

MEETING NOTICE

JOINT CONTRACT SEWERAGE COMMITTEE

August 23, 2022

1:30 P.M.

Council Chambers at Bettendorf City Hall
1609 State Street

1. Approval of minutes from February 2022 meeting.
2. Update on Waste Water Treatment Plant Flood Protection Design (Davenport).
3. Update on UV Disinfection Project (Davenport).
4. Update on I&I Projects / Studies (All Cities).
5. Report from Waste Water Treatment Plant and Compost Facility. (Davenport)
6. Discussion of Digester RNG / Digester Upgrades Alternatives / FOG Ordinance (Davenport)
7. Discussion of Rate Studies (All Cities)
8. Discussion of EPA / IDNR Local Limits (Davenport)
9. Discussion of future meetings. Next meeting is scheduled for February 14, 2022.
10. Other business.
11. Adjourn.

MINUTES
JOINT CONTRACT SEWERAGE COMMITTEE
February 8, 2022
1:30 P.M. BETTENDORF CITY HALL

Members Present:

Robert Gallagher, Mayor, City of Bettendorf
Ronald Rice, Mayor, City of Panorama Park
Mike Matson, Mayor, City of Davenport
Rick Dunn, Alderman, City of Davenport
Scott Webster, Alderman, City of Bettendorf
Dan Miers, Water Pollution Control Plant Manager, City of Davenport
Brian Schmidt, Director of Public Works, City of Bettendorf
Nicole Gleason, Assistant City Administrator/Director of Public Works, City of Davenport
Mallory Merritt, Assistant City Administrator/Chief Financial Officer, City of Davenport
Jason Schadt, Director of Finance, City of Bettendorf

Others Present:

Decker Ploehn, City Administrator, City of Bettendorf
Clay Merritt, Assistant Public Works Director, City of Davenport
Jim Odean, Assistant Finance Director, City of Davenport
Brent Morlok, City Engineer, City of Bettendorf
Brian Schadt, City Engineer, City of Davenport

The meeting was called to order at 1:30 p.m. by Mayor Gallagher.

1. First item on the agenda was appointment of officers for FY 22/23. Mayor Matson volunteered to be appointed Chair and Nicole Gleason as Vice Chair. The motion passed unanimously.
2. Second item on the agenda was approval of the minutes from the August 2021 meeting. There were no additions, deletions or corrections. Brian Schmidt made a motion to accept the minutes as written. The motion was seconded by Alderman Webster. The motion passed unanimously.
3. Next item on the agenda was an update on the 1930's Interceptor Sewer Abandonment Project. This project is a major component of the Joint Use cities' efforts to reduce clean water flow at the plant. Brian Schadt reported the project is completed. Due to river levels remaining low, a full assessment on the effectiveness has not been done.
4. Next item on the agenda was the update on Waste Water Treatment Plant Flood Protection Project. The USEDA grant request was approved. Three (3) engineering firms were interviewed for the project and a contract will be in place by the end of February. Per the EDA grant, the project will need to be completed within 4 to 5 years.
5. Next item on the agenda was the report on the UV Disinfection Project. Dan Miers reported the completion date is set for March 1, 2022. Operational season will be March 15th thru November 15th. There is a 20% increase in electricity usage associated with the new system. This additional consumption will decrease the revenue being generated by co-generation causing us to pay more for electricity in a few years. Currently,

we are producing and using methane to run the generators, cogenerating electricity and selling it back to MidAmerican Energy Company for a credit. The agreement with MidAmerican Energy Company will expire in January 2028.

6. Next item on the agenda was an update on I&I Projects / Studies. Brent Morlok reported Bettendorf has an estimated \$600,000 sewer lining program contract this year. Baker Tilley is also performing a rate study for Bettendorf and staff is addressing how to program in the \$20 million worth of projects that were identified during the citywide I&I study. Davenport reported three (3) large I&I projects scheduled for this year and has budgeted \$2 million per year for direct I&I removal. Davenport City Council recently approved a \$2.5 million for a lining and manhole program that will take approximately two (2) years to complete. Panorama Park and Riverdale completed the first phase of their project.
7. Next item on the agenda was a report on the Waste Water Treatment Plant and Compost Facility. Dan Miers reported the Administrative Consent Order with the IDNR is completed. The NPDES permit is in place for five (5) years. Construction of Wet Weather Optimization project is completed. The UV Disinfection project is 95% completed. Stand Associates has provided a draft Nutrient Reduction Study to be submitted to IDNR by July 1, 2022. Nutrient is nitrogen and phosphorus removal from our wastewater treatment. We are able to meet phosphorus limits. The secondary treatment will need doubled in size in order to remove nitrogen, which is currently the greatest concern. The estimated cost for the project is \$140 million, but is not required at this time. The study is required to determine if the project is feasible.
8. Next item on the agenda was an update on the six (6) year Capital Improvement Plan (CIP) for the Joint Use System. All of the capital funding set aside for FY 2023 is going toward the match for EDA grant. FY 2024 – FY 2028 funding is allocated for repairs and upgrades to the plant and compost facility.
9. Next item on the agenda was a discussion of Digester RNG / Digester project and Davenport Rate Study. PFM completed the rate study for Davenport with a recommendation to increase rates by 5% each year for the next three (3) years. The increases will help sustain current CIP needs and long term issues. Jason Schadt reported Bettendorf is currently in the process of a rate study with Baker Utility.

Dan Miers reported RNG is a different way to process our natural gas through our digesters to send to the MidAmerican pipeline and receive RIN credits which we could sell on that market. There are two (2) different values of RIN credits based upon the quality of gas generated (D3 and D5 gas). The engineers are estimating this project will bring \$4 million of revenue annually. Further discussion was had regarding the potential cost options and overall feasibility of the RNG project and digester upgrades.

10. Next item on the agenda was approval of the allocation percentages and budget. The total budget number reduced 1.65% from last year. The following percentages for Operation and Maintenance and Industrial Pretreatment costs were submitted for review and approval:

Davenport	78.82%
Bettendorf	19.95%
Riverdale	1.16%
Panorama Park	0.07%

Alderman Webster made a motion to approve the percentages. The motion was seconded by Alderman Dunn. The motion passed unanimously.

11. Next item on the agenda was the approval of capacity allocations. Dan Miers gave a brief summary of the information as presented. The approved allocations can be found in the meeting packet. Alderman Webster

motioned to approve the capacity allocations. The motion was seconded by Alderman Dunn. The motion passed unanimously

12. Next item was the discussion of future meetings. The next meeting will be held on August 23, 2022.

13. The next item on the agenda was other business.

The meeting was adjourned on motion by Mayor Bawden seconded by Nicole Gleason.

Local Limit Analysis and Pretreatment Streamlining

August 10th, 2022

Facility Name: Davenport City of STP

Introduction: The City of Davenport received a new permit in July 2021 for the Davenport Water Pollution Control Plant (DWPCP). A local limit analysis was required by the issuance of this permit.

History: Local limits for the DWPCP have been in place since 2003. DWPCP staff, with the assistance of Paul Marshall, Region VII EPA, and his spreadsheet, developed local limits for the treatment plant. The analysis was modified and approved by Steve Williams, Iowa Department of Natural Resources (IDNR). The DWPCP developed a two-tiered approach to local limits. This method better distributed the pollutant allocations to all industries.

The three high flow food processors (PB Leiner, (formerly Leiner Davis Gelatin), Kraft Oscar Mayer, and Nestle Purina Pet Care) have historically been in tier one. Based on historical discharge data, a multiplier of domestic strength pollutant level was used with their monthly average permitted flow to determine monthly average poundage of pollutant allowed from each of them. These industries have been regulated purely on monthly average poundage since they are measuring actual daily sewage flow and have a flow proportional sampler.

However, Kraft Oscar Mayer’s facility was decommissioned in 2019. The new facility, Kraft Heinz, has been placed in Tier 1 (High flow, low metals). In this revision of the Sewer Use Ordinance, Kraft Oscar Mayer will be removed, Kraft Heinz added, and local limits recalculated using the same formula in order to account for this change.

All other industrial contributors are in tier two and have a uniform concentration limit applied. This uniform concentration limit is calculated by subtracting the total of tier one poundage from maximum allowable industrial poundage and dividing by tier two monthly average permitted flow. An industry can be permitted on poundage basis only using the UCL if they install a flowmeter and flow paced sampler. A five percent growth factor was set aside from the maximum allowable industrial poundage. The established local limits are listed in Table 1 and Table 2.

At the last Audit of our Pretreatment program, it was noted that there was an inconsistency in our Sewer Use Ordinance. During the 2018 modification of the SUO, the City adopted a new definition of Significant Noncompliance (SNC) at 13.16.260 (f) that reads “Failure to provide within 45 days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical Pretreatment Standard deadlines, periodic self-monitoring reports, and reports on compliance with compliance schedules”. However, the City did not update its Enforcement Response Plan (ERP), which still indicates “Failure to provide within 30 days.” We propose changing the language in the ERP to reflect this change. (See Appendix A).

Table 1			
Davenport Water Pollution Control Plant			
2606 South Concord Street			
Tier 1 Significant Industrial User Local Limits			
	PB Leiner USA	Nestle Purina	Kraft Heinz

Pollutant	30 Day Average	30 Day Average	30 Day Average
Al	NA	NA	NA
As	0.14 Pounds	0.037 Pounds	0.08 Pounds
Ba	NA	NA	NA
Cd	0.070 Pounds	0.018 Pounds	0.04 Pounds
Total Cr	0.110 Pounds	0.03 Pounds	0.03 Pounds
Cu	0.320 Pounds	0.09 Pounds	0.19 Pounds
Fe	NA	NA	NA
Pb	0.070 Pounds	0.02 Pounds	0.04 Pounds
Hg	NA	NA	NA
Mo	NA	NA	NA
Ni	0.080 Pounds	0.02 Pounds	0.04 Pounds
Se	0.08 Pounds	0.02 Pounds	0.05 Pounds
Ag	0.07 Pounds	0.018 Pounds	0.04 Pounds
Zn	1.20 Pounds	0.32 Pounds	0.70 Pounds
Total Phenols	0.27 Pounds	0.071 Pounds	0.15 Pounds
Total Cyanide	0.081 Pounds	0.022 Pounds	0.05 Pounds

Table 2	
Davenport Water Pollution Control Plant	
2606 South Concord Street	
Tier 2 Significant Industrial User Local Limits	
Pollutant	30 Day Average
Al	NA
As	0.581 mg/L
Ba	NA
Cd	0.098 mg/L
Total Cr	0.199 mg/L
Cu	1.475 mg/L
Fe	NA

Pb	1.180 mg/L
Hg	NA
Mo	NA
Ni	6.937 mg/L
Se	0.127 mg/L
Ag	0.074 mg/L
Zn	4.801 mg/L
Total Phenols	115.833 mg/L
Total Cyanide	0.621 mg/L

Evaluation: The permit rationale dated April 20, 2021 evaluated the need for chloride, sulfate, ammonia, phosphorus, total kjeldahl nitrogen, nitrates and metals limits in the new permit. IDNR did not propose any limits be placed in the permit at this time, for these parameters.

A chloride sample was taken and submitted for evaluation against the chloride water quality standard (WQS). The chloride result of 152 mg/L is only 5.8% of the WQS and therefore monitoring and limits were not included in the new permit. I see no potential to violate the chloride WQS and no need to include chloride in the local limit parameters.

