAILs individually for the treatment plants, but if that is politically infeasible, then set a single, conservative local limit (i.e., the lowest limit developed in the assessment for the individual treatment works) for a POC. The limit should then apply to all IUs that discharge to the POTW, without regard as to which works actually treats the wastewater discharged by a particular IU.

Q: Can BMPs and BPJ limits be applied in lieu of the traditionally derived numeric local limits?

A: The General Pretreatment Regulations do not specifically address the use of best management practices (BMPs) and best professional judgment (BPJ) as local limits. EPA Region 8 recognizes that BMPs and BPJ limits are useful and effective at controlling pollutants in discharges from many types of indirect dischargers. The bottom line is that Region 8 has approved the use of BMPs and BPJ limits where the POTW specifically tracks the effectiveness of such limits and the BMPs and BPJ limits are enforceable.

Q: If a pollutant is below the detection level in influent, effluent, and sludge, can a POTW exclude it as a POC (and not develop a MAHL), even if it is one of EPA Region 8's POCs?

A: Maybe, on a case-by-case basis. EPA Region 8 has established a process for developing local limits. Many local limits are only applied as needed, so not adopting a local limit for a pollutant once all of the sampling has been done and a local limit calculated makes little sense. Remember, local limits are only applied as needed. Why would it be in the POTWs best interest to not have a MAHL developed for each pollutant? Further, because POTWs need to develop a MACL for the non-SIU commercial dischargers, it really requires adoption of a MAIL for SIUs.

There have been instances where a POTW landfills its biosolids or they will remain in a lagoon or they surface dispose. This means that pollutants such as molybdenum do not have a standard which to base a local limit upon. However, EPA Region 8 very strongly recommends that POTWs use the Clean Sludge Land Application standards when developing local limits. Land Application is one of the goals of the pretreatment program.

Where a POTW wants to avoid adopting a local limit for a POC because of its biosolids disposal option, Region 8 will require is a written statement from the NPDES signatory official stating that they recognize that should they need a limit for that pollutant in the future, they recognize that a full resampling program, local limits development process, and use of the most up-to-date local limits strategy will be required for use, independent of any existing NPDES permit requirements. In addition, the POTW shall recognize that EPA will not necessary be able to process the modification request in the same priority as it does with full local limits re-evaluations and other substantial program modifications. This can present a problem should a new SIU move in and desires to discharge with a valid, technically-based permit limit.

Q: Should local limits be developed as dissolved metals, total metals, or both? How does hexavalent chromium relate to total chromium, and which should be used for local limits development?

A: While it may be desirable to develop local limits for both dissolved and total metals, in

reality it is impractical because of cost. City data are almost exclusively in terms of "total" because of NPDES requirements, total metals are what matter to the treatment works, and Categorical Pretreatment Standards are always expressed as total. Although the dissolved form of metals is usually more toxic to aquatic biota, POTWs need to control the total metal entering the treatment works because particulate metal or metal compounds may exert some toxicity or may later be resolubilized. By implementing local limits to control total metal concentrations, a POTW will reduce the chances for pass through and ensure that the quality of the sludge is not degraded. Hexavalent chromium is the more toxic of the two forms of the metal. A POTW should develop local limits for both hexavalent chromium and total chromium.

Q: Are there minimum analytical detection levels that should be achieved when analyzing samples for local limits?

A: When analyzing influent and effluent samples, POTWs must use methods approved under 40 CFR Part 136. These methods establish Method Detection Limits (MDLs) for the various pollutants. The minimum analytical detection limit that is required is determined by the concentration of the criteria that are evaluated. If you have a permit limit where the concentration is very low, the analytical method for analysis would have to have a MDL below this permit limit.

Q: Is it necessary to account for hydraulic detention time through the treatment works when conducting sampling?

A: Treatment works sampling should account for hydraulic detention times within the plant whenever possible. Developing relevant removal efficiencies depends in part on accounting for hydraulic detention times. For some systems, such as lagoon systems, hydraulic detention times may be lengthy (e.g., 21 days).

Q: Do I have to develop a data collection plan for the local limits evaluation?

