Local Limits

The National Pretreatment Program as implemented under the Clean Water Act (CWA) and General Pretreatment Regulations [40 CFR Part 403], and as delegated to the State of Florida, is designed to control the discharge of nondomestic wastes to WWFs. The objectives of the Program are to prevent pass through and interference, to protect the receiving waters, and to improve opportunities for the reuse and reclamation of municipal and industrial wastewaters and sludges. To accomplish these objectives, the Program relies on three different types of discharge standards: categorical pretreatment standards, general and specific prohibitions, and local limits. Some of the underlying concepts of each of these types of discharge standards are highlighted below:

<u>Categorical pretreatment standards</u>

- Developed and established at the Federal level
- Found in 40 CFR Parts 405-471
- Apply to specific industrial categories
- Based on best available treatment technology, as well as pollutant protective measures

<u>General and specific prohibitions</u>

- Established at the Federal level
- Found in paragraph 62-625.400(1)(a) and (2)(a-h), F.A.C. [and 40 CFR 403.5(a)(1) & (b)(1-8)]
- Apply to all discharges to WWFs
- Provide generally for protection of WWFs

<u>Local limits including Best Management Practices (BMPs)</u>

- Developed and established by Control Authorities
- Requirements for development are found in subsection 62-625.400(3) and paragraph 62-625.500(2)(c), F.A.C. [and 40 CFR 403.5(c) and 403.8(f)(4)]
- Apply to all nondomestic discharges
- Provide site-specific protection for a WWF, including the health and safety of WWF workers.
- Where the Control Authority chooses to adopt BMPs as local limits, appropriate legal authority must be included in the sewer use ordinance. All local limits, including BMPs, must be approved by DEP before implementation.

These standards are complimentary and are not intended to conflict. One of a Control Authority's responsibilities is to identify and implement applicable standards, applying the most stringent requirements where multiple provisions exist (see Chapter 6).

The focus of this chapter is on local limits. As noted above, general and specific prohibitions apply to all non-domestic discharges and regulated pollutants such as heat, pH, oils, and solid or viscous

pollutants that can cause pass-through or interference. Categorical pretreatment standards are discussed in detail in Chapter 6.

Local limits may consist of BMPs and/or numeric limitations for any pollutant, such as metals, cyanide, BOD_5, TSS, oil and grease, and possibly organics developed by a Control Authority to prevent interference, pass through, sludge contamination, and worker health and safety problems from excessive discharge of those pollutants. Numeric local limits are generally expressed as maximum daily limitations.

In general, the evaluation of the need for local limits involves the public utility:

- Conducting an industrial waste survey to identify all IUs that might be subject to the pretreatment program;
- Determining the character and volume of pollutants contributed to the WWF(s) by these IUs;
- Determining additional pollutants of concern (POCs) for the WWF(s). These are pollutants with known environmental criteria (such as limits in the WWF's wastewater discharge permit), other pollutants that are known to be discharged to the WWF(s), and any other pollutants which have a reasonable potential for pass through, interference, sludge contamination, or interfere in the reclamation of treated wastewater;
- Prepare and submit a plan of study to the DEP prior to initiating sampling for local limits;
- Conducting a technical evaluation to determine the maximum allowable treatment plant headworks (influent) loading for all POCs;
- Compare allowable loadings with the actual and potential loadings received at the WWF(s) to determine whether local limits are needed for each POC; and
- Implementing a system to assure these loadings will not be exceeded, taking into account uncontrollable sources (background, domestic, commercial), and industrial contributions.

The local limits submission should include an overview of the WWF(s) for the DEP's review (the DEP checklist for local limits development review is provided as Appendix 4-C) and should include the following:

- The number of WWF treatment plants, their locations, and service area;
- The receiving waters and classification for the WWF's discharge;
- A description of each WWF's plant and processes (and schematic diagram);
- A list of all pollutants of concern;
- Design flow and average daily flow for each WWF;
- Sludge production rate and sludge disposal method(s) for each WWF treatment plant;
- Total industrial user flow;
- Total flows for hauled wastewater discharged to the WWF;
- A list of all significant industrial users (SIUs);

- Indication of whether rainwater infiltration/inflow contributes to the WWF's influent loadings;
- A discussion of the estimated service area growth;
- A discussion of planned facility modifications or additions; and
- Operational problems known or suspected to have been caused by industrial discharges.