A sample was also submitted and analyzed for Sulfate (same sample). The resulting sulfate value of 72.2 mg/L is only ~1% of the WQS for sulfate and therefore monitoring and limits were not included in the new permit. I see no potential to violate the sulfate WQS and no need to include sulfate in the local limit parameters.

Currently, there are no WQS for total nitrogen, total kjeldahl nitrogen, total phosphorus or nitrate; and there are no limits for these parameters in the 503 regulations for land application of the biosolids. The highest Secondary Effluent ammonia nitrogen result, during a 12-month period from May 2020 through May 2021, was 24.64 mg/L and the average ammonia nitrogen result was 19.49 mg/L. I see no reasonable potential to exceed the WLA for ammonia nitrogen and therefore no need to include ammonia in the local limit parameters.

When Local Limits were re-evaluated last in 2008, there was initial concern for the potential to exceed the new WQBEL of 0.01428 mg/L for thallium. Further testing was conducted from July 24, 2008 through September 30, 2008. Nine samples were analyzed and all samples, except for one, were reported at <0.01 mg/L. The exception sample was reported at 0.01 mg/L. See table 3.

Table 3	
Sample Date	Thallium mg/L
7/24/2008	<0.01
8/1/2008	<0.01
8/8/2008	<0.01
8/15/2008	<0.01
8/22/2008	<0.01
8/30/2008	<0.01
9/9/2008	<0.01
9/15/2008	<0.01
9/30/2008	0.01

With this additional testing, I believe we will have no issues with the thallium WQBEL.

In 2021, the new permit established a new WLA for Aluminum. Previously, no local limit was designated for Aluminum. The new allocation (3.249E+00 mg/L) was much lower than the previous value (27.4 mg/L), and there was originally concern for exceedance. However, during the testing period from 5/4/2020-5/31/2021 (N=56), the average, max, and min Aluminum values in both influent and effluent were well below the limit. At this time, I do not believe it is necessary to establish a local limit for Aluminum.

Table 4		
Al (mg/L) 5/4/2020-05/31/2021		
	Effluent	Influent
Average	0.021	0.430
Max	0.099	0.814
Min	0.010	0.222

Recommendation: A change in the local limits to redistribute WLA after Kraft Oscar Mayer's departure and startup of Kraft Heinz is proposed.

APPENDIX A



DAVENPORT
PUBLIC WORKS

DAVENPORT WATER POLLUTION CONTROL PLANT

Pretreatment Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN

2021

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Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN

All violations of requirements must be reviewed by the Control Authority. The Control Authority shall notify the industrial user when a violation is found.

For most violations, the Control Authority shall receive an explanation and, as appropriate, a plan from the industrial user to correct the violation within a specified time period. If the violations persist or the explanation and the plan are not adequate, the Control Authority response shall become more formal and commitments (or schedules, as appropriate) for compliance shall be established in an enforceable document.

The enforcement response selected should be related to the seriousness of the violation, and enforcement response should be escalated if compliance is not achieved expeditiously after taking the initial action. A serious violation may require a formal enforcement action, as described in the Enforcement Response Plan.

The Control Authority shall set deadlines for the industrial user to respond to notification of violations and shall ensure that unfulfilled due dates are noted in Violation Summaries. Contact and commitments shall be confirmed in correspondence between the parties and noted in the Violation Summary.

FORMAL ENFORCEMENT AND FOLLOWUP

Formal enforcement shall be triggered by a failure to achieve compliance in a specified time period through less formal means, a review of violation records, and in some cases, the advice of counsel. Formal enforcement shall be considered for each violation or group of violations that meets the definition of Significant Noncompliance (SNC). The decision to pursue formal action will be supported by a well-documented record of the violations by the industrial user and any prior efforts to obtain compliance on the part of the Control Authority. The Control Authority may have a “show cause” meeting with the industrial user, before commencing formal enforcement actions. This meeting should be held as soon as possible after the decision to escalate enforcement is made.

ENFORCEMENT MECHANISMS

Enforcement mechanisms may range from a simple reminder call to imposing significant criminal penalties. The Control Authority realizes that some violations may constitute criminal violations of Federal and State law, and under such circumstances, the Control Authority may seek the assistance of the Approval Authority.

INFORMAL ACTIONS

- Informal notice to industrial user (i.e., telephone call, or meeting with industrial user representative, e-mail)
- Informal meeting
- Notice of Violation
- Notice of meeting to show cause.

FORMAL ACTIONS

- Administrative orders and compliance schedules
- Civil suit for injunctive relief and/or civil penalties

- Criminal suit
- Termination of service

Each of these actions will be more fully discussed in the following subsections.

INFORMAL NOTICE TO INDUSTRIAL USER

Informal notice may consist of a telephone call or “reminder” letter to an appropriate official of an industrial user. Such a call or letter may be used to notify officials of minor violations (e.g., a report submitted late) and to seek an explanation, suggest the exercise of more care, and/or notify the “violator” that subsequent violations of the same type shall be dealt with more severely. Such informal notice may be used to correct minor, inadvertent noncompliance and to demonstrate that the Control Authority will note and follow up all instances of noncompliance.

INFORMAL MEETINGS

If a telephone call does not produce compliance or adequate explanation of the reason for noncompliance, a meeting between officials of the Control Authority and the industrial user may be required. If informal meetings are unsuccessful in obtaining the firm’s commitment to complying with its pretreatment obligations, the Control Authority will inform the industrial user representatives of stronger enforcement mechanisms that are available. The Control Authority will record all informal contacts, notices, and meetings with representatives of industrial users on its Violation Summary.

NOTICE OF VIOLATION

The notice of violation letter is a written notice to the industrial user that the Control Authority has observed a violation of pretreatment standards or requirements and expects the noncompliance to be corrected and explained. The notice of violation letter may also require corrective actions and schedules to which the industrial user will be expected to adhere and a statement of any additional action that will be pursued if corrective actions are not accomplished as scheduled. The letter should clearly state that compliance with the requirements of the letter does not excuse previous violations.

Such notice of violation letters will be sent by certified mail with return receipt requested.

NOTICES OR MEETINGS TO SHOW CAUSE

The Control Authority may consider a meeting with the industrial user or issue a notice to “show cause” by the industrial user prior to taking formal enforcement action and/or discontinuing service. The industrial user will be presented with the facts that the Control Authority believes demonstrate noncompliance and asked to “show cause” to the Control Authority as to why it should not initiate formal action or discontinue sewer service. However, this action is not a prerequisite to taking a formal enforcement action or to discontinue sewer service, as described in the following sections.

ADMINISTRATIVE ORDERS AND COMPLIANCE SCHEDULES

Section 309(a)(3) of the Clean Water Act authorized the Environmental Protection Agency to issue orders without notice or opportunity for prior hearing, known as Administrative Orders (AOs), requiring compliance with standards or other requirements developed under the authority of the Act. Control Authorities may issue similar orders under Section 403.8(f)(1)(iii) of the General Pretreatment Regulations. These can be used to place an industrial user on an enforceable schedule to comply with pretreatment standards (e.g., install treatment, operate and maintain facilities), including appropriate interim limits.

PENALTIES

40 Code of Federal Regulations (CFR) 403.8(f)(1)(vi)(A) requires approved pretreatment programs to seek or assess civil or criminal penalties up to \$1,000.00 per day per violations. However, this limit may be inadequate for some spills and violations that interfere with treatment or pass through the Publicly Owned Treatment Works (POTW). Appropriate action may involve seeking the assistance of the Approval Authority for obtaining penalties under State or Federal law.

TERMINATION OF SERVICE

Approved pretreatment program must have authority to halt immediately any actual or threatened discharge to the Control Authority that may represent an endangerment to the public health, the environment, or the POTW, upon notifying the industrial user of the violation [40 CFR 403.8(f)(1)(vi)(B)]. The Control Authority can deny or condition new or increased discharges by industrial users or changes in the nature of pollutants discharged to the Control Authority by the industrial user if the discharge does not meet applicable pretreatment standards or will cause the Control Authority to violate its National Pollutant Discharge Elimination System (NPDES) permit.

CIVIL SUIT FOR INJUNCTIVE RELIEF AND/OR CIVIL PENALTIES

In a civil suit for injunctive relief, the Control Authority collects pertinent information sufficient to prove the violations at issue and turns the information over to the city attorney for case filing. The city attorney asks the court to order a discharger to take specific actions (e.g., cease prohibited discharge). The civil suit for injunctive relief is used when the industrial user is unlikely to execute successfully the steps that the Control Authority believes are necessary to achieve or maintain compliance, when the violation is serious enough to warrant court action to deter future similar violations, or when the danger presented by an individual user's noncompliance does not permit lengthy negotiation of a settlement.

CRIMINAL SUIT

Section 309(c) of the Clean Water Act authorizes the Federal Government to seek criminal punishment for any person who willfully or negligently violates pretreatment standards, among other standards, or any person who knowingly makes a false statement regarding any report, applications, record, or other document required by the General Pretreatment Regulations. The factors to consider to determine when violations should be addressed through criminal actions include: willfulness of the violations, knowledge of the violations, nature and seriousness of the offense, need for deterrence, compliance history of the subject, adequacy of the evidence, and the adequacy of penalties and sanctions available through civil or administrative enforcement actions. For criminal cases, the United States must provide proof beyond a reasonable doubt that the violation occurred through "willful or negligent action" of the discharges.

Examples of criminal violations include falsification of data, tampering with results or equipment, willful or negligent failure to provide notice of slug discharges, or willful violation of the wastewater discharge permit. All suspected instances of criminal violation will be evaluated.

In considering the development of criminal cases, the Control Authority will work closely with the local prosecutor and the Approval Authority to obtain guidance.

TERMS AND ABBREVIATIONS

AO	Administrative Order
ASPP	Accidental Spill Prevention Plan
Civil Litigation	Civil litigation against the industrial user seeking equitable relief, monetary penalties and actual damages.
Control Authority	City of Davenport, Water Pollution Control Plant
Criminal Prosecution	Pursuing punitive measures against an individual and/or organization through a court of law.
Fine	Monetary penalty assessed by Control Authority officials. Fine should be assessed by the Pretreatment Coordinator or POTW Superintendent.
IU	Industrial User
Meeting	Informal compliance meeting with the IU to resolve recurring noncompliance
NPDES	National Pollutant Discharge Elimination System
NOV	Notice of Violation
PC	Pretreatment Coordinator
PM	Plant Manager
Show Cause	Formal meeting requiring IU to appear and show why Control Authority should not take a proposed action against it. The meeting may serve as a forum to discuss corrective actions and compliance schedules.
SNC	Significant Noncompliance
Major violations/deficiencies	Deficiencies or violations that result in (or have potential to cause) environmental or POTW damage, have evidence of intent or negligence, and/or will result in delays to final or successive milestones in a compliance plan.

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Minor violations/deficiencies

Deficiencies or violations that do not result in (or have potential to cause) environmental or POTW damage, have evidence of intent or negligence, and/or will result in delays to final or successive milestones in a compliance plan.

