LOCAL LIMITS:

WHAT IS EXPECTED OF AN APPROVAL AUTHORITY

Chuck Durham
Director of Pretreatment Services
PG Environmental

Margaret Green
Office of Wastewater Management
EPA

RESPONSIBILITY OF AN APPROVAL AUTHORITY

- **Set permit requirements**

40 CFR 403.5(c)(1) - When specific limits must be developed by POTW.

  - Deadlines
  - Interim steps
  - Scope

- **Review headworks analysis**
  - Review interim deliverables
    - E.g. sampling plans, draft analyses
- **Approve & public notice limits**
  - Per 40 CFR 403.5(d) – are pretreatment standards

REGULATORY REQUIREMENTS

REGULATORY REQUIREMENTS

40 CFR 403.8(f)(4)

Local limits. The POTW shall develop local limits as required in § 403.5(c)(1), or demonstrate that they are not necessary.

40 CFR 403.5(c) - When specific limits must be developed by POTW 40 CFR 403.5(d)

Local limits. Where specific prohibitions or limits on pollutants or pollutant parameters are developed by a POTW in accordance with paragraph (c) above, such limits shall be deemed Pretreatment Standards for the purposes of section 307(d) of the Act.

REGULATORY REQUIREMENTS

40 CFR 122.44(J)(2)(II)

POTWS must provide a written technical evaluation of the need to revise local limits following NPDES permit issuance or reissuance.

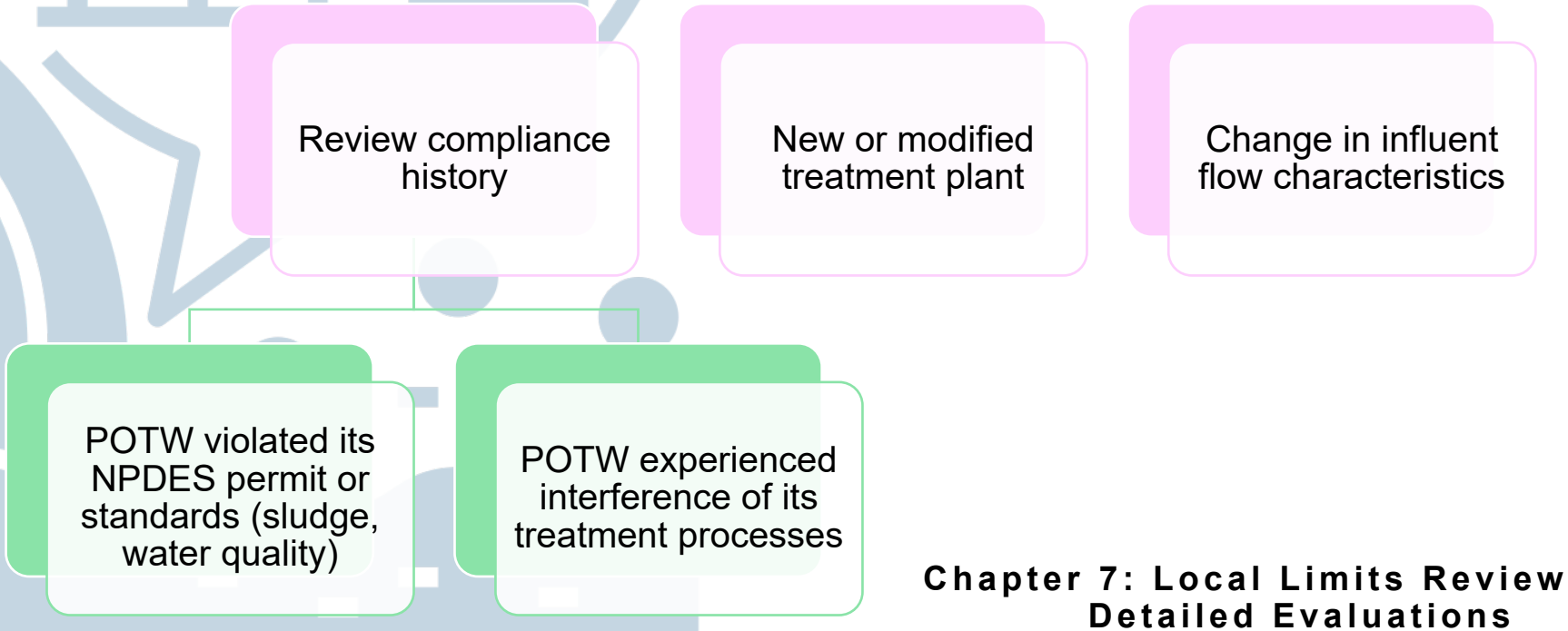
40 CFR 403.10(F)(1)(I)

Incorporate POTW Pretreatment Program conditions into permits issued to POTW's; require compliance by POTW's with these incorporated permit conditions; and require compliance by Industrial Users with Pretreatment Standards;

40 CFR 403.18(A)

Either the Approval Authority or a POTW with an approved POTW Pretreatment Program may initiate program modification at any time to reflect changing conditions at the POTW. Program modification is necessary whenever there is a significant change in the operation of a POTW Pretreatment Program that differs from the information in the POTW's submission, as approved under § 403.11.

OTHER REASONS TO REASSESS LOCAL LIMITS



PRETREATMENT LANGUAGE IN NPDES PERMITS

What’s in your state NPDES Permit?

Does your state region have pretreatment permit language?

POTWs with approved pretreatment program

POTWs without approved pretreatment programs

POTWs required to develop an approved pretreatment program

PERMIT BOILERPLATE BEST PRACTICES

Boilerplate

The Permittee shall develop, continually maintain, and enforce, as necessary, local limits to implement the general and specific prohibitions in 40 CFR§403.5(c)(1) which prohibit the introduction of any pollutant(s) which cause pass through or interference and the introduction of specific pollutants to the waste treatment system from any source of nondomestic discharge.