This information will also familiarize public utility personnel with the WWF they must protect. Also critical to understanding the WWF is identifying present or potential operational problems as determined from review of past and present operation and maintenance data. Reductions in removal efficiency, degradation of the collection system, emergencies such as sewer blockages, excessive corrosion, unusual odors, explosion hazards, explosions or fires, violation of wastewater discharge permit conditions, water quality degradation or fish kills attributed to the WWF's discharge, and sludge contamination are typical indicators. Careful examination of the operating design and history of the WWF may provide evidence for the cause of problems identified, whether from equipment failures, improper operation and maintenance, or industrial discharges.

Sampling and analysis of the WWF(s) treatment plant influent (including hauled waste), effluent, and sludge, along with non-industrial sources discharging to the collection system will be necessary to quantify the extent of pollutant pass through, interference, inhibition, and sludge contamination, and to provide a basis for establishing local industrial discharge limitations. This sampling program should be designed to obtain quantitative information regarding the concentrations, loads, and fluctuations of specific pollutants (particularly priority pollutants) identified from both the industrial waste survey and to provide an overview of the wastewater characteristics of the WWF(s). Historical data obtained from proper sample collection activities performed as required under the wastewater permit may be used as well. Where possible, 24-hour sample collection periods should account for hydraulic detention times to obtain a more accurate representation of actual treatment plant removal efficiencies. Additional sampling activities may encompass SIUs to quantify industrial pollutant loadings;

WWF treatment plant processes may also be sampled to determine, using mass balance calculations, the fate of the specific pollutants within the treatment plant, and to determine the areas within the system that are most heavily affected by the pollutants in question.

In accordance with paragraph 62-625.500(2)(c), F.A.C., and to minimize the time and funds spent on sampling and analysis for the Control Authority, a plan of study is required for submittal to the DEP prior to initiating sampling. The plan of study will outline how the Control Authority will collect and analyze samples to determine the appropriate local limits for their program. A detailed local limits plan of study summary is presented in Appendix 4-A. At a minimum, the sampling plan should include the following:

A description of the steps necessary to identify discharges, pollutants of concern and flow conditions, which may cause or contribute to pass through or interference with the operation of the WWF. The description should include a list of the documents that will be reviewed (e.g., best management practices, effluent discharge standards, reuse guidelines, requirements for land application of residuals,

facility monitoring data, industrial waste survey).

- Identification of sampling locations (e.g. influent, effluent, sludge, and non-industrial uncontrollable domestic/commercial/background)
- Parameters to be sampled for at each sampling location.
- Sample type for each parameter (grab, composite, time-proportional, flow proportional). Parameters requiring grab sampling techniques are pH, Cyanide, VOCs, Total phenols, oil and grease, TPH, sulfides, and temperature.
- Identification of the laboratory that will perform the analyses and the laboratory's quality assurance procedures.
- Identification of analytical methods required for the analysis of each parameter including the required method detection limit.
- Date and number of samples to be collected at each sampling location.
- Designation of WWF 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.
- Proposed schedule and timetable for implementation, including final date for submission of the local limits to the DEP.

If well organized, a plan of study will not be a large document. Much of the information can be presented in tabular form. The DEP checklist for local limits plan of study review is presented in Appendix 4-B.

EPA's *July 2004 Local Limits Development Guidance* (EPA Guidance Manual) provides various methods for calculating local limits. The referenced guidance manual and the associated appendices are available at the following websites:

http://www.epa.gov/npdes/pubs/final_local_limits_guidance.pdf

http://www.epa.gov/npdes/pubs/final_local_limits_appendices.pdf

The predominant approach used by Control Authorities and advocated by the DEP is a chemical-specific approach known as the Maximum Allowable Headworks Loading (MAHL) method, which is sometimes referred to as the Total Allowable Headworks Loading (TAHL) method. This method involves back-calculating from environmental and plant protection criteria to MAHLs. This is accomplished, pollutant

by pollutant, for each environmental criteria or plant requirement. The lowest or most limiting value for each pollutant serves as the basis for allocation to industry and ultimately setting local limits. The following steps generally detail the MAHL local limits development process.