ENFORCEMENT RESPONSE GUIDE

ILLEGAL DISCHARGE

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Nonpermitted discharge	Failure to apply for permit renewal, no environmental or POTW damage	Issue NOV; AO requiring permit application, administrative fine.	PC PM
2.	Unpermitted discharge	Discharger unaware of permit requirement, no environmental or POTW damage	Issue NOV; AO requiring permit application analyses; administrative fine	PC PM
3.	Unpermitted discharge	Results in violation of POTW NPDES permit or dangerous situation -SNC	Issue AO to immediately halt discharge; administrative fine; judicial action.	PM

DISCHARGE STANDARD VIOLATION

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Exceedance of discharge limits	Isolated, nonsignificant (1 st or 2 nd offense)	Informal response; issue NOV.	PC
2.	Exceedance of discharge limits	Frequent, nonsignificant (repeated offense)	Meeting with IU; AO; show cause; administrative fine	PC PM
3.	Exceedance of discharge limits	SNC	Issue AO; administrative fine; judicial action including fine	PC PM

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4.	Exceedance of discharge limits	Results in known environmental or POTW damage (endangerment to life)	Issue order to halt discharge; administrative fine; judicial actions; terminate service.	PM
5.	Slug load discharge	Isolated without known damage	Compliance meeting; NOV; AO to develop spill plan.	PC PM
6.	Slug load discharge	Isolated with known interference, pass-through, or damage results-SNC	Show cause; AO or judicial action, including penalty.	PC PM
7.	Slug load discharge	Recurring – SNC	Judicial action; including penalty; terminate service.	PM

SAMPLING, MONITORING AND REPORTING VIOLATIONS

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Minor sampling, monitoring or reporting deficiencies	Isolated or infrequent (1 st or 2 nd offense)	Informal response; require corrections within 10 days; issue AO if no response.	PC PM
2.	Minor sampling, monitoring or reporting deficiencies	Frequent (repeated offense) or continuous	Issue NOV; compliance meeting; AO; administrative fine.	PC PM
3.	Major sampling, monitoring or reporting deficiencies	Isolated or infrequent (1 st or 2 nd offense)	Informal response; issue NOV; require corrections.	PC
4.	Major sampling, monitoring or reporting deficiencies	Frequent (repeated offense) or continuous to become SNC	Compliance meeting; issue AO and administrative fine; show cause; judicial action.	PC PM

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5.	Complete failure to sample, monitor or report	SNC	AO; judicial actions; termination of service.	PM
6.	Continued failure to sample, monitor or report	Violation of NOV condition	AO; show cause; judicial action	PM
7.	Failure to submit schedule of compliance	Violation of consent order or AO	Show cause; administrative fine; judicial action; terminate service.	PM
8.	Failure to notify effluent violation or slug discharge	Isolated or infrequent No known effects	Phone call or NOV. If no response in 10 days, issue AO.	PC PM
9	Failure to notify of effluent violation or slug discharge	Frequent or continued violation – SNC	Show cause; AO; judicial action including penalties	PC PM
10.	Failure to notify of effluent limit violation or slug discharge	Known environmental or POTW damage results – SNC	Judicial action including penalties; terminate service.	PM

COMPLIANCE SCHEDULE

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Missed milestone date	Will not effect other milestone dates or final date	Informal response; issue NOV.	PC
2.	Missed milestone date	Will effect other milestone dates or final date. Violation for good or valid cause	Compliance meeting; issue AO.	PC PM

**ENFORCEMENT RESPONSE PLAN
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3.	Missed milestone date	Will effect other milestone or final date. Violations not for good or valid cause – SNC	Show cause; administrative fine; judicial action, including penalty.	PM
4.	Failure to meet compliance schedule report requirements	Did not submit report but did complete milestone	Informal response; issue NOV.	PC
5.	Failure to meet compliance reporting requirements	Did not submit report and did not complete milestone	Issue NOV; AO with administrative fine.	PC PM
6.	Missed final date	Good or valid cause	Informal response; issue NOV.	PC
7.	Missed final date	45 days or more outstanding – SNC Failure or refusal to comply without good or valid cause	Show cause; AO with administrative fines; judicial action.	PM
8.	Reporting false information	ANY INSTANCE – SNC	Referral to prosecutor for criminal investigation; judicial action, including penalties; terminate service.	PM

SPILL INCIDENTS

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Spill incident	Reported and investigated	NOV; compliance meeting; AO to upgrade or develop ASPP.	PC PM

**ENFORCEMENT RESPONSE PLAN
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2.	Repeated spill incidents	Failure to upgrade or develop ASPP	Issue NOV; AO with administrative fines; notice to show cause.	PC PM
3.	Repeated spill incidents	Failure to act on a decision of compliance meeting and results in known environmental or POTW damage	Judicial action; terminate service.	PM

VIOLATION DETECTED DURING FIELD INSPECTIONS/INVESTIGATIONS

	<u>NONCOMPLIANCE</u>	<u>NATURE OF VIOLATION</u>	<u>RANGE OF RESPONSE</u>	<u>PERSONNEL</u>
1.	Minor violation of permit condition	No evidence of negligence or intent	NOV; AO for immediate corrective action.	PC
2.	Minor violation of permit condition	Evidence of negligence or intent	AO or civil action and penalty; possible criminal action	PM
3.	Major violation of permit condition	Evidence of negligence or intent – SNC	AO or civil action and penalty; possible criminal action; terminate service	PM

TIMEFRAMES FOR RESPONSES:

- A. All violations will be identified and documented within seven days of receiving compliance information.
- B. Initial enforcement responses [involving contact with the industrial user and the request for information on corrective or preventative action(s)] will occur within 15 days of violation detection.
- C. Follow up actions for continuing or reoccurring violations will be taken within 60 days of the initial enforcement response. For all continuing violations, the response will include a compliance schedule.
- D. Violations which threaten health, property, or environmental quality are considered emergencies and will receive immediate responses such as halting the discharge or terminating service.
- E. All violations meeting the criteria for significant noncompliance will be addressed with an enforceable order within 30 days of the identification of significant noncompliance

LOCAL LIMITS CALCULATOR

Plant	Non SIU Flow, MGD: 14.1	Flow To Digsr: MGD: 0.1739
	Tier 1 SIU, MGD: 1.525	SLDG To Disposal, MGD: 0.17
Data:	Tier 2 SIU, MGD: 2.974	SLDG Disposal %Solids: 2.5
	TOTAL Flow, MGD: 18.9	SITE Use, Years: 100
	7Q10, MGD: 8931.48	SITE Size, Acres: 18000

TIER 1
MASS LOADING
FROM HI-FLOW INDUSTRIES (lbs/D)

NPDES Limit	Removal Efficiencies		Domestic Level	PB Leiner Typical (mg/L)	Nestle Purina Typical (mg/L)	Kraft Heinz Typical (mg/L)	WQS	Safety Factor	Avg. Infl. Cncntrn	AS Inhibition	Digestion Inhibition	1) Leiner Davis 2) Nestle Purin: 3) Kraft Heinz				SUM TIER 1 ALLOCATION
	Primary	Plant										0.825	0.22	0.48	1.525 MGD	
Ag	0.0165	20%	75%	0.005	0.01	0.01	NA	5%	0.01	0.25	13	Ag	0.07	0.018	0.04	0.13 lbs Ag
As	1.4730	NA	45%	0.003	0.02	0.02	NA	5%	0.02	0.1	1.6	As	0.14	0.037	0.08	0.25 lbs As
Cd*	0.0187	14%	14%	0.003	0.01	0.01	NA	5%	0.01	1	20	Cd*	0.07	0.018	0.04	0.13 lbs Cd*
CN	0.0953	27%	69%	0.001	0.01	0.01	NA	5%	0.01	0.1	4	CN	0.081	0.022	0.05	0.15 lbs CN
Cr	0.0693	27%	82%	0.05	0.01	0.03	NA	5%	0.01	1	100	Cr	0.07	0.055	0.04	0.16 lbs Cr
Cu*	0.1165	22%	60%	0.061	0.01	0.11	NA	5%	0.048	1	40	Cu*	0.07	0.202	0.04	0.31 lbs Cu*
Hg	0.0071	10%	60%	0.0003	0.0029	0.0029	NA	5%	0.00055	0.1	NA	Hg	0.02	0.005	0.01	0.04 lbs Hg
Ni*	3.6530	14%	42%	0.021	0.01	0.01	NA	5%	0.01	1	10	Ni*	0.08	0.020	0.04	0.14 lbs Ni*
Pb*	0.8551	57%	61%	0.049	0.01	0.01	NA	5%	0.011	0.1	340	Pb*	0.07	0.019	0.04	0.13 lbs Pb*
Zn*	0.9337	27%	67%	0.175	0.08	0.37	NA	5%	0.167	1	400	Zn*	0.55	0.68	0.16	1.39 lbs Zn*

*HARDNESS DEPENDENT

NOTE: all values mg/l unless noted

Mississippi River 7Q10 CFS To MGD Conversion for Davenport Water Pollution Control Plant
13820 CFS = 8931.479 MGD

zinc 0.08 #REF! 0.37 mg/L @ permit flow limit
zinc 4.80 2.67 4.00 lbs/d actual

LOCAL LIMITS CALCULATOR

Plant	Non SIU Flow, MGD: 14.1	Flow To Digsr: MGD: 0.1739
	Tier 1 SIU, MGD: 1.525	SLDG To Disposal, MGD: 0.17
Data:	Tier 2 SIU, MGD: 2.974	SLDG Disposal %Solids: 2.5
	TOTAL Flow, MGD: 18.9	SITE Use, Years: 100
	7Q10, MGD: 8931.48	SITE Size, Acres: 18000

TIER 1
MASS LOADING
FROM HI-FLOW INDUSTRIES (lbs/D)

NPDES	Removal Efficiencies		Domestic Level	Tier 1 IUs Typical (mg/L)	WQS	Safety Factor	Avg. Infl. Cncntrn	AS Inhibition	Digestion Inhibition	1) Leiner Davis 2) Nestle Purin 3) Kraft Heinz			SUM TIER 1 ALLOCATION		
	Limit	Primary								Plant	0.825	0.22		0.48	1.525 MGD
Ag	0.0165	20%	3%	0.005	0.01	NA	5%	0.01	0.25	13	Ag	0.07	0.018	0.04	0.13 lbs Ag
As	1.4730	NA	4%	0.003	0.02	NA	5%	0.02	0.1	1.6	As	0.14	0.037	0.08	0.25 lbs As
Cd*	0.0187	14%	3%	0.003	0.01	NA	5%	0.01	1	20	Cd*	0.07	0.018	0.04	0.13 lbs Cd*
CN	0.0953	27%	9%	0.001	0.01	NA	5%	0.01	0.1	4	CN	0.081	0.022	0.05	0.15 lbs CN
Cr	0.0693	27%	3%	0.05	0.02	NA	5%	0.01	1	100	Cr	0.11	0.03	0.03	0.18 lbs Cr
Cu*	0.1165	22%	60%	0.061	0.05	NA	5%	0.048	1	40	Cu*	0.32	0.09	0.19	0.60 lbs Cu*
Hg	0.0071	10%	60%	0.0003	0.0029	NA	5%	0.00055	0.1	NA	Hg	0.02	0.005	0.01	0.04 lbs Hg
Ni*	3.6530	14%	3%	0.021	0.01	NA	5%	0.01	1	10	Ni*	0.08	0.02	0.04	0.14 lbs Ni*
Pb*	0.8551	57%	9%	0.049	0.01	NA	5%	0.011	0.1	340	Pb*	0.07	0.02	0.04	0.13 lbs Pb*
Zn*	0.9337	27%	67%	0.175	0.17	NA	5%	0.167	1	400	Zn*	1.20	0.32	0.70	2.21 lbs Zn*