Within **(X)** months from the effective date of this permit, the Permittee shall conduct a technical re-evaluation of its local limitations and submit the evaluation and any proposed revisions to its local limits to **[STATE AGENCY]** and U.S. EPA Region **(X)** for review and approval. U.S. EPA Region **(X)** requests the Permittee to complete and submit Attachment **XXX** for the evaluation and any proposed revisions to its local limits. Should the evaluation reveal the need to revise local limits, the permittee should complete the revisions within **(X)** days of notification by EPA (or State Agency) and submit those revisions for approval.

Establishes:
- Deadlines
- Deliverables

PERMIT BOILERPLATE BEST PRACTICES

Tennessee Local Limits Boilerplate

Submit a written technical evaluation of the need to revise local limits **within 120 days of the effective date of this permit** to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the Division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.

PASS THROUGH LIMITATIONS

Jasper STP	06/19/20	Marion County
Design Flow: 2.28 MGD*	TN0054585	1Q10: 5,073 MGD

Parameter	Concentration (µg/l)
Copper	80.00
Chromium, III	Report only
Chromium, VI	Report only
Chromium, Total	60.00
Nickel	180.00
Cadmium	5.00
Lead	45.00
Mercury	0.40
Silver	5.00
Zinc	200.00
Cyanide	230.00
Toluene	15.00
Benzene	3.00
1,1,1 Trichloroethane	30.00
Ethylbenzene	4.00
Carbon Tetrachloride	15.00
Chloroform	85.00
Tetrachloroethylene	25.00
Trichloroethylene	10.00
1,2 trans Dichloroethylene	1.50
Methylene Chloride	50.00
Phenols, Total	50.00
Naphthalene	1.00
Phthalates, Total [1]	64.50

[1] Total Phthalates is the sum of Bis (2-ethylhexyl) phthalate, Butyl benzylphthalate, Di-n-butylphthalate and Diethyl phthalate.

Note: These limits are monthly averages. All sampling and analysis must be in accordance with 40 CFR 136 unless explicitly allowed by the NPDES permit. See Part 3.2. of the NPDES permit for sample type requirements. References include T.C.A. 0400-40-14-.12(7)(c), 40 CFR 136, and EPA Form 3510-2C (8/90 version).

PERMIT BOILERPLATE BEST PRACTICES

California Local Limits Boilerplate

Evaluate the need to revise local limits pursuant to 40 C.F.R. section 403.5(c)(1) and, within 180 days following the effective date of this Order, submission of a report describing the changes, with a plan and schedule for implementation.

Local limits developed by the Discharger shall be presented in a table including the applicability of the local limits to SIUs. If local limits do not apply uniformly to SIUs, specify the applicability in the tables listing the categorical industrial users (CIUs) and non-categorical SIUs.

ADDITIONAL PERMITTING OPTIONS

EPA Region 3 Boilerplate:

*"The permittee shall submit to XX a reevaluation of its local limits based on a headworks analysis of its treatment plant within one (1) year of permit issuance, and provide a revised submission within three (3) months of receipt of comments from XX unless a longer period of time is granted in writing by XX… The list of pollutants to be evaluated, as well as a **sampling plan** for collection of necessary data, shall be submitted to XX within three (3) months of permit issuance…*

Sampling Plan for
Local Limits Development

The sampling plan should address four issues which are discussed in more detail below, including: (1) the pollutants to be evaluated; (2) the points of sampling to determine removal rates and background loadings; (3) the number and type of sampling events; and (4) the analytical methods and the levels of detection to be used.

Sampling Plan considerations

- Pollutants to be evaluated
- Sampling points
  - Influent
  - Effluent
  - Biosolids
  - Domestic/Background/Commercial
  - Hauled waste
  - Wastewater plant internal sampling points
- Number and type of sampling events
  - Statistically valid results (20-30 samples)
  - Representative samples
- Analytical methods/detection levels