A: Developing a data collection plan for local limits evaluation is not required by 403 regulations, although EPA Region 8 strongly suggests setting up a plan. The current strategy establishes a planning process checklist in Appendix A

Q: Is sampling and analysis of the receiving stream necessary?

A: Receiving stream data (flow and ambient background concentrations of pollutants) provide key input parameters for headworks loading calculations and the POTW needs to evaluate for pass through based on water quality standards. These data may already be available from sources such as the U.S. Geological Survey, State environmental agencies, and in the POTW's NPDES permit. Therefore, a POTW may not need to conduct sampling and analysis of the receiving stream to gather these values.

Q: Water quality standards have been established for our treatment works' receiving waters, but no water quality-based effluent limitations are included in our permit. Is it

necessary to include the analysis for an allowable headworks loading based on water quality standards in this case?

A: Yes, it is. If a POC concentration measured at the headworks exceeds a MAHL that was set by the headworks loading for a water quality standard, there will be pass through of the pollutant, thereby causing a violation of the water quality standard and (consequently) of the Clean Water Act. In general, POTWs will not have NPDES permit limits for all of the POCs established during the local limits analysis. In such cases, a POTW should base its effluent-quality-based headworks loading on State Water Quality Standards (WQS) or federal Water Quality Criteria (WQC). State environmental agencies have developed WQS that set maximum allowable pollutant levels for their water bodies, specific to the receiving stream reach's designated uses. Even though the POTW's NPDES permit may not contain a numeric effluent limit for a POC, the permit should contain narrative provisions requiring compliance with State WQS and prohibiting the discharge of any toxic pollutants in toxic amounts. A local limit based on a State WQS fulfills the narrative permit requirement specifying "no discharge of toxics in toxic amounts."

Q: How does a POTW develop local limits based on a NPDES WET limit?

A: Nothing in the pretreatment regulations prohibit using Whole Effluent Toxicity (WET) test data as the basis for developing a local limit. WET tests are primarily designed to protect the receiving waters from the aggregate toxic effect of a mixture of pollutants in the effluent. The WET approach is most useful for complex effluents where it may be infeasible to identify and regulate all toxic pollutants in the discharge, or where chemical-specific pollutants are set, but synergistic effects are a problem. However, <u>unless</u> you can identify each compound in the effluent that produces measurable acute or chronic toxicity concentrations, WET testing should not be used to set local limits for a particular POC. If the toxic pollutant or pollutant parameter cannot be identified, then all of the possible POCs present in the mixture have to be evaluated. In this situation, WET test data may not be a cost-effective methodology for identifying POCs for evaluation in the local limits development process. You should consult the guidance Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants (EPA/833-B-99-002, August 1999) for further information on conducting a Toxicity Identification Evaluation (TIE).

Q: Influent and effluent pollutant concentrations are below detectable levels yet the pollutant is detected in the sludge. What removal rate should I use?

A: A POTW should first evaluate those levels below the detection limit as outlined in the Stategy. If the methodologies do not allow the calculation of a removal rate, a POTW can selectively use removal efficiencies reported by other POTWs with similar treatment or by studies that have been published in professional journals or by EPA. The Strategy provides a list of removal efficiency data for priority pollutants gathered from other POTWs literature values.

Q: Why should POTWs use the Table 3 Land Application Part 503 sludge standards when the POTW's sludge is disposed of in a landfill?

A: POTWs should use the Table 3 standards because the Pretreatment Regulations list recycling of sludge as one of the goals of the program. Land application standards help meet this goal and also allow for more sludge disposal options, since the Table 3 standards are the most stringent. Additionally, until a sludge landfill is properly closed and abandoned there is always a potential for the leachate to affect groundwater. In some cases, collected leachate can be trucked (as hauled waste) to a POTW and treated down to non-toxic concentration levels. For this option to be viable, the metals content of the sludge should be limited to concentrations that will not cause potential pass through or interference problems for the POTW. Table 3 sludge standards for land application cover all nine toxic metals, while the landfill sludge standards specify limits only for arsenic, chromium and nickel. Imposing Land Application standards on sludge increases the probability that the leachate can be successfully treated in the future at a POTW. Nevertheless, if a POTW has a choice of disposal options, EPA recommends that it use land application disposal techniques because they are generally more controllable and have less potential for serious environmental degradation of surface water and ground water.