*HARDNESS DEPENDENT

NOTE: all values mg/l unless noted

Mississippi River 7Q10 CFS To MGD Conversion for Davenport Water Pollution Control Plant
13820 CFS = 8931.479 MGD

zinc 0.17 #REF! 0.17 mg/L @ permit flow limit
zinc 4.80 2.67 4.00 lbs/d actual

ARSENIC

source

Domestic Backgrnd:	0.003	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	4%	Calculated
Primary Rmvl Eff.:	NA	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	literature
SLDG Digstn Inhib.:	1.6	literature
NPDES Limit, mg/l:	1.473	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	36.58	Regulation
Disp Limit, mg/kg:	508.6	calculated
SLDG Qual mg/kg:	41	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digrs: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	1.4003
SLDG Dispsl:	0.8738
Secndry Inhib.:	0.3692 <i>Limiting</i>
NPDES #:	5.7838
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	55.655
SLDG Dispsl:	34.729
Secndry Inhib.:	14.675 <i>Limiting</i>
NPDES #:	229.88

TIER 2

LOCAL LIMITS - TIERED

LOWER-FLOW SIU CONCENTR'N, mg/L

14.4 lbs/Day without Hi-Flow IUs
 2.974 MGD without Hi-Flow IUs
 0.581 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 24 times background sewage concentrations
 0.0686 mg/L concentration limit for Tier 1 w/ SF
 0.2544 lbs/Day allocated to Hi-Flow IUs w/ SF

CADMIUM

		source
Domestic Backgrnd:	0.003	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	3%	calculated
Primary Rmvl Eff.:	14%	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	literature
SLDG Digstn Inhib.:	20	literature
NPDES Limit, mg/l:	0.0187	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	34.79	Regulation
Disp Limit, mg/kg:	483.7	calculated
SLDG Qual mg/kg:	39	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr, MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	23.16
SLDG Dispsl:	1.0957
Secndry Inhib.:	4.3988
NPDES #:	0.0643 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	920.51
SLDG Dispsl:	43.547
Secndry Inhib.:	174.83
NPDES #:	2.5557 <i>Limiting</i>

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

2.4	lbs/Day without Hi-Flow IUs
2.974	MGD without Hi-Flow IUs
0.098	mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 25 times background sewage concentrations
 0.071 mg/L concentration limit for Tier 1 w/ SF
 0.13 lbs/Day allocated to Hi-Flow IUs w/ SF

CHROMIUM

Domestic Backgrnd:	0.05	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	3%	calculated
Primary Rmvl Eff.:	27%	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	literature
SLDG Digstn Inhib.:	100	
NPDES Limit, mg/l:	0.0693	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2676	Regulation
Disp Limit, mg/kg:	37208	calculated
SLDG Qual mg/kg:	na	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	118.96
SLDG Dispsl:	1082.9
Secndry Inhib.:	5.0328
NPDES #:	0.1284 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	4728
SLDG Dispsl:	43039
Secndry Inhib.:	200.03
NPDES #:	5.1026 <i>Limiting</i>

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

4.9 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
0.199 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 30 times background sewage concentrations
 1.43 mg/L concentration limit for Tier 1 w/ SF
 0.18 lbs/Day allocated to Hi-Flow IUs w/ SF

COPPER

		source
Domestic Backgrnd:	0.061	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	60%	calculated
Primary Rmvl Eff.:	22%	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	literature
SLDG Digstn Inhib.:	40	literature
NPDES Limit, mg/l:	0.1165	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	1338	Regulation
Disp Limit, mg/kg:	18604.1	calculated
SLDG Qual mg/kg:	1500	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digrs: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	2.1336
SLDG Dispsl:	1.941
Secndry Inhib.:	4.6701
NPDES #:	0.9356 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	84.802
SLDG Dispsl:	77.147
Secndry Inhib.:	185.61
NPDES #:	37.187 <i>Limiting</i>

**TIER 2
LOCAL LIMITS - TIERED**

LOWER-FLOW SIU CONCENTR'N, mg/L
36.6 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
1.475 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 13 times background sewage concentrations
 0.7552381 mg/L concentration limit for Tier 1 w/ SF
 0.5970427 lbs/Day allocated to Hi-Flow IUs w/ SF

CYANIDE

source	
Domestic Backgrnd:	0.001
Instream Backgrnd:	0
Plant Removal Eff.:	9% <i>calculated</i>
Primary Rmvl Eff.:	27% <i>literature</i>
WQS:	NA
Ratio: Dslvd/Tot:	1
Inhibition 2nd Trtmt:	0.1 <i>literature</i>
SLDG Digstn Inhib.:	4 <i>literature</i>
NPDES Limit, mg/l:	0.0953
SLUDGE DISPOSAL	
Lbs/Acre/Life, limit:	NA <i>Regulation</i>
Disp Limit, mg/kg:	NA <i>calculated</i>
SLDG Qual mg/kg:	NA <i>Regulation</i>
Grwth/Safety factor:	5%

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	1.6002
SLDG Dispsl:	NA
Secndry Inhib.:	0.5146
NPDES #:	0.3913 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	63.599
SLDG Dispsl:	NA
Secndry Inhib.:	20.452
NPDES #:	15.551 <i>Limiting</i>

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

15.4 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
0.621 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 50 times background sewage concentrations
 0.0476 mg/L concentration limit for Tier 1 w/ SF
 0.1501 lbs/Day allocated to Hi-Flow IUs w/ SF

LEAD

		source
Domestic Backgrnd:	0.049	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	9%	calculated
Primary Rmvl Eff.:	57%	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	literature
SLDG Digstn Inhib.:	340	literature
NPDES Limit, mg/l:	0.8551	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	268	Regulation
Disp Limit, mg/kg:	3726.4	calculated
SLDG Qual mg/kg:	300	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	132.09
SLDG Dispsl:	2.713
Secndry Inhib.:	0.74 <i>Limiting</i>
NPDES #:	3.4083
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	5250
SLDG Dispsl:	107.83
Secndry Inhib.:	29.411 <i>Limiting</i>
NPDES #:	135.46

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

29.3 lbs/D without Hi-Flow IUs w/ SFs
2.974 MGD without Hi-Flow IUs
1.180 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 5.52 times background sewage concentrations
 0.2576 mg/L concentration limit for Tier 1 w/ SF
 0.1335 lbs/Day allocated to Hi-Flow IUs w/ SF

City of Davenport, 2606 South Concord Activated Sludge Plant		08/01/22	
MERCURY		source	
Domestic Backgrnd:	0.0003 literature	Non SIU Flow, MGD:	14.134
Instream Backgrnd:	0	TTL Flow, MGD:	18.9
Plant Removal Eff.:	60% literature	7Q10, MGD:	8931.5
Primary Rmvl Eff.:	10% literature	Flow To Digrs, MGD:	0.1739
WQS:	NA	SLDG To Disp, MGD:	0.17
Ratio: Dslvd/Tot:	1	SLDG Disp %Solids:	2.5
Inhibition 2nd Trtmt:	0.1 literature	SITE Use, Yrs:	100
SLDG Digrstn Inhib.:	NA literature	SITE Size, Acres:	#####
NPDES Limit, mg/l:	0.0071	LOCAL LIMITS	
SLUDGE DISPOSAL		UNIFORM CONCENTRATION, mg/l	
Lbs/Acre/Life, limit:	15.17 Regulation	Water Quality:	NA
Disp Limit, mg/kg:	210.9 calculated	Digrstn Inhib:	NA
SLDG Qual mg/kg:	17	SLDG Dispsl:	0.0232 Limiting
Grwth/Safety factor:	5%	Secndry Inhib.:	0.4188
		NPDES #:	0.0662
		ALLOWABLE lbs/day, TOTAL from ALL SIUs	
		Water Quality:	NA
		Digrstn Inhib:	NA
		SLDG Dispsl:	0.9228 Limiting
		Secndry Inhib.:	16.646
		NPDES #:	2.6325
		TIER 2	
		LOCAL LIMITS - TIERED	
		LOWER-FLOW SIU CONCENTR'N, mg/L	
		0.886	lbs/D without Hi-Flow IUs w/ SFs
		2.974	MGD without Hi-Flow IUs
		0.036	mg/L concentration limit w/ SF
Hi-Flow IU's Tier 1	10 times background sewage concentrations		
	0.0029 mg/L concentration limit for Tier 1 w/ SF		
	0.0363 lbs/Day allocated to Hi-Flow IUs w/ SF		

City of Davenport, 2606 South Concord Activated Sludge Plant			08/01/22		
	NICKEL	source	Non SIU Flow, MGD: 14.134	SLDG To Disp, MGD: 0.17	
			TTL Flow, MGD: 18.9	SLDG Disp %Solids: 2.5	
Domestic Backgrnd:	0.021	literature	7Q10, MGD: 8931.5	SITE Use, Yrs: 100	
Instream Backgrnd:	0		Flow To Digrs, MGD: 0.1739	SITE Size, Acres: #####	
Plant Removal Eff.:	3%	calculated	LOCAL LIMITS		
Primary Rmvl Eff.:	14%	literature	UNIFORM CONCENTRATION, mg/l		
WQS:	NA		Water Quality:	NA	
Ratio: Dslvd/Tot:	1		Digstn Inhib:	11.525	
Inhibition 2nd Trtmt:	1	literature	SLDG Dispsl:	11.831	
SLDG Digstn Inhib.:	10	literature	Secndry Inhib.:	4.3326	Limiting
NPDES Limit, mg/l:	3.653		NPDES #:	14.165	
SLUDGE DISPOSAL			ALLOWABLE lbs/day, TOTAL from ALL SIUs		
Lbs/Acre/Life, limit:	375	Regulation	Water Quality:	NA	
Disp Limit, mg/kg:	5214.2	calculated	Digstn Inhib:	458.06	
SLDG Qual mg/kg:	420	Regulation	SLDG Dispsl:	470.24	
Grwth/Safety factor:	5%		Secndry Inhib.:	172.2	Limiting
			NPDES #:	562.99	
Hi-Flow IU's Tier 1	20	times background			
	0.4	mg/L concentration limit for Tier 1 w/ SF			
	0.14	lbs/Day allocated to Hi-Flow Uus w/ SF			
			TIER 2		
			LOCAL LIMITS - TIERED		
			LOWER-FLOW SIU CONCENTR'N, mg/L		
				172.1	lbs/Day without Hi-Flow Ius w/ SF
				2.974	MGD without Hi-Flow IUs
				6.937	mg/L concentration limit w/ SFs

ZINC

		source
Domestic Backgrnd:	0.175	literature
Instream Backgrnd:	0	
Plant Removal Eff.:	67%	calculated
Primary Rmvl Eff.:	27%	literature
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	literature
SLDG Digstn Inhib.:	400	literature
NPDES Limit, mg/l:	0.9337	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2498	Regulation
Disp Limit, mg/kg:	34733.3	calculated
SLDG Qual mg/kg:	2800	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digrs: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	20.232
SLDG Dispsl:	3.0515 <i>Limiting</i>
Secndry Inhib.:	4.6797
NPDES #:	10.215
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	804.13
SLDG Dispsl:	121.28 <i>Limiting</i>
Secndry Inhib.:	186
NPDES #:	406

**TIER 2
LOCAL LIMITS - TIERED**

LOWER-FLOW SIU CONCENTR'N, mg/L
119.1 lbs/D without Hi-Flow lus w/ SF
2.974 MGD without Hi-Flow IUs
4.801 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1

- 8 times background
- 1.33 mg/L concentration limit for Tier 1 w/ SF
- 2.21 lbs/D allocated to Hi-Flow lus w/ SF

CITY: City of Davenport, 2606 South Concord Activated Sludge Plant
SUMMARY OF MASS LOADINGS

Note: Green shaded cells represent proposed local limits, at headworks location and as measured at IUs.