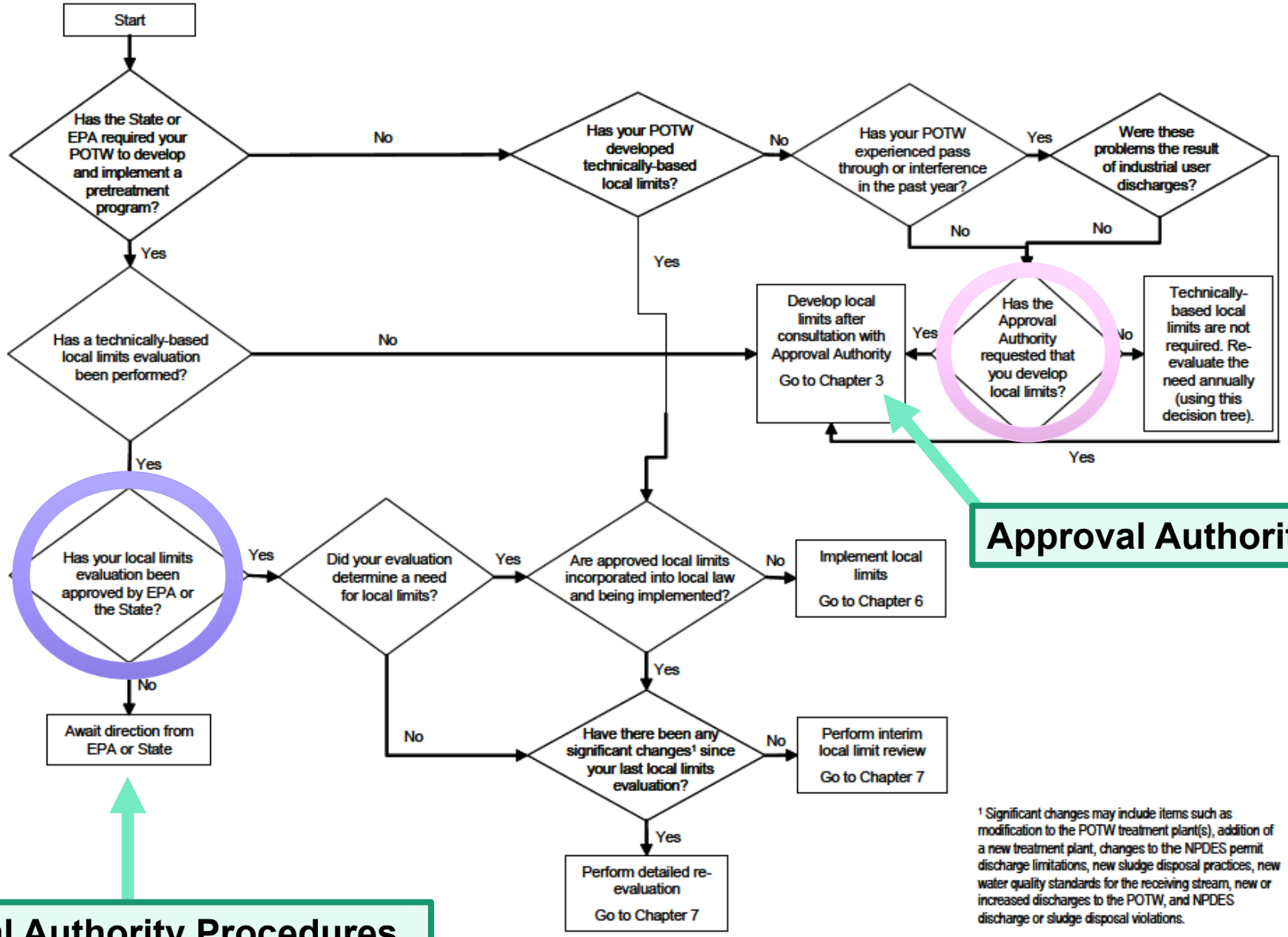
PERMIT CONSIDERATIONS: MONITORING

EPA Region 3 Approved Program Annual Reporting Requirement:

Routine Monitoring – The permittee shall conduct monitoring at its treatment plant that, at a minimum, includes **quarterly influent, effluent, and sludge analysis for all pollutants for which local limits have been established**, and **an annual priority pollutant scan for influent and sludge**.

HEADWORKS ANALYSIS
A BRIEF OVERVIEW

Figure 2-1: POTW Local Limits Decision Tree



[1] Significant changes may include items such as modification to the POTW treatment plant(s), addition of a new treatment plant, changes to the NPDES permit discharge limitations, new sludge disposal practices, new water quality standards for the receiving stream, new or increased discharges to the POTW, and NPDES discharge or sludge disposal violations.

Approval Authority Procedures

Approval Authority Procedures

https://www3.epa.gov/npdes/pubs/final_local_limits_guidance.pdf

CONDUCTING A HEADWORKS ANALYSIS

DETERMINE POLLUTANTS OF CONCERN (POC)

Identify pollutants that should be evaluated to determine the need for local limits to control them. E.G. NPDES permit limits, pollutants known to be discharged to the POTW, common conventional and non-conventional pollutants.

COLLECT AND ANALYZE DATA

POTW collects necessary data, including additional sampling and analysis of selected wastewater streams and sludge

CALCULATE MAHLS FOR EACH POC

POTWs should calculate AHLs for each POC based on treatment efficiency and to protect the plant from pass-through and interference.

POTW evaluates data and determines whether local limits are needed for each POC. Determines allocation to IUs, **submits a development package to the Approval Authority for its review and approval**, incorporates the local limits into local law and applies the local limits to the IUs.

DESIGNATE AND IMPLEMENT LOCAL LIMITS

LOCAL LIMITS REVIEWS AND RE-EVALUATIONS

And… do it all over again.