Q: What do I do when my total domestic/background loading of a pollutant is equal to or greater than my MAHL, so I have no allowable loading for IUs?

A: The POTW should undertake a program that involves short-term, intermediate, and long-term measures. Short-term measures include evaluating the data and calculations used to develop the local limits to assess the validity of results. Intermediate measures include establishing interim local limits, looking into other possible sources of pollutants (including expansion of your list of IUs), and determining how to manage these sources. Long-term measures involve evaluating controls for users not already covered by your pretreatment program. The adoption of an MACL is specifically designed to allow the POTW to effectively control discharges from non-SIU dischargers. Examples of activities for each of the steps are:

Short-term

Ensure that all significant industrial and commercial dischargers of the pollutants have been identified.

Use actual sewer trunk line monitoring data in place of any literature data used in determining total domestic pollutant loadings to the POTW.

Use removal efficiencies based on in-plant monitoring in place of any literature removal efficiencies used in determining MAHLs.

Verify the applicability of criteria (e.g., sludge disposal standards, water quality criteria) used as the basis for AHL calculations.

Verify that appropriate sampling locations have been used, and that samples are representative (i.e., do not reflect peak loading periods only).

Check the accuracy of all calculations made and the reliability of data used.

Evaluate how non-detect monitoring results were handled (e.g., equal to the detection level was used) and consider using other conventions (e.g., half the detection level).

Intermediate

Collect additional sampling data to refine values used (e.g., for removal efficiencies) or replace literature values.

If hauled waste is being accepted, consider discontinuing this practice or make sure that this loading is accounted for and controlled.

If chemicals are added in the plant or sewer system (e.g., to control root growth), consider alternatives which may not affect the pollutants with loadings of concern.

Long-term

Require industries and commercial businesses to perform pollutant minimization/prevention evaluations.

Consider implementing measures to address or regulate elevated loadings from non-industrial sources. These non-industrial sources include nonpoint sources (e.g., runoff) discharging to combined sewers, elevated pollutant levels in water supplies, household disposal of chemicals into sanitary sewers, and toxic pollutant discharges from commercial sources (e.g., photo labs or dry cleaners).

Pollution prevention/minimization programs can address each of these sources. Nonpoint sources of pollutants may be addressed through combined sewer overflow control programs and urban and agricultural chemical management programs. The POTW may be able to reduce elevated pollutant levels in water supplies by working with the local water department. For example, elevated levels of metals in water supplies often arise from leaching in water distribution pipes. The local water department may be able to reduce leaching by adjusting the pH of the water supply. In this case, the POTW may be able to assist the water company in developing a program to optimize the use of chemical additives in lieu of making simply adjustments to the pH by using acidic or caustic chemical agents. The POTW can make efforts to educate the public about how to properly dispose of household chemicals and to provide chemical and used-oil recovery facilities. Each of these efforts is not directly part of the local limits process.

Q: Can my State or EPA take enforcement action against IUs in my jurisdiction for violations of local limits?

A: All local limits developed in accordance with the provisions stated in 40 CFR 403.5(c) are deemed to be Pretreatment Standards for the purposes of section 307(d) of the CWA, and therefore EPA or the State Approval Authority may take enforcement action against any industrial user for a violation of a local limit. The CWA also provides that

affected third parties may bring “citizen suits” against users for violations of these local limits.

Q: How can a POTW justify imposing stringent local limits on IUs when the POTW is not subject to an NPDES permit limit or sludge standards for the same pollutant?

A: If a POTW believes that one or more POCs may cause or have the potential to cause damage to the system infrastructure (i.e., corrosion, erosion, disruption of plant treatment efficiencies), affect worker safety & health, or negatively impact water quality, it can impose local limit for these POCs. The use of site-specific data (rather than less precise“literature” data) for local limits calculations will always produce better, more technically defensible limits. In addition, POTWs have the ability to establish land application of its sludge as the goal of its pretreatment program and impose sludge land application, as opposed to sludge surface disposal, criteria.

Q: Is it possible to develop local limits for a wastewater treatment lagoon where sludge is dredged only every 20 years?