	Domestic/comml Sources		Hi-Flow/Low Metal Tier 1 SIUs		Allowable from Tier 2 SIUs (other)		lbs. Reserve	@ Headworks TOTAL Allowable lbs	@ Headworks ACTUAL Load	Current Loading as % of Limit
	lbs.	% of limit	lbs.	% of limit	lbs.	% of limit				
Ag	0.589	22%	0.127	5%	1.847	69%	0.099	2.662	1.576	59%
As	0.354	2%	0.254	2%	14.421	91%	0.734	15.763	3.153	20%
Cd	0.354	12%	0.127	4%	2.429	80%	0.128	3.037	1.576	52%
CN	0.118	1%	0.150	1%	15.401	94%	0.778	16.446	1.576	10%
Cr	5.894	52%	0.164	1%	4.939	44%	0.255	11.252	1.576	14%
Cu	7.191	16%	0.311	1%	36.876	80%	1.859	46.237	7.566	16%
Hg	0.035	4%	0.036	4%	0.886	88%	0.046	1.004	0.087	9%
Ni	2.475	1%	0.142	0%	172.059	94%	8.610	183.286	1.576	1%
Pb	5.776	16%	0.133	0%	29.277	80%	1.471	36.657	1.734	5%
Zn	20.629	14%	1.389	1%	119.891	81%	6.064	147.974	26.324	18%

ALL IUs
UNIFORM CONCENTRATION LIMIT
(NOT TO BE APPLIED)

	mg/l
Ag	0.050
As	0.369
Cd	0.064
CN	0.391
Cr	0.128
Cu	0.936
Hg	0.023
Ni	4.333
Pb	0.740
Zn	3.051

TIER 2 IUs
LOWER-FLOW IUs CONCENTRATION LIMIT
PROPOSED

	mg/l
Ag	0.074
As	0.581
Cd	0.098
CN	0.621
Cr	0.199
Cu	1.475
Hg	0.036
Ni	6.937
Pb	1.180
Zn	4.801

LIMITING CRITERIA

Ag	NPDES #:
As	Secndry Inhib.:
Cd	NPDES #:
CN	NPDES #:
Cr	NPDES #:
Cu	NPDES #:
Hg	SLDG Dispsl:
Ni	Secndry Inhib.:
Pb	Secndry Inhib.:
Zn	SLDG Dispsl:

DRAFT 2 Tiered Local Limits spreadsheet

We understand that the original Local Limits calculator workbook was developed by Paul Marshall, U.S. POTW capacity to manage non-conventional pollutants (MAHL) must be calculated to avoid pass-through. This capacity may then be allocated to POTW clients as the need may arise. The permitted allocation method. The uniform concentration method of allocation of POTW capacity has some inherent problems due to everybody as if they have the same needs or the same manufacturing process.

This version of the Local Limits Calculator workbook can be used to estimate Local Limits for a Tiered system. Two industrial tiers were established for this purpose (beyond domestic/commercial), Tier 1 (high flow/low concentration) and Tier 2 (low flow/higher concentration). The general concept is that metals loading is first allocated to "uncontrolled" sources (domestic/commercial). For best results, the Tier 1 users should all have flowmeters and flow-paced samplers, enabling permit "Leftover" metal loading (lbs/day) is then uniformly allocated to Tier 2 (low flow/higher concentration) users. Any of the concentration limits could be converted to mass limits if appropriate flow monitoring equipment is available.

The MAHL and MAIL (maximum allowable industrial loading) must be accurately determined before allocation. Once accurately determined, the MAHL and MAIL (lbs/day) data "are what they are" for the facility. The MAHL and MAIL are determined by the facility's discharge data.

For proper allocation, the spreadsheet must be customized: tailor the Tier 1 flow data and "acceptable" discharge concentrations. Two data entry areas are provided for this purpose.

First, fill in the flowrate for each Tier 1 user in the Data sheet, then move to the specific metals. Next, review the Tier 1 discharge data and adjust the value in cell B23 to ___ "times background concentration". Iterations will be required here. Try to match or exceed the highest typical discharge concentration. Next, compare the resulting Tier 2 (low flow industries) concentrations to their typical discharge concentrations.

The end result should be tailored to accommodate as much of the industrial capacity as is feasible, by volume. Outliers (statistically demonstrated as such) in the industrial monitoring data should not be used in this workbook. This workbook does not evaluate "need for the limits" information. The municipality must use judgement.

Please forward your comments regarding the tiered modification of this workbook to:

Rich Grant, P.E.

Fleis & VandenBrink Engineering, Inc.

rgrant@fveng.com

(616)541-6000

. EPA Region 7. We deserve no credit.
high, interference and sludge contamination.
must not exceed the POTW MAHL capacity.
it's simplicity. Usually it does not make sense to treat

allocation system.
low metals) and Tier 2 (other IUs).
priority), then to Tier 1 low concentration Industrial Users.
issuance with mass limits (no Tier 1 concentration limits).
users via concentration limits.
method is employed.

allocation can proceed.
The Tiered allocation does not affect the POTW capacity.

ratio of Local Limit/(discharge concentration).

Excel spreadsheets
around sewage concentrations".
concentrations of Tier 1 industry, to accommodate them.
large concentrations.

wisely allocating the POTW metals capacity.
Local Limits and allocation work, unless no slug control plan if feasible.
not in this decision that is beyond the scope of this calculation.

OTHER

Domestic Backgrnd:	1
Instream Backgrnd:	0
Plant Removal Eff.:	10%
Primary Rmvl Eff.:	10%
WQS:	1
Ratio: Dslvd/Tot:	1
Inhibition 2nd Trtmt:	1
SLDG Digstn Inhib.:	1
NPDES Limit, mg/l:	NA
SLUDGE DISPOSAL	
Lbs/Acre/Life, limit:	1
Disp Limit, mg/kg:	13.9
SLDG Qual mg/kg:	1
Grwth/Safety factor:	0%

source

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solid:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	2083.8
Digstn Inhib:	-2.601
SLDG Dispsl:	-2.957 <i>Limiting</i>
Secndry Inhib.:	1.4407
NPDES #:	NA
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	82822
Digstn Inhib:	-103.4
SLDG Dispsl:	-117.5 <i>Limiting</i>
Secndry Inhib.:	57.259
NPDES #:	NA

NonConservative

Domestic Backgrnd:	1
Cnctn @ Headworks	20
Instream Backgrnd:	0%
Plant Removal Eff.:	80%
Primary Rmvl Eff.:	0.3
WQS:	1
Ratio: Dslvd/Tot:	1
Inhibition 2nd Trtmt:	1
SLDG Digstn Inhib.:	1
NPDES Limit, mg/l:	1
SLUDGE DISPOSAL	
Cnctn to DGSTR:	60.0
mg/kg to DISPSL:	40
Lbs/Acre/Life, limit:	100
Disp Limit, mg/kg:	#####

source

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solid:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	9387.6
Digstn Inhib:	-1.644 <i>Limiting</i>
SLDG Dispsl:	145.33
Secndry Inhib.:	2.6997
NPDES #:	16.864
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	373113
Digstn Inhib:	-116.1 <i>Limiting</i>
SLDG Dispsl:	5776.2
Secndry Inhib.:	107.3
NPDES #:	670.25

Grwth/Safety factor:	0
Lbs/Acre/Year, limit:	NA
Disp. Limit, mg/kg:	NA

Pollutant	Conc	SAMPLE VOLUMES			MGD	Disposal
		Comp	Comp	Service		
Pb	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
Cu	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
Zn	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
Mn	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
Fe	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1
	0.01	0.01	0.01	0.01	0.1	0.1

* MGD is hardness dependent

INSTRUCTIONS

INTRODUCTION

Congratulations. You are the proud owner of the finest Local Limits spreadsheet money can't buy. This spreadsheet is designed to take the drudgery out of calculating one's local limits, however, it assumes that the user has at least a rudimentary understanding of how headworks limits are calculated. It does not work magic. It is a tool that is only as good as the person using it. Therefore, the writer assumes no responsibility for the use of this program. You're on your own.

Before using the spreadsheet one should make a backup copy. Many cells are linked under normal conditions, however, when warranted, they can be overwritten. When this is done the link is broken and future calculations may not work correctly.

The spreadsheet is based on the formulas that are presented in the EPA Guidance Manual on the Development and Implementation of Local Discharge Limits Under the Pretreatment Program. However, some of the formulas have been combined since some of the intermediate steps are not warranted when using a computer to determine local limits. The spreadsheet focuses on the ten pollutants that EPA has specified as the minimum pollutants one should evaluate to fulfill the requirements of 40 CFR 403.5. However, other pollutants of concern can be evaluated with this spreadsheet.

The original program was written in Quattro Pro for Windows 5.0. If you are using a different version or importing it into a different spreadsheet some of the macros may not run properly. It is recommended that the Quattro Pro version be used where possible.

LAYOUT

The program takes advantage of the notebook approach that all major spreadsheet manufacturers have adopted. This allows for much more organized display of data and a greater ease in navigation. Each pollutant has been put on its own notebook page, with the page bearing the name of the pollutant. This greatly facilitates the evaluation of individual pollutants.

The first page (DATA) conveniently contains all of the values that one will use when performing the headworks analysis. The table is already loaded with the literature values that EPA presented in the above mentioned Guidance Manual. These data will be henceforth called "default" data, a term made famous by EPA's earlier local limits calculator, PRELIM. Where site specific data are available these numbers can be overwritten and they will automatically be used in the headworks calculation. If a return to the default data is desired one can find a table of the EPA default data on the notebook page (DEFAULT). Because both tables present the pollutants in the same order, values can be easily copied from one to the other. When replacing data in the spreadsheet always follow the format of the existing value.

To view the calculation for a given pollutant click on the notebook tab for that pollutant. The screen will contain a list of all of the inputs that go into the calculation. If a value is one that is default data, the word "literature," "Goldbook," or "Regulation" will appear in the "source" column. If an input is one that can be made on the (DATA) page it appears in black. If the input is one that can only be made on that page it appears in purple. Unless stated all concentrations are in mg/l and all flows are in MGD. A discussion of each input is presented below.

Domestic Background

This input represents the average value of non SIU sources. It should represent those sources that will be assumed to be uncontrollable.

Instream Background

This is the measurement of the pollutant taken ABOVE the treatment plant outfall.

Plant Removal Efficiency

This is the average removal efficiency (in decimal percent) taken across the wastewater treatment plant for the pollutant under investigation.

Primary Removal Efficiency

If Secondary treatment inhibition is the controlling condition, this value can be important. It is the removal efficiency taken across primary treatment (if it exists).

Water Quality Standard (WQS)

The spreadsheet uses the EPA "Goldbook" water quality criteria as default for those cities that do not have an NPDES permit limit for the pollutant in question.