Step 1 - Collect Data for Local Limits Development

A. *Determining Pollutants of Concern*

Control Authorities must consider the full range of priority, conventional and nonconventional pollutants when identifying pollutants of concern (POCs). At a minimum, this evaluation must include all 15 of EPA's POCs which consists of Cd, Cr, Cu, Pb, Ni, Zn, As, CN^-, Ag, Hg, Mo, Se, BOD_5, TSS and ammonia (for WWFs that accept non-domestic sources of ammonia). Data should be collected to identify any toxic POCs which could reasonably be expected to be discharged to the WWF in quantities that could pass through or interfere with the WWF treatment process, contaminate sludge or reclaimed water, jeopardize worker health and safety or the affect the collection system.

At least one priority pollutant scan (for those pollutants identified in 40 CFR Part 122, Appendix D, Tables II and III, with the exception of acrolein and acrylonitrite) should be performed to identify potential POCs in the influent, effluent, and sludge. An analysis for the conventional pollutants identified under 40 CFR Part 401.16 should also be performed. All pollutants identified in any analysis above detection limits should be addressed by developing a local limit for each pollutant or providing an adequate justification for not doing so.

B. *Characterizing Existing Loadings*

IUs
As part of the local limits development process, existing loadings to the treatment plant must be characterized since local limits should be based on site-specific monitoring data. This can be accomplished by conducting monitoring of all IUs. Public utility and IU self-monitoring results are both acceptable data. In addition, information from the public utility's industrial waste survey (Chapter 5) may be useful.

Hauled Waste
If hauled wastes are accepted at the WWF, they may be a significant source of pollutant loadings or flows. In such a case, these discharges should be considered as a significant nondomestic source in the determination of local limits.

Non-industrial Loadings
Loadings from non-industrial (domestic/commercial/background) sources may be characterized by site-specific monitoring of a representative portion of the Control Authority's collection system.

Treatment Plant Monitoring

Sufficient monitoring must be conducted at the WWF treatment plant to characterize influent, effluent, and sludge loadings for its pollutants of concern. A minimum of 7 consecutive days of monitoring of the treatment plant influent and effluent and 2 consecutive days of monitoring of the treatment plant sludge for POCs is recommended for small WWFs [up to 5 million gallons per day (MGD)]. The recommended monitoring period for WWFs above 5 MGD is a minimum of 14 consecutive days of the treatment plan influent and effluent, and 2 days of monitoring of the treatment plant sludge.

C. *Determining Applicable Environmental Criteria*

Environmental criteria generally include wastewater discharge permit limits, water quality standards or criteria, reuse standards or criteria, sludge disposal requirements, and unit process inhibition values. All applicable environmental criteria must be used when developing local limits. Other appropriate requirements may include worker health and safety criteria, collection system effects, incineration emissions requirements or other applicable Federal, State, or local environmental protection requirements.

Another less frequently used environmental criteria is biological toxicity. Where biological toxicity testing indicates a problem, pollutants causing the problem should be isolated and local limits developed to correct the toxicity. This may be performed as part of the Toxicity Reduction Evaluation (TRE) process.

Step 2 - Development of Maximum Allowable Headworks Loadings (MAHLs)

The maximum amount (lbs/day) of each toxic pollutant contributed by an IU or received at the headworks of the treatment plant that will allow the Control Authority to achieve all of the above applicable environmental criteria must be calculated or justification provided of why it was not done. The nonconservative pollutants (volatiles) require special consideration when conducting headworks analysis (e.g., alternative formulas and allocation methods). All calculations should be consistent with the approach outlined in the above referenced EPA's local limits guidance manual.
During this step of the local limits development process, an acceptable mass balance between the actual loadings of pollutants at the headworks and the estimated loadings of pollutants from specific source discharges should be demonstrated. This can be accomplished by calculating the actual loading of each pollutant from influent monitoring data and comparing this value with the sum of the estimated loadings from all individual sources (non-industrial, industrial, hauled waste, etc.).