A: The POTW can always develop local limits based on water quality. A lagoon system would not be significantly different than any other type of system in that respect. For sludge, the POTW should ensure that the sludge, when dredged, will meet the standards for its chosen sludge disposal option by establishing local limits protective of that option.

Q: If I have CIUs that have specific, numeric categorical pretreatment standards, is it necessary for me to apply local limits to these CIUs for these pollutants?

A: Yes, if the local limits are more stringent than the values specified in the categorical standards or if the local limits are for pollutants that are not covered by the categorical standards and are present in the discharge.

Q: Can local limits evaluation and development be contracted out?

A: EPA believes that the optimum process is for the Control Authority to evaluate and develop the appropriate local limits because it provides the Control Authority with a better understanding of limit development and the importance of compliance. However, recognizing the fact that some Control Authorities may be severely constrained by an overextended workforce, or require access to technical expertise that is not internally available, it may be appropriate for the CA to secure the necessary manpower and expertise through an outside consultant or engineering firm. However, the CA should be

aware that any mistakes or improper determinations would be its legal responsibility if the Approval Authority, an IU, or any outside party challenges the POTW on the assignment of the limits.

V. Abbreviations and Definitions

ABBREVIATIONS			
Ag	Silver	As	Arsenic
Cd	Cadmium	Cr (tot)	Chromium (total)
Cr (III)	Chromium - trivalent	Cr (VI)	Chromium - hexavalent
Cu	Copper	Hg	Mercury
Mo	Molybdenum	Ni	Nickel
Pb	Lead	Se	Selenium
Zn	Zinc	VOC	Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons		
BTEX	The sum of Benzene, Toluene, Ethylbenzene, Xylene		
Avg	Average	Dry Wt.	Dry Weight
Lbs/Day	pounds per day	MGD	Million Gallons per Day
BCF	Bioconcentration Factor	MCL	Maximum Contaminant Level for Drinking Water
MDL	Method Detection Limit	mg/Kg	milligrams per Kilogram
mg/l	milligrams per liter		
MAHL	Maximum Allowable Headworks Load (lbs/day)		
MAIL	Maximum Allowable Industrial Load (lbs/day)		
MACL	Maximum Allowable Commercial Loading (lbs/day)		
La	Maximum headworks loading for Water Quality acute	Lad	Maximum headworks loading for Anaerobic Digestion
Las	Maximum headworks loading for Activated sludge	Lc	Maximum loading for Water Quality chronic
Ln	Maximum headworks loading for NPDES permit	Lsd	Maximum headworks loading for Sludge disposal
Q	Flow	REM EFF	Removal Efficiency
POTW	Publicly Owned Treatment Works		
SIU	Significant Industrial User	WWTP	Wastewater Treatment Plant
Stream A-1E3	One-day average once-in-three year low flow-acute	Stream C-30E3	30-day average once-in-three year low flow-chronic

ADRE	Average daily removal efficiency
AHL	Allowable headworks loading
BDL	Below Detection Limits
BOD	Biochemical Oxygen Demand
BOD_5	5-day Biochemical Oxygen Demand
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	United States Environmental Protection Agency
FOG	Fats, oils, and greases
IU	Industrial User
I&I	Inflow and Infiltration
LEL	Lower Explosive Limit
MAHL	Maximum Allowable Headworks Loading
MAIL	Maximum Allowable Industrial Loading
MCL	Maximum Contaminant Level
MDL	Method detection limit
MGD	Million gallons per day
MLE	Maximum likelihood estimation
MRE	Mean removal efficiency
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
POC	Pollutant of Concern
POTW	Publicly Owned Treatment Works
PS	Percent solids
RCRA	Resource Conservation and Recovery Act
ROS	Regression order statistic
SA	Site area
SIU	Significant Industrial User
SL	Site life
SUO	Sewer Use Ordinance
TCLP	Toxicity Characteristic Leaching Procedure
TRE	Toxics Reduction Evaluation
TSS	Total suspended solids
TTO	Total Toxic Organics
VOC	Volatile Organic Compound
WET	Whole Effluent Toxicity
WQC	Water Quality Criteria
WQS	Water Quality Standards

Definitions

5-day Biochemical Oxygen Demand (BOD_5): The biochemical oxygen demand of wastewater during decomposition occurring over a 5-day period. Also, a measure of the organic content of wastewater.