Ratio: Dissolved/Total

Secondary inhibition is a function of the dissolved metal form. However, almost all sampling is conducted for total metals. If one knows the average ratio of the Dissolved Metal to the Total Metal, this can be employed as a correction factor. Note: the correction factor will be a number less than one.

Inhibition of Secondary Treatment

This is the lowest concentration at which inhibition of secondary treatment occurs. A plant specific number is difficult to know, therefore, literature data is almost always used. The spreadsheet is set up with activated sludge as the assumed secondary treatment process. Secondary treatment inhibition values for trickling filters can be found in the (DEFAULT) table.

Sludge Digestion Inhibition

This is the lowest concentration measured in an anaerobic digester where inhibition of sludge digestion is observed. The author knows of no source of inhibition values for aerobic sludge digestion and therefore recommends that anaerobic default values be used. Site specific values for either type are difficult to know.

NPDES Limit

If an NPDES permit limit exists for the pollutant it will appear here. If the limit was entered on the (DATA) page the analysis with regard to water quality standards is disabled. Check with your Approval Authority to determine if you should evaluate for water quality considerations if an NPDES permit limit exists for the pollutant.

Sludge Disposal

The regulatory standards for land application of sludge are presented. The disposal limit is calculated based on the disposal site size and the acres available for disposal.

Growth/Safety Factor

If a safety factor is desired it should be entered in a decimal percent. Not all Approval Authorities require safety factors for all pollutants.

PLANT DATA

It is easier to input the plant data on the (DATA) page. However, if warranted it can also be adjusted on the page of the pollutant. Eight plant specific inputs exist. They are:

Non SIU Flow

Input the the non SIU average flow, i.e. the flows from domestic and commercial sources. It is assumed that these flows all have the average pollutant level reflected by the Domestic Background concentration already discussed.

Total Plant Flow (TTL Flow)

This is the average daily dry weather flow of the wastewater treatment plant. The program uses the difference between the total plant flow and the non SIU flow as the flow that represents those industries for which the local limit will apply.

7Q10

This is the 7Q10 flow of the receiving stream measured upstream from the wastewater treatment plant. If one is not evaluating for water quality effects (because one has NPDES limits instead) this number has no effect on the calculation.

Flow to Digester

This is the average daily flow, in MGD, to the sludge digester.

Sludge Flow to Disposal

This is the average sludge flow to the disposal fields. The total flow for the year divided by 365 will yield the best results.

Sludge Disposal Percent Solids

Use the average percent solids of the sludge flow reported above. Note that this is not a decimal percent.

Site Use, Years

Enter the expected or desired site life in years of the fields receiving the pollutant.

Site Size, Acres

Enter the acreage that will be available during the above reported site use period.

RESULTS:

The headworks calculation for the pollutant is presented in two forms. In a box entitled "LOCAL LIMITS" one will find the limit expressed as a concentration if it is applied uniformly to all industries whose flows are considered as SIU flows by the program. The Uniform Concentration limits are presented because this is the most popular method for applying a local limit. However, the plant's true local limit is a mass, therefore, the program shows the TOTAL allowable pounds per day that can be contributed to the plant from ALL SIUs together.

Each pollutant is evaluated for the most restrictive case. The program identifies this case and the word "Limiting" will appear next to the value. This is the limit.

OTHER NOTEBOOK PAGES

SUMMARY

This page presents a summary of the headworks analysis. For each of the ten pollutants the domestic/commercial mass loading is presented along with its percentage of the total loading from all sources. Likewise, the total allowable mass that can be discharged from all SIUs and its percentage of the total from all sources is presented. If a safety factor was included, the mass held in reserve is also shown as is the total mass acceptable from all sources.

If one entered values for the average plant influent concentrations the average actual mass at the plant headworks is presented. This is then compared to the Allowable Load from all sources.

Clicking on the button marked "Unifrm Cnctrn" will show the local limits for all pollutants as a uniform concentration if it is to be applied using that method. Also a table is presented that lists the limiting factor behind the limit developed for each pollutant.

OTHER

This page allows for the development of a local limit for any other conservative pollutant of concern. Note that the input criteria are all in purple. Therefore, all such inputs must be made on this page.

NONCON

The Guidance Manual includes formulas for evaluating for non-conservative pollutants. They are incorporated here. Note that some of the inputs are different (they appear in blue) and that they all won't fit on one screen.

POLLUTANT SCREENING

The Guidance Manual presents a method (p. 2-22) for screening to determine when one MUST perform a headworks analysis for a particular pollutant. This method is found on notebook page (SCREEN). If the input values are entered as defined by the column the program will state whether an analysis is needed or not.

PRINTING THE SPREADSHEET

Generally the spreadsheet can be printed two ways. On almost all pages a print button can be clicked that will print that individual page. However, it may be more efficient to print from the notebook page (PRINT). Here one can find a button that will print the input page, the ten metals/cyanide results (three pollutants to a page), and the summary page all at once. All pages can be printed from the (PRINT) page.

Also, when one prints the (SCREEN) page from the (PRINT) page, the printout will be expanded to show the screening criteria. If a 0 appears in the column the pollutant passes the screening criteria. If a 1 appears column the pollutant fails that element of the screening criteria. When the screening analysis is printed from its own page the criteria are not shown.

TABLE of "DEFAULT" VALUES

The following tables are taken from the EPA's Local Limits Guidance Manual

	Removal Efficiencies			Domestic Level	@h=100 WQS*	Inhibition Levels	
	Primary	Act Sldg	Trkl Fltr			AS	Digestion
Ag	20%	75%	66%	0.005	0.00012	0.25	13
As	NA	45%	NA	0.003	0.19	0.1	1.6
Cd*	15%	67%	68%	0.003	0.0011	1	20
CN	27%	69%	59%	0.041	0.005	0.1	4
Cr	27%	82%	55%	0.05	0.2	1	100
Cu*	22%	86%	55%	0.061	0.012	1	40
Hg	10%	60%	50%	0.003	1.2	0.1	NA
Ni*	14%	42%	29%	0.021	0.16	1	10
Pb*	57%	61%	55%	0.049	0.032	0.1	340
Zn*	27%	79%	67%	0.175	0.11	1	400

*Hardness Dependent (This table assumes Hardness=100)

all values in mg/l unless stated

PUSH BUTTONS TO PRINT

Metals/Cyanide

- | | |
|---|----------------|
| Print Data page, all metals/cyanide and Summary | Print Arsenic |
| Print Nonconservative Pollutant | Print Cadmium |
| Print "Other" limit | Print Chromium |
| Print Data page | Print Copper |
| Print EPA default values | Print Cyanide |
| Print Screening exercise, expanded form | Print Lead |
| Print summary of mass loadings | Print Mercury |
| | Print Nickel |
| | Print Silver |
| | Print Zinc |

cyanide (SelectBlock ~CN.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~CN.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	lead (SelectBlock ~Pb.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Pb.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	mercury (SelectBlock ~Hg.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Hg.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	nickel (SelectBlock ~Ni.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Ni.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	silver (SelectBlock ~Ag.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Ag.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	zinc (SelectBlock ~Zn.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Zn.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)	cadmium (SelectBlock ~Cd.A1.H18) (PrintOrientation Portrait) (PrintPrint_To_Fit Yes) (PrintBlock ~Cd.A1.H18*) (PrintDoPrint) (SelectBlock PRINT.A1.A1)
---	--	---	--	--	--	---

(PrintBlock ~HELL_PA3_J225*)
(PrintDoPrint)
(SELECTBLOCK HELL_P.A1)

LOCAL LIMITS CALCULATOR

Plant	Non SIU Flow, MGD:	14.1	Flow To Digrs: MGD:	0.1739
	Tier 1 SIU, MGD:	1.045	SLDG To Disposal, MGD:	0.17
Data:	Tier 2 SIU, MGD:	2.974	SLDG Disposal %Solids:	2.5
	TOTAL Flow, MGD:	18.9	SITE Use, Years:	100
	7Q10, MGD:	8931.48	SITE Size, Acres:	18000

	NPDES Limit	Removal Efficiencies		Domestic Level	PB Leiner Typical (mg/L)	Nestle Purina Typical (mg/L)	Kraft Heinz Typical (mg/L)	WQS	Safety Factor	Avg. Infl. Cncntrn	AS Inhibition	Digestion Inhibition
		Primary	Plant									
Al	3.249		91%	0.023	1.58	0.80	0.16	NA	5%	0.42992	NA	NA
Fe	4.332			0.989				NA	5%		NA	NA
Mo	NA		6%	0.008	0.01	0.10	0.01	NA	5%	0.01	NA	NA
Se	0.0836		33%	0.003	0.01	0.01	0.01	NA	5%	0.011	NA	NA
Phen.	1.915		90%	0.01	0.08	0.02	0.02	NA	5%	0.02	200	NA

*HARDNESS DEPENDENT

NOTE: all values mg/l unless noted

Mississippi River 7Q10 CFS to MGD Conversion for the Davenport Water Pollution Control Plant
13820 CFS = 8931.479

TIER 1
MASS LOADING
FROM HI-FLOW INDUSTRIES (lbs/D)

1) Leiner Davis	2) Nestle Purin	3) Kraft Heinz	SUM TIER 1 ALLOCATION
0.825	0.22	0.48	1.525 MGD
10.88	1.47	0.66	13.01 lbs Al
0.00	0.00	0.00	0.00 lbs Fe
0.07	0.19	0.04	0.30 lbs Mo
0.08	0.02	0.05	0.15 lbs Se
0.52	0.04	0.08	0.64 lbs Phenols

Al
Fe
Mo
Se
Phenols

MOLYBDENUM

Domestic Backgrnd:	0.008	source
Instream Backgrnd:	0	
Plant Removal Eff.:	6%	
Primary Rmvl Eff.:	0%	
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	NA	
SLDG Digstn Inhib.:	NA	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	
Disp Limit, mg/kg:	NA	calculated
SLDG Qual mg/kg:	75	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	18000

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	1.0497 <i>Limiting</i>
Secndry Inhib.:	NA
NPDES #:	NA
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	41.72 <i>Limiting</i>
Secndry Inhib.:	NA
NPDES #:	NA

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

41.4 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
1.670 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 100 times background sewage concentrations
 0.76 mg/L concentration limit for Tier 1 w/ SF
 0.3 lbs/Day allocated to Hi-Flow IUs w/ SF

SELENIUM

Domestic Backgrnd:	0.003	source
Instream Backgrnd:	0	
Plant Removal Eff.:	33%	
Primary Rmvl Eff.:	0%	
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	NA	
SLDG Digstn Inhib.:	NA	
NPDES Limit, mg/l:	0.0836	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	Regulation
Disp Limit, mg/kg:	NA	calculated
SLDG Qual mg/kg:	36	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	0.0833 <i>Limiting</i>
Secndry Inhib.:	NA
NPDES #:	0.4652
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	3.309 <i>Limiting</i>
Secndry Inhib.:	NA
NPDES #:	18.488

**TIER 2
LOCAL LIMITS - TIERED
LOWER-FLOW SIU CONCENTR'N, mg/L**

3.2 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
0.127 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 20 times background sewage concentrations
 0.0571 mg/L concentration limit for Tier 1 w/ SF
 0.1521 lbs/Day allocated to Hi-Flow IUs w/ SF