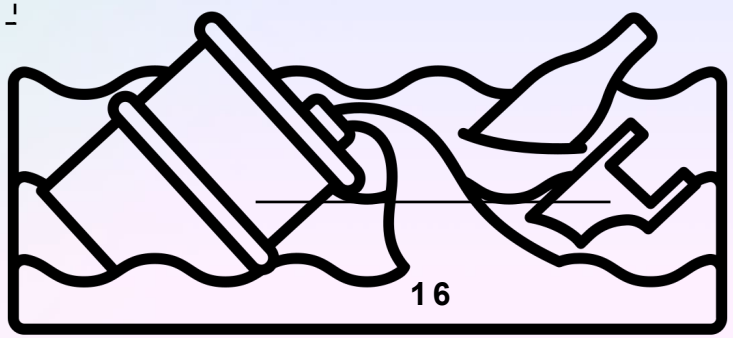


Table 3-1: Selected Information Sources for Determining Potential POCs

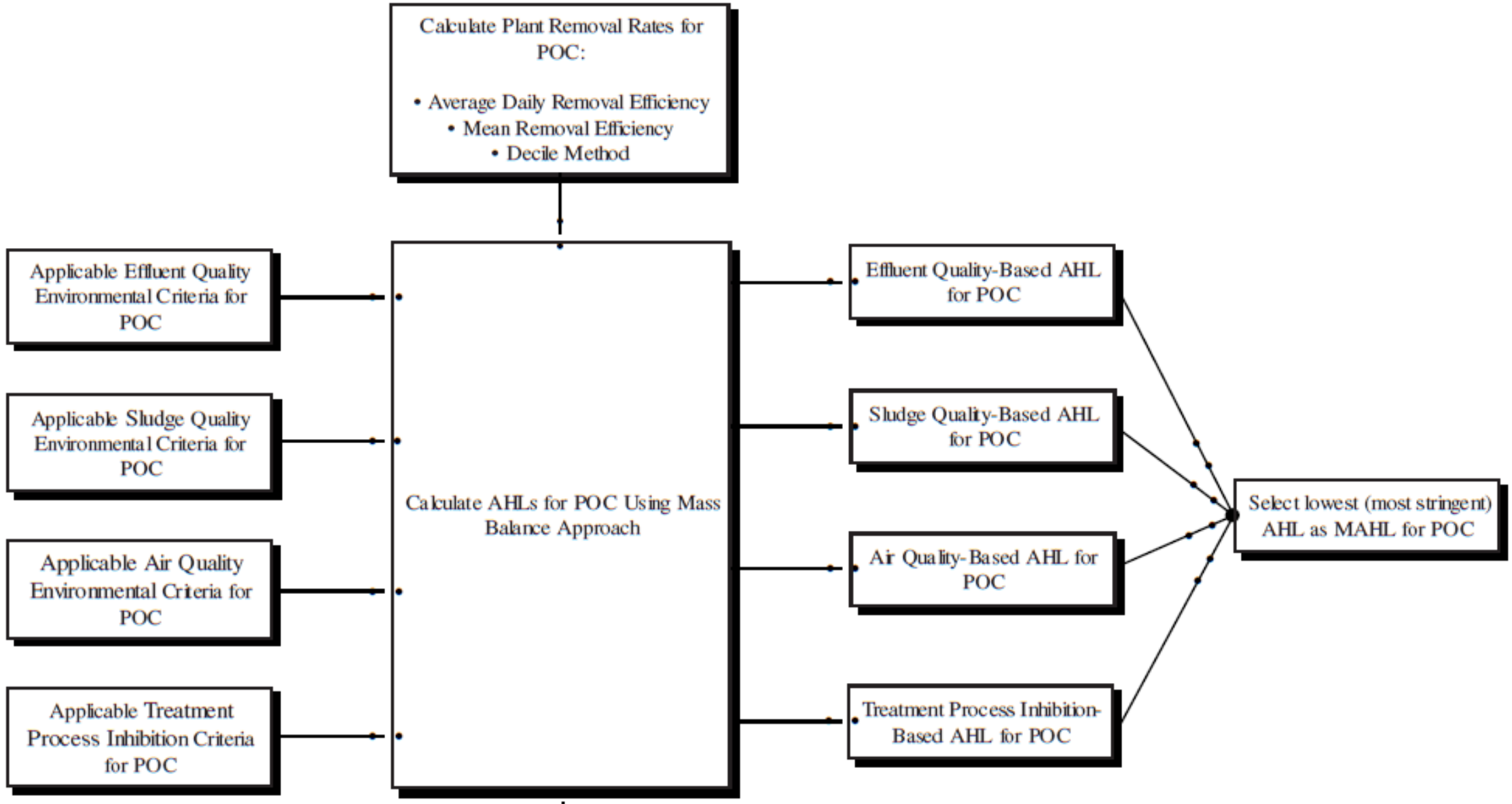
Source	Information Provided
Industrial Waste Survey (IWS)	POTWs can request in the IWS information that may help identify and assess the pollutants discharged, or potentially discharged, by each user surveyed. The information gained from the IWS can help the POTW: • Identify IUs of which the POTW had been unaware, or that have recently moved into the POTW's service area. • Identify pollutants likely to be discharged to the collection system that should be considered potential POCs. • Identify previously unknown characteristics of an IU and its discharges. • Evaluate the potential for slug loadings and periods of increased loadings from variable discharges (e.g., from facilities that experience seasonal fluctuation in their discharges and from batch dischargers). • Plan a sampling program to help ensure efficient use of POTW resources. • Estimate raw waste loadings of pollutants for which analytical methods are unavailable. • Identify opportunities for pollution prevention. Most, if not all, POTWs that have approved pretreatment programs will have conducted initial IWSs. POTWs also may find it helpful to review IWS data in conjunction with pollutant occurrence data for various industries.
IU Permit Applications	Details of the pollutants likely to be discharged by an IU and received at the POTW. Through permits or local ordinances, POTWs can require IUs to provide toxicity data for pollutants detected in the IU's wastewater. IUs can sometimes get such data from the manufacturers of their raw feedstock, solvents, surfactants, and other chemicals from material safety data sheets (MSDSs).
IU Self-Monitoring, POTW Compliance Monitoring, and Inspections	Indications of the pollutants discharged, or potentially discharged, by IUs. Also, confirmation of information provided by the industrial waste survey and IU permit applications.
EPA Pretreatment Program Guidance Manuals	Lists of priority pollutants likely to be found in discharges from various industries, lists of guidance and other manuals, and information on how to obtain copies of the manuals. A list of pretreatment guidance manuals and information on how to obtain copies is provided in Appendix A.
Approval Authorities	Data on pollutants detected in direct dischargers' effluents, which can be reviewed by POTWs to identify pollutants that may be discharged by similar IUs in their service areas.
State Pollutant and Chemical Databases	Sources of information about industrial effluent*
*The North Carolina Department of Resources and Community Development has created databases using reports of POTW effluent toxicity and the associated discharges of toxics from IUs, as well as information provided by chemical manufacturers about the chemical characteristics, such as measured toxicity, of biocidal compounds.	