Allowable Headworks Loading (AHL): The maximum quantity of a pollutant (the pollutant "loading") which will not cause a POTW to violate a treatment plant or environmental criterion developed to prevent process inhibition or interference, or to violate effluent, sewage sludge, or air quality standards.

Approval Authority: The Director in an NPDES State with an approved State pretreatment program and the appropriate EPA Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program (40 CFR 403.3).

Best Management Practices: Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of water of the U.S. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Blank (Bottle): Is an aliquot of analyte-free water which is taken through the appropriate steps of the analytic process as a means of determining if the sampling container is introducing contamination into the sample. For aqueous samples, reagent water is used as a blank matrix.

Blank (Equipment): Is an aliquot of analyte-free water which is taken to and opened in the field. The contents of the blank are poured appropriately over or through the sample collection device, collected in a sample container, and returned to the laboratory as a sample to be analyzed. Equipment blanks are a check on the sampling device cleanliness.

Blank (Field): Is an aliquot of analyte-free water or solvent brought to the field in sealed containers and opened in the field to verify the sampling atmosphere cleanliness. Samples are transported back to the laboratory with the other sample containers and analyzed along with the actual field samples.

Blank (Method): Is an aliquot of analyte-free water prepared in the laboratory and analyzed by the analytical method used for field samples. Method blanks are used to test for the cleanliness of reagents, instruments, and the laboratory environment.

Blank (Sample Preservation): Is an aliquot of analyte-free water (usually distilled water) to which a known quantity of preservative is added. This type of sample is a means f determining the level of contamination of acid and chemical preservatives after a period of use in the field.

Chain-of-Custody: A legal record (which may be a series of records) of each person who had possession of an environmental sample, from the person who collected the sample to the person who analyzed the sample in the laboratory and to the person who witnessed the disposal of the sample.

Clean Water Act (CWA): The primary federal law that protects our nation's waters, including lakes, rivers, aquifers and coastal areas. It provides for the establishment of a comprehensive program that includes standards, technical tools, and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction.

Code of Federal Regulations (CFR): A codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the Federal Government. The CFR is divided into 50 titles, which represent broad areas subject to federal regulation. Each title is divided into chapters, which usually bear the name of the issuing agency. Each chapter is further subdivided into parts covering specific regulatory areas. Large parts may be subdivided into subparts. All parts are organized in sections, and most citations to the CFR are provided at the section level.

Combined Wastestream Formula (CWF): A procedure under EPA's pretreatment regulations for calculating alternative discharge limits at industrial facilities where a regulated wastestream from a categorical industrial user is combined with other wastestreams prior to treatment.

Composite Sample: A composite sample is a collection of individual grab samples obtained at regular intervals, either based on time intervals or flow intervals (e.g. every two hours during the sampling day or every 1000 gallons of wastewater discharged). The aggregate sample will reflect the average wastewater pollutant quality over the compositing sample period. In time composite sampling the samples are collected after equal time intervals over a specific period (e.g. 24 hours). The samples can be individual grab samples collected at equally spaced intervals over a specific period or successive samples collected at equal intervals over a period of time by an automated sampler set in the time proportional mode. Flow composite sampling can be produced in one of two ways. The first method of obtaining a flow composite sample is to collect equal volume individual grab samples after a specific volume of flow passes the monitoring point. The second manner of obtaining flow composite sample is to vary the volume of the aliquot collected in proportion to the amount of flow that passed over the time interval which the sampling represents. Composite samples are designed to be representative of the effluent conditions by reflecting the average conditions during the entire sampling period.

Concentration-based limit: A limit based upon the relative strength of a pollutant in a wastestream, usually expressed in mg/l.

Conservative pollutant: A pollutant found in wastewater that is not metabolized while passing through the treatment processes in a conventional wastewater treatment plant. Therefore, a mass balance can be constructed to account for the distribution of the conservative pollutant. Metals are examples of conservative pollutants.

Conventional Pollutants: Pollutants typical of municipal sewage, and for which municipal secondary treatment plants are typically designed; defined at 401.16 as BOD, TSS, fecal coliform, oil and grease, and pH.