PENOLS

Domestic Backgrnd:	0.01	source
Instream Backgrnd:	0	
Plant Removal Eff.:	90%	
Primary Rmvl Eff.:	0%	
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	200	
SLDG Digstn Inhib.:	NA	literature
NPDES Limit, mg/l:	1.915	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	
Disp Limit, mg/kg:	NA	calculated
SLDG Qual mg/kg:	NA	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr, MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	NA
Secndry Inhib.:	755.39
NPDES #:	72.303 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	NA
Secndry Inhib.:	30023
NPDES #:	2873.7 <i>Limiting</i>

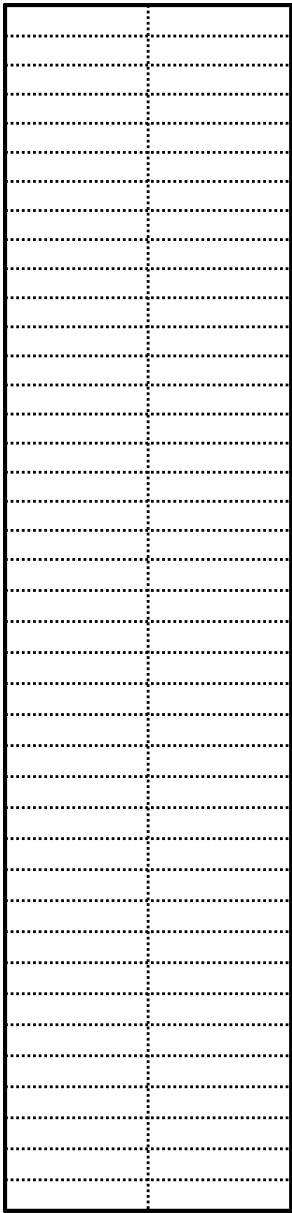
TIER 2

LOCAL LIMITS - TIERED

LOWER-FLOW SIU CONCENTR'N, mg/L
2873.0 lbs/D without Hi-Flow IUs w/ SF
2.974 MGD without Hi-Flow IUs
115.833 mg/L concentration limit w/ SF

Hi-Flow IU's Tier 1 500 times background sewage concentrations
 4.7619 mg/L concentration limit for Tier 1 w/ SF
 0.6397 lbs/Day allocated to Hi-Flow IUs, w/ SF

City of Davenport, 2606 South Concord Activated Sludge Plant		08/01/22	
ALUMINUM			
source			
Domestic Backgrnd:	0.023	Non SIU Flow, MGD:	14.134
Instream Backgrnd:	0	TTL Flow, MGD:	18.9
Plant Removal Eff.:	91%	7Q10, MGD:	8931.5
Primary Rmvl Eff.:	0%	Flow To Digrs: MGD:	0.1739
WQS:	NA	SLDG To Disp, MGD:	0.17
Ratio: Dslvd/Tot:	1	SLDG Disp %Solids:	2.5
Inhibition 2nd Trtmt:	NA	SITE Use, Yrs:	100
SLDG Digstn Inhib.:	NA	SITE Size, Acres:	#####
NPDES Limit, mg/l:	3.249	LOCAL LIMITS	
SLUDGE DISPOSAL		UNIFORM CONCENTRATION, mg/l	
Lbs/Acre/Life, limit:	NA Regulation	Water Quality:	NA
Disp Limit, mg/kg:	NA calculated	Digstn Inhib.:	NA
SLDG Qual mg/kg:	NA Regulation	SLDG Dispsl.:	NA
		Secndry Inhib.:	NA
Grwth/Safety factor:	5%	NPDES #:	129.82 Limiting
		ALLOWABLE lbs/day, TOTAL from ALL SIUs	
		Water Quality:	NA
		Digstn Inhib.:	NA
		SLDG Dispsl.:	NA
		Secndry Inhib.:	NA
		NPDES #:	5159.8 Limiting
{SelectBlock ~Ag:A1.H18} {Print.Block "~Ag:A1.H18"} {Print.Left_Margin "1.20 in"} {Print.Right_Margin "0.00 in"} {Print.DoPrint} {SelectBlock ~Ag:A1.A1} {Print.Left_Margin "0.40 in"} {Print.Right_Margin "0.40 in"} {Print.Header_Margin "0.50 in"} {Print.Footer_Margin "0.50 in"} {Print.Lines_Between_Pages "0"}			



IRON

source

Domestic Backgrnd:	0.989	
Instream Backgrnd:	0	
Plant Removal Eff.:	0%	
Primary Rmvl Eff.:	0%	<i>literature</i>
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	NA	
SLDG Digstn Inhib.:	NA	
NPDES Limit, mg/l:	4.332	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	
Disp Limit, mg/kg:	NA	<i>calculated</i>
SLDG Qual mg/kg:	NA	
Grwth/Safety factor:	5%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	NA
Secndry Inhib.:	NA
NPDES #:	13.569 <i>Limiting</i>
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	NA
Digstn Inhib:	NA
SLDG Dispsl:	NA
Secndry Inhib.:	NA
NPDES #:	539.29 <i>Limiting</i>

COPPER

source

Domestic Backgrnd:	0	
Instream Backgrnd:	0	
Plant Removal Eff.:	0%	
Primary Rmvl Eff.:	0%	
WQS:	0	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0	
SLDG Digstn Inhib.:	0	
NPDES Limit, mg/l:	0	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	1338	Regulation
Disp Limit, mg/kg:	18604.1	calculated
SLDG Qual mg/kg:	1500	
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	
ALLOWABLE lbs/day, TOTAL from ALL SIUs			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	

LEAD

source

Domestic Backgrnd:	0	
Instream Backgrnd:	0	
Plant Removal Eff.:	0%	
Primary Rmvl Eff.:	0%	
WQS:	0	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0	
SLDG Digstn Inhib.:	0	
NPDES Limit, mg/l:	0	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	268	Regulation
Disp Limit, mg/kg:	3726.4	calculated
SLDG Qual mg/kg:	300	
Grwth/Safety factor:	0%	

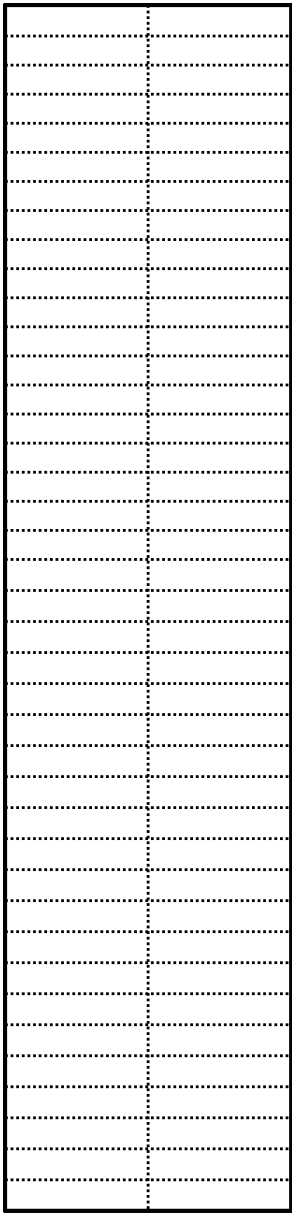
Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

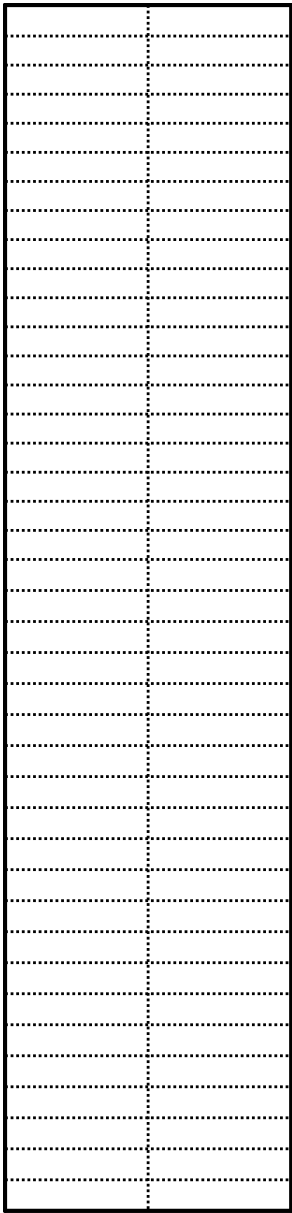
UNIFORM CONCENTRATION, mg/l			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	
ALLOWABLE lbs/day, TOTAL from ALL SIUs			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	

```
{SelectBlock ~Pb:A1..H18}
{Print.Block "~Pb:A1..H18"}
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{Print.Right_Margin "0.00 in"}
{Print.DoPrint}
{SelectBlock ~Pb:A1..A1}
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{Print.Right_Margin "0.40 in"}
{Print.Header_Margin "0.50 in"}
{Print.Footer_Margin "0.50 in"}
{Print.Lines_Between_Pages "0"}
```


City of Davenport, 2606 South Concord Activated Sludge Plant			08/01/22			
MERCURY:			Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
source			TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
Domestic Backgrnd:	0		7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Instream Backgrnd:	0		Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####
Plant Removal Eff.:	0%		LOCAL LIMITS			
Primary Rmvl Eff.:	0%		UNIFORM CONCENTRATION, mg/l			
WQS:	0		Water Quality:	NA: #DIV/0!	#DIV/0!	
Ratio: Dslvd/Tot:	1		Digstn Inhib:	NA: #DIV/0!		
Inhibition 2nd Trtmt:	0		SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
SLDG Digstn Inhib.:	0	literature	Secndry Inhib.:	NA: #DIV/0!		
NPDES Limit, mg/l:	0		NPDES #:	NA: #DIV/0!		
SLUDGE DISPOSAL			ALLOWABLE lbs/day, TOTAL from ALL SIUs			
Lbs/Acre/Life, limit:	15.17	Regulation	Water Quality:	NA: #DIV/0!	#DIV/0!	
Disp Limit, mg/kg:	210.9	calculated	Digstn Inhib:	NA: #DIV/0!		
SLDG Qual mg/kg:	17		SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Grwth/Safety factor:	0%		Secndry Inhib.:	NA: #DIV/0!		
			NPDES #:	NA: #DIV/0!		
{SelectBlock ~Hg:A1.H18} {Print.Block "~Hg:A1.H18"} {Print.Left_Margin "1.20 in"} {Print.Right_Margin "0.00 in"} {Print.DoPrint} {SelectBlock ~Hg:A1.A1} {Print.Left_Margin "0.40 in"} {Print.Right_Margin "0.40 in"} {Print.Header_Margin "0.50 in"} {Print.Footer_Margin "0.50 in"} {Print.Lines_Between_Pages "0"}						