DETERMINING POCS

Approval authority should:

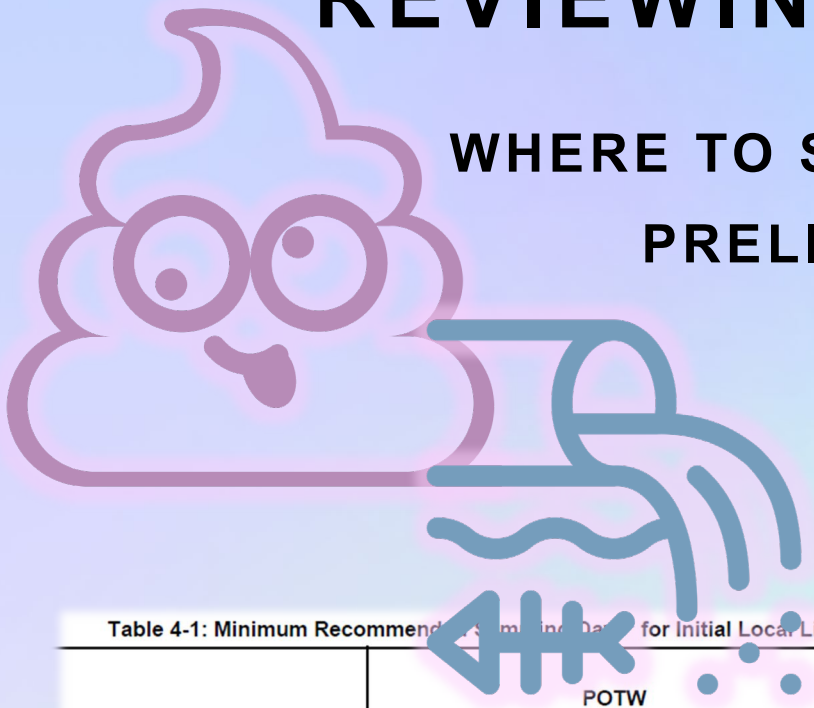
- Confirm all pollutants of concern are identified and evaluated.
- Review materials submitted by the POTW, priority pollutant lists, industrial waste surveys to ensure all POCs are identified prior to the POTW commencing an evaluation.

Figure 5-1: Process Flow Diagram for Calculating MAHL for a Single POC



REVIEWING A HEADWORKS ANALYSIS

REVIEWING A HEADWORKS ANALYSIS



WHERE TO START?

PRELIMINARY CHECK:

- Did the POTW include all pollutants?
- Data collection
  - # samples
  - Sample locations
  - Detection levels
- Calculations correct?
- Data input correct?
- Correct flows used? Values for WQS/NPDES PERMIT LIMITS?
- Other considerations
  - Hauled waste included?
  - Conventional limits evaluated based on treatment plant design?

Exhibit 3-1: EPA's 15 POCs

10 Original POCs

Arsenic	Lead
Cadmium	Mercury
Chromium	Nickel
Copper	Silver
Cyanide	Zinc

5 New POCs

Molybdenum
Selenium
5-day Biochemical Oxygen Demand
Total Suspended Solids
Ammonia (for plants that accept non-domestic sources of ammonia)

Table 4-1: Minimum Recommended Sampling Days for Initial Local Limits Development

Parameter	POTW			Residential/ Commercial
	Influent (days to sample)	Effluent (days to sample	Sludge (days to sample)	Collection System (days to sample
Organic Priority Pollutants (1)	1 - 2	1 - 2	1	1 - 2
National POCs (2)	7 - 14	7 - 14	2	7
POTW-specific POCs (2)	7 - 14	7 - 14	2	7
Percent solids, sludge (3)			2	
TCLP pollutants (4)			1	

*Sampling days are defined as the number of days that samples are collected for a parameter. Sampling days should be consecutive days for National POCs and POTW-specific POCs. Samples should be 24-hour composite samples unless sampling methods only allow for grab samples (see Section 4.5).

(1) Conducted once or twice to determine potential POCs.
(2) The range of values for sampling days (7-14) for influent and effluent sampling of POCs is a minimum recommended range for the number of days to sample. POTWs that are small [up to 5 million gallons per day (MGD)] should have at least 7 consecutive sampling days for POCs while larger POTWs (5-10 MGD) should have at least 14 consecutive sampling days. POTWs larger than 10 MGD should consider more sampling according to local concerns and economics. POTWs should seek input from the Approval Authority for their sampling plan.
(3) The sludge regulations at 40 CFR Part 503 already require the percentage of solids to be determined every day that sludge is applied to land.
(4) Sample for TCLP pollutants if sludge is disposed, or is likely to be disposed, in a landfill.

https://www3.epa.gov/npdes/pubs/final_local_limits_guidance.pdf

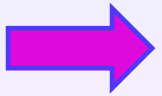
CHECKING CALCULATIONS

- Statistically valid?
- Data- outliers?
- Non-detect data?
- Negative/correct removal efficiency?
- Negative MAILs?
- Correct calculations?
- Safety/growth factor included?

Select Removal Efficiency (from list)	Removal Efficiency (%) (Rpotw)
Influent/Effluent	50.00
User Entered	-
Influent/Effluent	-
Daily Removal	-
Influent/Sludge	-
Default (activated sludge)	-

Region 3 Local Limits & Removals 5-3

As In (mg/l)	As Eff (mg/l)	As Daily Rem (%)
0.01	0.005	50
0.01	0.005	50
0.01	0.005	50
0.01	0.005	50
0.01	0.005	50
0.01	0.005	50
0.02	0.01	50



Judgement call

REMOVAL EFFICIENCIES

POC SAMPLING METHODS: "PAIRED" SAMPLES SAMPLING

- "Pair" Influent/Effluent Samples According to the Detention Time (DT)
  - "Delayed" Composite Samplers ***OR***
  - IF DT is ~24 Hrs, or ~48 Hrs, or ~72 Hrs
    - Just Use Regular "Daily" Composite Results and "Match Them"
    - i.e. 24 hour DT… Monday's influent is "paired" with Tuesday's effluent

CALCULATE PAIRED SAMPLES

My POTW DT is 72 Hours….So what????