Step 3 - Determine Maximum Allowable Industrial Loadings (MAIL)

Once the MAHL is calculated, a safety factor must be applied and the value discounted for non-industrial (domestic/commercial/background) loadings in order to determine the maximum allowable allocation available for IUs. A safety factor is incorporated into the calculations to allow for future industrial and residential growth and other discrepancies which may enter into the calculations because of the use of default data or variations in analytical sensitivity. A reasonable safety factor might be a 10-25% reduction in the total allowable industrial loading for a specific pollutant. A sound technical justification for the selected safety factor must be provided by the Control Authority. Selection of a high safety factor does not constitute an appropriate substitute for periodic review and revisions of the MAHL.

To facilitate MAHL and MAIL calculations, a public utility may opt to use the DEP's Local Limits Information Development System (LLIDS) 2001 program, a Microsoft Access-based application which guides a public utility to enter site-specific data and information to determine MAHLs. A copy of LLIDS 2001 is available at the following website:

http://publicfiles.dep.state.fl.us/DWRM/wastewater/LLIDS2001v2.exe

A copy of LLIDS can also be obtained from the DEP Pretreatment Program. The DEP LLIDS user manual is available at the following website:

http://www.dep.state.fl.us/water/wastewater/downloads/LLIDS2001v2_Manual.pdf

(Should these links become out of date, please manually search the Department webpage for the current locations or call the Pretreatment Coordinator for further information at (850) 245-8601.)

Step 4 - Allocating Maximum Allowable Industrial Loading

Once the MAIL is calculated, this loading is allocated depending on the number and types of IUs and the method of application (permits, contracts or sewer use ordinance) employed by the Control Authority. Where the current loading of a pollutant exceeds the MAHL, a local limit must be established to reduce loadings to within the range of the MAHL.

By far, the most common allocation approach is the uniform concentration method, whereby all IUs must meet an identical limit. This provides one set of limits for all non-domestic contributors which makes implementation and enforcement straight forward yet may result in unnecessary pretreatment by IUs since IU contribution demands are not taken into account, e.g., IU “A” does not discharge the pollutant above detection levels yet receives the same limit as IU “B”, who contributes the pollutant as a result of processes employed. Other allocation approaches include:

- IU contributory flow method whereby only those IUs that are contributors of specific pollutants are limited, with the allocation based only on flow from these discharges and not necessarily the demand;
- Mass proportional method whereby the allowable loading is allocated to existing users based on current loadings; and
- Basis of IU needs for discharge loading whereby IUs are allocated a loading based on demonstrated need. The entire MAIL is not necessarily allocated. When this method is employed, special consideration should be made to set aside an appropriate allocation for future increase to the number of IU discharging to the WWF (and related flows) associated with service area growth/development.

Local limits should be reasonable and should be at or above detection limits yet not so lenient as to provide IUs additional opportunity to pollute or encourage hazardous waste to be discharged to the WWF.

Step 5 - Implementation of Local Limits

Once developed, local limits must be effectively implemented. Local limits should be incorporated into local regulations and/or some form of individual control mechanisms. While MAHL is the primary method employed for establishing local limits, other methods of local limits development may be established by public utilities, including:

➢ Collection System Approach. Pollutants which may cause fire and explosion hazards or other worker health and safety concerns are first identified. Pollutants found to be present are evaluated for their propensity to volatilize and are modeled to evaluate their expected concentration in air. Comparisons are made with worker health exposure criteria and lower explosive limits. Where values are of concern, limits may be set or development of management practices may be required to control undesirable discharges. The collection system approach may also consider the prohibition of pollutants with specific flashpoints to prevent discharge of ignitable wastes. Additional information on the development of limits based on collection system concerns can be found in the *Guidance to Protect POTW Workers from Toxic and Reactive Gases and Vapors* (1992).