Control Authority: As defined in 40 CFR 403.12, the POTW if the POTW's submission for its pretreatment program (40 CFR 403.3(t)1)) has been approved in accordance with the requirements of 40 CFR 403.11; or (2) the Approval Authority if the Submission has not been approved.

Conservative Pollutants: Pollutants which are presumed not to be destroyed, biodegraded, chemically transformed, or volatilized within the POTW. Conservative pollutants introduced to a POTW ultimately exit the POTW solely through the POTW's effluent and sludge.

Daily Maximum Limitations: The maximum allowable discharge of pollutants during a 24 hour or operating day period. Where daily maximum limitations are expressed in terms of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

Duplicate Sample (Field): Is a precision check on sampling equipment and sampling technique. At selected stations duplicate samples are collected simultaneously at the same location from two sets of field equipment installed at the site, or duplicate grab samples are collected simultaneously at the same location.

Flashpoint: The lowest temperature at which vapor combustion will propagate away from its source of ignition.

Grab sample: A sample which is taken from a wastestream on a one-time basis with no regard to the flow of the wastestream and without consideration of time. The time it takes to collect this sample shall not exceed 15 minutes.

Headworks: The point at which wastewater enters a wastewater treatment plant. The headworks may consist of bar screens, comminutors, a wet well and pumps.

Industrial User (IU) or Indirect Discharger: An industrial or commercial facility that discharges non-domestic wastewater into sanitary sewers for treatment by a public owned treatment works (POTW).

Inflow and Infiltration (I&I): Infiltration is the seepage of groundwater into a sewer system, including service connections. Seepage frequently occurs through defective or cracked pipes, pipe joints, connections or manhole walls. Inflow is the water discharged into a sewer system and service connections from sources other than regular connections. This includes flow from yard drains, foundation drains and around manhole covers. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak in the sewer itself.

Inhibition Concentration: Estimate of the toxicant concentration that would cause a give percent reduction (e.g. IC25) in a non-lethal biological measurement of the test organisms, such as reproduction and growth.

Instantaneous Maximum Discharge Limit: The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of a grab sample collected at the industrial user.

Interference: EPA uses the term "interference" in its regulations to describe a discharge that, alone or with discharges from other sources, inhibits or disrupts a publicly owned treatment works (POTW), its treatment processes and operations, or its sludge processes, use, or disposal and therefore causes a violation of the POTW's NPDES permit, and increases the magnitude or duration of such a violation.

Local Limits: Established under 40 CFR Section 403.5. Conditional discharge limits imposed by municipalities upon industrial and commercial businesses that discharge to the POTW (i.e. sanitary sewerage system).

Lower Explosive Limit (LEL): The minimum concentration in air at which a gas or vapor will explode or burn in the presence of an ignition source.

Maximum Contaminant Level (MCL): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are an enforceable standard.

Maximum Allowable Commercial Loading (MACL): The total daily mass of a particular pollutant that a POTW can accept from all commercial users and ensure the POTW is protecting against pass through and interference.

Maximum Allowable Industrial Loading (MAIL): The total daily mass of a particular pollutant that a POTW can accept from all permitted industrial users and ensure the POTW is protecting against pass through and interference.

Maximum Allowable Headworks Loading (MAHL): Upper limit of pollutant loading at which a POTW will not violate any treatment plant or environmental criteria developed to prevent process inhibition or interference, or violation of effluent, sludge, or air quality standards.

Method Detection Limit (MDL): The minimum concentration of an analyte (pollutant) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure set forth in 40 CFR Part 136, Appendix B.

Monthly Average: The arithmetic average value of all samples taken in a calendar month for an individual pollutant parameter. The monthly average may be the average of all grab samples taken in a given calendar month, or the average of all composite samples taken in a given calendar month.

National Pollutant Discharge Elimination System (NPDES): The Clean Water Act prohibits the discharge of a pollutant except in compliance with the permitting system established the Act. Thus, the discharge of pollutants into the waters of the United States is prohibited unless a special NPDES permit is issued by EPA, a state, or, where delegated, a Native American tribal government.