DAY	INF	EFF	%RR
Fri			
Mon	50	78	-56%
Fri			
Mon	36	48	-33%

DAY	INF	EFF	%RR
Fri	325		
Mon		78	76%
Fri	294		
Mon		48	84%

MAHL = 0 pounds Nickel

MAHL = 19.8 pounds Nickel

POTW Flow = 3.5 MGD NPDES Nickel Limit = 136 ug/l

AVERAGE DAILY REMOVAL EFFICIENCY

Influent (mg/L)	Effluent (mg/L)	Percent Removal
455	17	96.3%
277	45	83.8%
342	5	98.5%
299	13	95.7%
150	20	86.7%
615	20	96.7%
125	5	96.0%
596	15	97.5%

Removal Efficiency = 93.9%

MEAN REMOVAL EFFICIENCY

Influent (mg/L)	Effluent (mg/L)
455	17
277	45
342	5
299	13
150	20
615	20
125	5
596	15
Average 357.4	17.5

Removal Efficiency = 95.1%

ADRE VS. MRE

Influent (mg/L)	Effluent (mg/L)	Percent Removal
455	17	96.3%
277	45	83.8%
342	5	98.5%
299	13	95.7%
150	20	86.7%
615	20	96.7%
125	5	96.0%
596	15	97.5%

Removal Efficiency = 93.9%

Influent (mg/L)	Effluent (mg/L)
455	17
277	45
342	5
299	13
150	20
615	20
125	5
596	15
Average 357.4	17.5

Removal Efficiency = 95.1%

IMPORTANCE OF REMOVAL VALUES

Same POTW: 0.002 mg/l Cadmium Limit

5.0 MGD Flow

RR	MAHL [lbs]
46.0%	0.154
56.0%	0.190
66.0%	0.245

RR	MAHL [lbs]
76.0%	0.348
86.0%	0.596
96.0%	2.085

IMPORTANCE OF REMOVAL VALUES

Same POTW: 15.0 mg/l NPDES BOD Limit

5.0 MGD Flow

RR	MAHL [lbs]
92.4%	8,215
93.4%	9,466
94.4%	11,176
95.4%	13,594

RR	MAHL [lbs]
96.4%	17,389
97.4%	24,061
98.4%	39,115
99.4%	104,250

USING EPA'S DEFAULT REMOVAL EFFICIENCIES

- EPA recommends site specific data

- If site specific data are inadequate, removal efficiencies for some pollutants from other POTWs or studies are given in the Local Limits Guidance Manual
  - EPA data is from 1977 studies
  - When using literature values, use the most restrictive (lowest) value

POC ANALYTICAL METHODS: METALS, METALS EVERYWHERE

- "REGULAR LEVEL" METALS ANALYSES
  - Flame Atomic Absorption [AA]
  - ICP ["Plasma"]

- "LOW LEVEL" METALS ANALYSES
  - Graphite Furnace Atomic Absorption
  - ICP/MS [Plasma Mass Spec]

“REGULAR LEVEL” METALS REMOVAL RATE EXAMPLE

- Chromium Influent = 11 ug/l
- Chromium Effluent = <10 ug/l
  - EPA’s 2004 *Local Limits Development Guidance* allow the use ½ DL on the effluent value
    [10 * ½ = 5 ug/l]

$$\frac{(11 - 5)}{11} * 100 = \underline{\textbf{54.5 \% RR}}$$

[OR EPA Median Literature Value of 82%]
VERSUS……

"LOW LEVEL" METALS REMOVAL RATE EXAMPLE

- Same POC Samples analyzed by ICP-MS
- Chromium Influent = 11 ug/l
- Chromium Effluent = 0.70 ug/l

$$\frac{(11 - 0.70)}{11} * 100 = \textbf{93.6\% RR}$$

[Oh, what a difference ICP/MS makes!]

SAME ~~POTW~~...
SAME SAMPLES....

5.0 MGD Flow and 0.050 mg/l Effluent Limit

Source/ Type of Metals Analysis	Removal Rate %	Allowable Influent Chromium	Chromium MAHL (pounds)
"Regular Level"	54.5%	0.11 mg/l	4.6
Median Literature	82%	0.28 mg/l	11.7
"Low Level"	93.6%	0.78 mg/l	32.5

SOMETHING ELSE TO CONSIDER…

INF	*EFF*	*RR %*
12.5	<0.5	96.0
14.0	<0.5	96.4
10.8	<0.5	95.4
15.5	<0.5	96.8
	ADRE	96.15

MAHL = 1516 pounds NH_3N

POTW Flow = 3.5 MGD

INF	*EFF*	*RR %*
12.5	<0.1	99.2
14.0	<0.1	99.3
10.8	<0.1	99.1
15.5	<0.1	99.4
	ADRE	99.25

MAHL = 7784 pounds NH_3N

NPDES NH_3-N Limit = 2.0 mg/l

COMMON MISTAKES FOUND IN SUBMITTALS

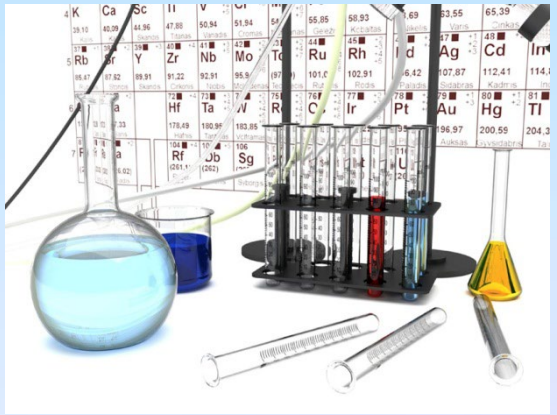
- Generosity killed the plant
- Focus is Too Narrow
- Documenting the Thought Process
  - Why were specific POC's eliminated
  - Why were others included