➢ IU Management Practice Plans. Identified IUs are required to develop management practices as enforceable pretreatment requirements for the handling of chemicals and wastes. Example practice plans include chemical management practices, best management practices, and spill prevention plans. Management practice plans are usually narrative local limits. Where best management practices are proposed by the control authority as local limits, the BMPs will be evaluated using the checklist found in Appendix 4-D.

➢ Case-by-Case Discharge Limits. The establishment of numeric local limits based on Best Professional Judgement (BPJ) and on available technologies which are known to be economically

feasible. This approach is most often used when insufficient data is available to employ other methods described above.

- Local Specific Prohibitions. Narrative standards prohibiting, e.g.:
  - noxious or malodorous liquids, gases, or solids creating a public nuisance
  - wastestreams which impart color and pass through the WWF
  - storm water, roof runoff, swimming pool drainage
  - wastewaters containing radioactive wastes or isotopes
  - removed substances from pretreatment of wastewater.

Step 6 – Periodic Re-evaluation of Local Limits

After the initial development, local limits must be periodically re-evaluated. Many variables on which local limits calculations are based may vary over time. Revisions to the local limits will reflect changes in conditions or assumptions. Conditions that might require that local limits be revised include changes in environmental criteria, availability of additional monitoring data, changes in the collection system including significant changes of the flows from commercial and SIU discharges, or changes in plant processes, capacity, or configuration.

Control Authorities are required to provide a written technical evaluation to verify whether the existing local limits are still protective of the WWF within 180 days of their wastewater discharge permit re-issuance. Further, 40 CFR 403.5(c)(1) and paragraph 62-625.400(3)(a), F.A.C., require Control Authorities to continue to develop and enforce appropriate local limits after developing an approved pretreatment program.

The EPA's *July 2004 Local Limits Development Guidance* provides two approaches to meet the technical evaluation requirement. Control Authorities may perform an abbreviated re-evaluation of existing local limits or a detailed local limits re-evaluation depending on the specific situation of the Control Authority.

If the Control Authority feels that their existing local limits are still protective of their WWF(s), they may choose to perform the existing local limits review and submit an abbreviated submittal for local limits re-evaluation to the DEP. The DEP abbreviated submittal for local limits re-evaluation submission requirements is presented in Appendix 4-E, and the DEP checklist for abbreviated submittal for local limits re-evaluation review is presented in Appendix 4-F. However, the Control Authority should contact the DEP Pretreatment Staff prior to submitting the abbreviated local limits re-evaluation.

The abbreviated re-evaluation of local limits requires the Control Authority to compare their current pollutant headworks loadings with the MAHL for all local limit parameters, along with examining any recent water quality exceedances or permit violations. Control Authorities can consider the abbreviated re-evaluation as an alternative to a detailed local limits re-evaluation when:

1. There have been no major wastewater treatment process changes to the WWF(s);
2. No substantial incidences of past performance problems (pass through, interference, or collection system issues);
3. No new Pollutants of Concern have been identified; and
4. The Control Authority wishes to retain the existing local limits.

In order to perform the abbreviated re-evaluation of local limits the Control Authority must ensure sufficient sampling data for all local limit parameters exists. Additional information on existing local limits review can be found in Chapter 7 of the EPA's *July 2004 Local Limits Development Guidance*.

When the Control Authority has implemented changes to their WWF (e.g., plant expansion, treatment process changes), or review of the WWF's past performance revealed incidences of pass through or interference that can be attributed to industrial discharges, this may be an indication that the existing local limits are not protective of the WWF and the Control Authority should perform a detailed re-evaluation. A detailed local limits re-evaluation involves the Control Authority examining their current wastewater characteristics to determine if existing local limits should be recalculated, reallocated, or if additional local limits should be developed. Once the initial assessment of the effectiveness of existing local limits have been determined, the Control Authority may decide that the data previously used to develop the local limits are no longer representative, in this case, the Control Authority should develop a local limits POS as specified in this Chapter and submit the POS to the DEP prior to initiating sampling. The Control Authority should then follow the local limits development process as discussed in this Chapter.