Nonconventional pollutants: All pollutants that are not included in the list of conventional or toxic pollutants in 40 CFR Part 401. Includes pollutants such as chemical oxygen demand (COD), total organic carbon (TOC), nitrogen and phosphorus.

Non-conservative Pollutants: Pollutants that are mitigated by natural biodegradation or other environmental decay or removal processes in the receiving stream or POTW after mixing and dilution have occurred.

Pass Through. EPA uses the term "pass through" in its regulations to describe a discharge that enters the waters of the United States from a publicly owned treatment works (POTW) in quantities or concentrations that, alone or with discharges from other sources, either causes a violation of any requirement of the POTW's NPDES permit, or increases the magnitude or duration of a violation of the POTW's NPDES permit.

Pollutant: Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged to water.

Pollutant of Concern (POC): Any pollutant that might reasonably be expected to be discharged to the POTW in sufficient amounts to pass through or interfere with the works, contaminate its sludge, cause problems in its collection system, or jeopardize its worker's health and/or safety and that must be considered in the local limits development process beyond the initial sampling event.

Priority Pollutant: Pollutant listed by the Administrator of EPA under Clean Water Act Section 307(a). There are 65 classes of pollutants and 126 individual pollutants identified and can be found in 40 CFR Part 423, Appendix A.

Publicly Owned Treatment Works (POTW): A waste-treatment works owned by a state, unit of local government, or Indian tribe, usually designated to treat domestic wastewater.

Receiving Water: A stream, lake, river, ocean, or other surface or groundwater into which treated or untreated wastewater is discharged.

Representative Sample: A sample from a wastestream that is as nearly identical as possible in composition to that in the larger volume of wastewater being discharged and typical of the discharge from the facility on a normal operating day.

Resource Conservation and Recovery Act (RCRA). Passed by Congress in 1976, RCRA gave EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites (see CERCLA). The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that required phasing out land disposal of hazardous waste. Some of the other mandates of this strict law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

Sewer Use Ordinance (SUO). A legal mechanism implemented by a local government entity which sets out, among others, requirements for the discharge of pollutants into a POTW.

Significant Industrial User (SIU). All users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, non-contact cooling and boiler blowdown wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Spiked Sample (Field): A sample of a known amount of a particular pollutant constituent prepared in the field by adding a known amount of the analyte in question during sampling. This technique identifies potential sample matrix interference and/or problems with inadequate sample preservation.

Spiked Sample (Laboratory): A sample of a known amount of a particular pollutant constituent prepared in the laboratory by adding a known amount of the pollutant in question at a concentration where the accuracy of the test method is satisfactory. Spiked samples check on the accuracy of the analytical procedure.

Split Sample: A sample which is collected and divided into the necessary number of portions for analysis. Equally representative samples must be obtained in the process. The split samples are then analyzed by separate laboratories (or the same lab) preferably using the same analytical techniques.

Total Suspended Solids (TSS): A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids."

Toxicity Characteristic Leaching Procedure (TCLP): A laboratory procedure designed to predict whether a particular waste is likely to leach chemicals into groundwater at dangerous levels.

Toxic Pollutant (40 CFR 122 Appendix D): Pollutants or combinations of pollutants, including disease causing agents, which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, (including malfunctions in reproduction), or physical deformations, in such organisms or their offspring. Toxic pollutant includes those listed as toxic under Section 307(a)(1) of the Clean Water Act or in the case of sludge use and disposal practices, any pollutant identified in regulations implementing Section 405(d) of the Clean Water Act.

Volatile Organic Compound (VOC): Any organic compound that participates in atmospheric photochemical reactions except those designated by EPA as having negligible photochemical reactivity.

Water Quality Criteria: Comprised of both numerical and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or states for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal.

Water Quality Standard: A statute or regulation that consists of the beneficial designated use or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular waterbody and an antidegradation statement.

Whole Effluent Toxicity (WET) Tests: Whole effluent toxicity is the aggregate toxic effect of an effluent measured directly by an aquatic toxicity test. Aquatic toxicity methods designed specifically for measure WET have been codified in 40 CFR 136. WET test methods employ a suite of standardized freshwater, marine, and estuarine plants, invertebrates, and vertebrates to estimate acute and short-term chronic toxicity of effluents and receiving waters.