COMMON MISTAKES (cont'd)

- Lack of Communication
  - Between CA and Consultant
  - Between Management and Front Line
- Upper Limits for Compatible Pollutants
- Information Outdated
  - IU Inventory changes affect flow data
  - Recent WWTP upgrades

COMMON MISTAKES (cont'd)

- Sample Regime not Reflective of Actual Process



- Use of Incorrect Sampling Methods

- Lack of Public Participation

COMMON MISTAKES (cont'd)

Silver Influent (mg/L)	Silver Effluent (mg/L)	Silver Percent Removal
<0.0022	<0.0011	100%
<0.0011	<0.0011	100%
<0.0011	<0.0011	100%
<0.0011	<0.0011	100%
<0.0022	<0.0011	100%
<0.0011	<0.0011	100%

- How many WWTPs remove 100% metals?
- If all samples are BDL, it does not mean RE is 100%!

DELIVERABLE TRACKING AND MAINTENANCE

WHEN AN ANALYSIS IS NOT APPROVABLE…

WHAT DO YOU DO?

STEP 1 RESPOND	STEP 2 RESUBMIT	STEP 3 ACCEPT	STEP 4 ADOPT	STEP 5 APPROVE
Provide a written response to the POTW. Should include why the package is not acceptable. Response should include a timeline to resubmit a revised evaluation.	POTW resubmits evaluation based on review from the approval authority. Approval authority does a re-review to ensure the evaluation is acceptable, if not, back to step one.	Once the evaluation is reviewed, the approval authority should provide a response accepting the evaluation.	The POTW must formally adopt the local limits depending on their local ordinance. They must provide proof of adoption to the approval authority.	The approval authority may now formally approve and public notice the intent to approve the new local limits.

LOCAL LIMITS RESOURCES & TOOLS

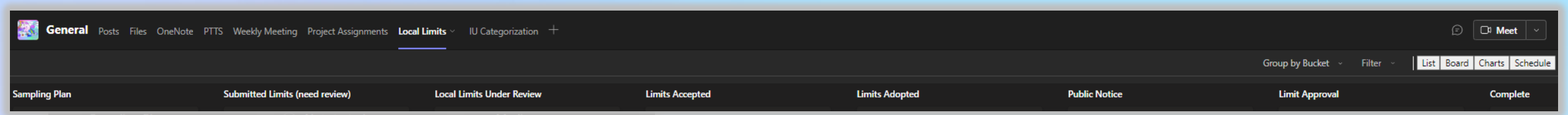
DEVELOPED TOOLS:

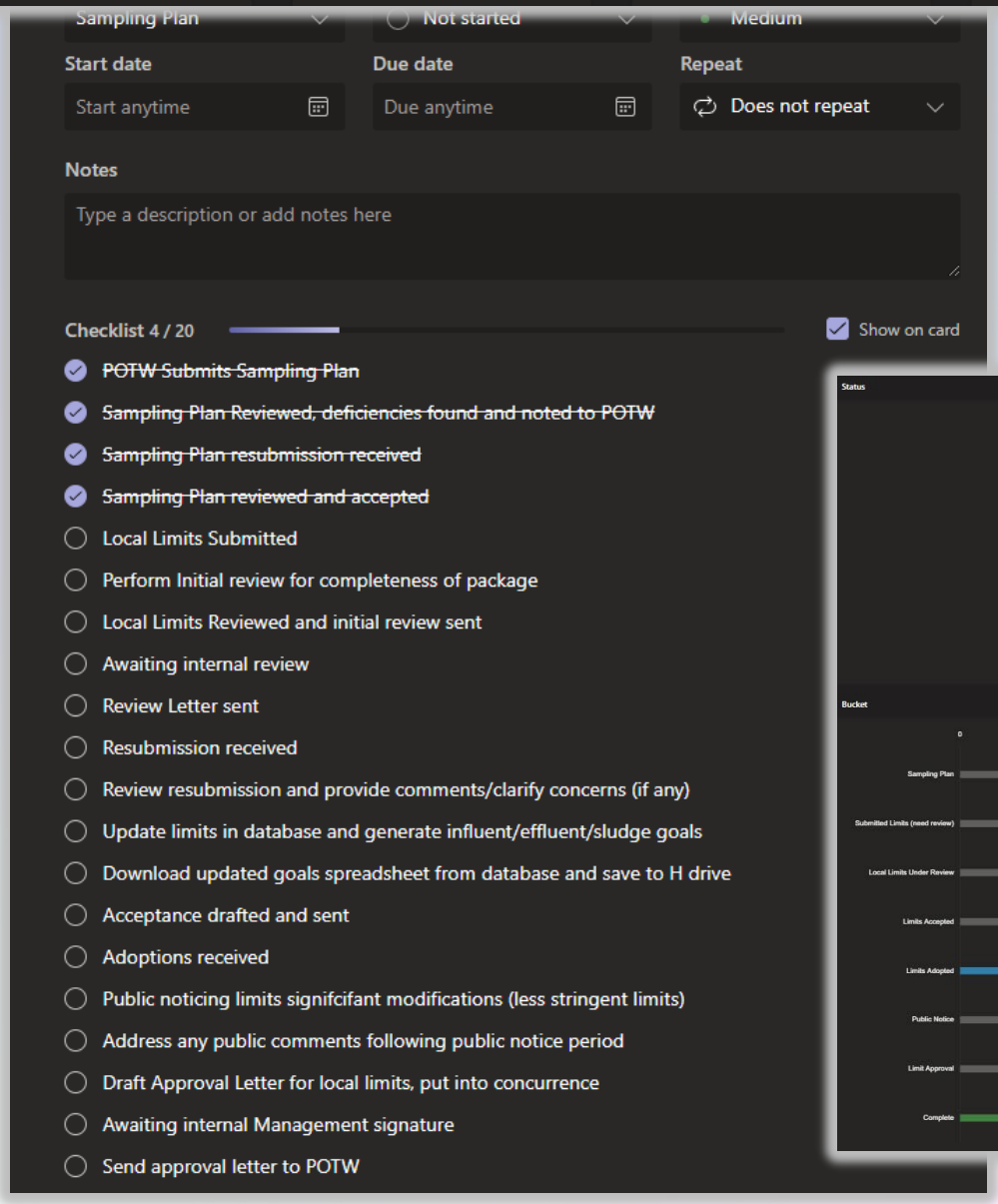
- Standardized
  - Checklists
  - Templates
  - Spreadsheets
- Utilize applications (e.g. Teams)
- State specific
  - Water quality standards
  - NPDES limits

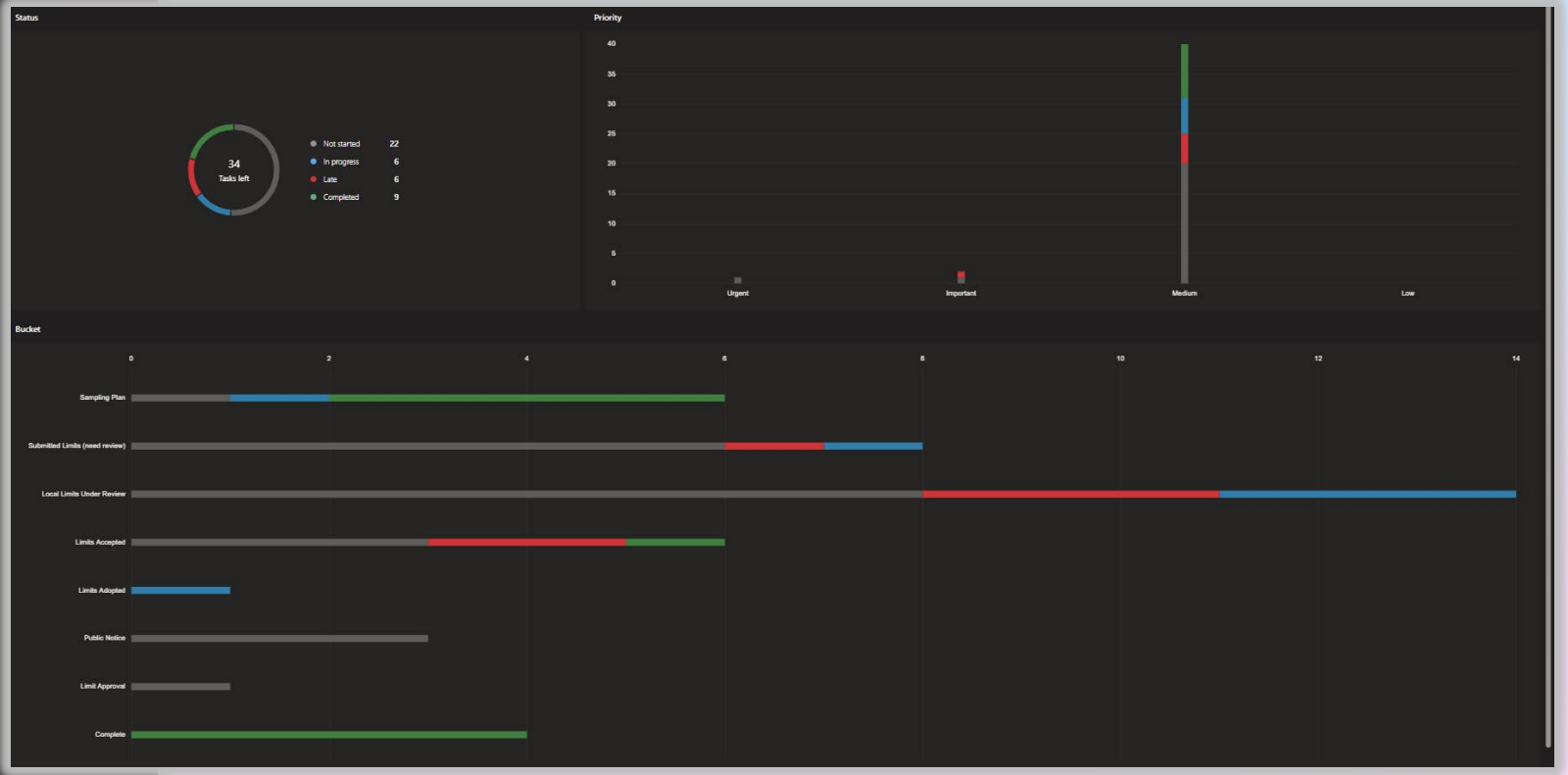
RESOURCES:

- EPAs Local Limits Guidance
  - https://www3.epa.gov/npdes/pubs/final_local_limits_guidance.pdf
- Appendices and regional guidance:
  - https://www.epa.gov/npdes/npdes-pretreatment-local-limits-additional-information

MY ANSWER TO EVERYTHING: TEAMS SITES!







THANK YOU

Questions or want to talk about local limits some more?

Contact: EPA_HQ_Pretreatment@epa.gov