City of Davenport, 2606 South Concord Activated Sludge Plant			08/01/22			
NICKEL			Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
source			TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
Domestic Backgrnd:	0		7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Instream Backgrnd:	0		Flow To Digsr: MGD:	0.1739	SITE Size, Acres:	#####
Plant Removal Eff.:	0%		LOCAL LIMITS			
Primary Rmvl Eff.:	0%		UNIFORM CONCENTRATION, mg/l			
WQS:	0		Water Quality:	NA: #DIV/0!	#DIV/0!	
Ratio: Dslvd/Tot:	1		Digstn Inhib:	NA: #DIV/0!		
Inhibition 2nd Trtmt:	0		SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
SLDG Digstn Inhib.:	0		Secndry Inhib.:	NA: #DIV/0!		
NPDES Limit, mg/l:	0		NPDES #:	NA: #DIV/0!		
SLUDGE DISPOSAL			ALLOWABLE lbs/day, TOTAL from ALL SIUs			
Lbs/Acre/Life, limit:	375	Regulation	Water Quality:	NA: #DIV/0!	#DIV/0!	
Disp Limit, mg/kg:	5214.2	calculated	Digstn Inhib:	NA: #DIV/0!		
SLDG Qual mg/kg:	420	Regulation	SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Grwth/Safety factor:	0%		Secndry Inhib.:	NA: #DIV/0!		
			NPDES #:	NA: #DIV/0!		
{SelectBlock ~Ni:A1.H18} {Print.Block "~Ni:A1.H18"} {Print.Left_Margin "1.20 in"} {Print.Right_Margin "0.00 in"} {Print.DoPrint} {SelectBlock ~Ni:A1.A1} {Print.Left_Margin "0.40 in"} {Print.Right_Margin "0.40 in"} {Print.Header_Margin "0.50 in"} {Print.Footer_Margin "0.50 in"} {Print.Lines_Between_Pages "0"}						



ZINC

source

Domestic Backgrnd:	0	
Instream Backgrnd:	0	
Plant Removal Eff.:	0%	
Primary Rmvl Eff.:	0%	
WQS:	0	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0	
SLDG Digstn Inhib.:	0	
NPDES Limit, mg/l:	0	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2498	Regulation
Disp Limit, mg/kg:	34733.3	calculated
SLDG Qual mg/kg:	2800	
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solids:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digrs: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	
ALLOWABLE lbs/day, TOTAL from ALL SIUs			
Water Quality	NA	#DIV/0!	#DIV/0!
Digstn Inhib:	NA	#DIV/0!	
SLDG Dispsl:	#DIV/0!	#DIV/0!	#####
Secndry Inhib.:	NA	#DIV/0!	
NPDES #:	NA	#DIV/0!	

```
{SelectBlock ~Zn:A1..H18}
{Print.Block "~Zn:A1..H18"}
{Print.Left_Margin "1.20 in"}
{Print.Right_Margin "0.00 in"}
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{Print.Left_Margin "0.40 in"}
{Print.Right_Margin "0.40 in"}
{Print.Header_Margin "0.50 in"}
{Print.Footer_Margin "0.50 in"}
{Print.Lines_Between_Pages "0"}
```


CITY: City of Davenport, 2606 South Concord Activated Sludge Plant
SUMMARY OF MASS LOADINGS

Note: Green shaded cells represent proposed local limits, at headworks location and as measured at IUs.

	Domestic/commcl Sources		Hi-Flow/Low Metal Tier 1 SIUs		Allowable from Tier 2 SIUs (others)		lbs. Reserve	@ Headworks TOTAL Allowable lbs	@ Headworks ACTUAL Load	Current Loading as % of Limit
	lbs.	% of limit	lbs.	% of limit	lbs.	% of limit				
Al	2.711	0%	12.391	0%	5147.388	95%	257.989	5408.728	67.766	1%
Fe	116.584	17%	0.000	0%	539.287	79%	26.964	682.836	NA	#N/A
Mo	0.943	2%	0.297	1%	41.423	93%	2.086	44.749	1.576	4%
Se	0.354	9%	0.152	4%	3.157	82%	0.165	3.828	1.734	45%
Phen	1.179	0%	0.640	0%	2873.036	95%	143.684	3018.538	3.153	0%

UNIFORM CONCENTRATION LIMIT (NOT TO BE APPLIED)

	mg/l
Al	129.822
Fe	13.569
Mo	1.050
Se	0.083
Phen	72.303

TIER 2 IUs LOWER-FLOW IUs CONCENTRATION LIMIT PROPOSED

	mg/l
Al	
Fe	
Mo	1.670
Se	0.127
Phen	115.833

LIMITING CRITERIA

Al	NPDES #:
Fe	NPDES #:
Mo	SLDG Dispsl:
Se	SLDG Dispsl:
Phen	NPDES #:

DRAFT 2 Tiered Local Limits spreadsheet

We understand that the original Local Limits calculator workbook was developed by Paul Marshall, U.S. POTW capacity to manage non-conventional pollutants (MAHL) must be calculated to avoid pass-through. This capacity may then be allocated to POTW clients as the need may arise. The permitted allocation method. The uniform concentration method of allocation of POTW capacity has some inherent problems due to it being everybody as if they have the same needs or the same manufacturing process.

This version of the Local Limits Calculator workbook can be used to estimate Local Limits for a Tiered system with two industrial tiers were established for this purpose (beyond domestic/commercial), Tier 1 (high flow/low concentration) and Tier 2 (low flow/high concentration). The general concept is that metals loading is first allocated to "uncontrolled" sources (domestic/commercial). For best results, the Tier 1 users should all have flowmeters and flow-paced samplers, enabling permit allocation. "Leftover" metal loading (lbs/day) is then uniformly allocated to Tier 2 (low flow/higher concentration) users. Any of the concentration limits could be converted to mass limits if appropriate flow monitoring equipment is available.

The MAHL and MAIL (maximum allowable industrial loading) must be accurately determined before allocation. Once accurately determined, the MAHL and MAIL (lbs/day) data "are what they are" for the facility. The MAHL and MAIL are determined by the facility's discharge data.

For proper allocation, the spreadsheet must be customized: tailor the Tier 1 flow data and "acceptable" discharge concentrations. Two data entry areas are provided for this purpose.

First, fill in the flowrate for each Tier 1 user in the Data sheet, then move to the specific metals. Next, review the Tier 1 discharge data and adjust the value in cell B23 to ___ "times background concentration". Iterations will be required here. Try to match or exceed the highest typical discharge concentration. Next, compare the resulting Tier 2 (low flow industries) concentrations to their typical discharge concentrations.

The end result should be tailored to accommodate as much of the industrial capacity as is feasible, by volume. Outliers (statistically demonstrated as such) in the industrial monitoring data should not be used in this workbook. This workbook does not evaluate "need for the limits" information. The municipality must use judgement.

Please forward your comments regarding the tiered modification of this workbook to:

Rich Grant, P.E.

Fleis & VandenBrink Engineering, Inc.

rgrant@fveng.com

(616)541-6000

. EPA Region 7. We deserve no credit.
high, interference and sludge contamination.
must not exceed the POTW MAHL capacity.
it's simplicity. Usually it does not make sense to treat

allocation system.
low metals) and Tier 2 (other IUs).
priority), then to Tier 1 low concentration Industrial Users.
issuance with mass limits (no Tier 1 concentration limits).
users via concentration limits.
method is employed.

allocation can proceed.
The Tiered allocation does not affect the POTW capacity.

ratio of Local Limit/(discharge concentration).

Excel spreadsheets
around sewage concentrations".
concentrations of Tier 1 industry, to accommodate them.
large concentrations.

wisely allocating the POTW metals capacity.
Local Limits and allocation work, unless no slug control plan if feasible.
not in this decision that is beyond the scope of this calculation.

OTHER

Domestic Backgrnd:	1
Instream Backgrnd:	0
Plant Removal Eff.:	10%
Primary Rmvl Eff.:	10%
WQS:	1
Ratio: Dslvd/Tot:	1
Inhibition 2nd Trtmt:	1
SLDG Digstn Inhib.:	1
NPDES Limit, mg/l:	NA
SLUDGE DISPOSAL	
Lbs/Acre/Life, limit:	1
Disp Limit, mg/kg:	13.9
SLDG Qual mg/kg:	1
Grwth/Safety factor:	0%

source

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solid:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digr: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	2083.8
Digstn Inhib:	-2.601
SLDG Dispsl:	-2.957 <i>Limiting</i>
Secndry Inhib.:	1.4407
NPDES #:	NA
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	82822
Digstn Inhib:	-103.4
SLDG Dispsl:	-117.5 <i>Limiting</i>
Secndry Inhib.:	57.259
NPDES #:	NA

NonConservative

Domestic Backgrnd:	1
Cnctn @ Headworks	20
Instream Backgrnd:	0%
Plant Removal Eff.:	80%
Primary Rmvl Eff.:	0.3
WQS:	1
Ratio: Dslvd/Tot:	1
Inhibition 2nd Trtmt:	0
SLDG Digstn Inhib.:	1
NPDES Limit, mg/l:	1
SLUDGE DISPOSAL	
Cnctn to DGSTR:	60.0
mg/kg to DISPSL:	40
Lbs/Acre/Life, limit:	100
Disp Limit, mg/kg:	#####

source

Non SIU Flow, MGD:	14.134	SLDG To Disp, MGD:	0.17
TTL Flow, MGD:	18.9	SLDG Disp %Solid:	2.5
7Q10, MGD:	8931.5	SITE Use, Yrs:	100
Flow To Digrs: MGD:	0.1739	SITE Size, Acres:	#####

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l	
Water Quality	9387.6
Digstn Inhib:	-1.644 <i>Limiting</i>
SLDG Dispsl:	145.33
Secndry Inhib.:	-2.966
NPDES #:	16.864
ALLOWABLE lbs/day, TOTAL from ALL SIUs	
Water Quality	373113
Digstn Inhib:	-116.1 <i>Limiting</i>
SLDG Dispsl:	5776.2
Secndry Inhib.:	NA
NPDES #:	670.25

Grwth/Safety factor:	0
Lbs/Acre/Year, limit:	NA
Disp. Limit, mg/kg:	NA

Pollutant	WASTEWATER TREATMENT				WQS Standard	WQS Priority	Exceedance
	Conc.	Conc.	Conc.	Conc.			
TSS (mg/L)				0.02	0.02	0	
				0.02	0.02	0	
				0.02	0.02	0	
				0.02	0.02	0	
				0.02	0.02	0	

* WQS is hardness dependent

INSTRUCTIONS

INTRODUCTION

Congratulations. You are the proud owner of the finest Local Limits spreadsheet money can't buy. This spreadsheet is designed to take the drudgery out of calculating one's local limits, however, it assumes that the user has at least a rudimentary understanding of how headworks limits are calculated. It does not work magic. It is a tool that is only as good as the person using it. Therefore, the writer assumes no responsibility for the use of this program. You're on your own.

Before using the spreadsheet one should make a backup copy. Many cells are linked under normal conditions, however, when warranted, they can be overwritten. When this is done the link is broken and future calculations may not work correctly.

The spreadsheet is based on the formulas that are presented in the EPA Guidance Manual on the Development and Implementation of Local Discharge Limits Under the Pretreatment Program. However, some of the formulas have been combined since some of the intermediate steps are not warranted when using a computer to determine local limits. The spreadsheet focuses on the ten pollutants that EPA has specified as the minimum pollutants one should evaluate to fulfill the requirements of 40 CFR 403.5. However, other pollutants of concern can be evaluated with this spreadsheet.

The original program was written in Quattro Pro for Windows 5.0. If you are using a different version or importing it into a different spreadsheet some of the macros may not run properly. It is recommended that the Quattro Pro version be used where possible.

LAYOUT

The program takes advantage of the notebook approach that all major spreadsheet manufacturers have adopted. This allows for much more organized display of data and a greater ease in navigation. Each pollutant has been put on its own notebook page, with the page bearing the name of the pollutant. This greatly facilitates the evaluation of individual pollutants.

The first page (DATA) conveniently contains all of the values that one will use when performing the headworks analysis. The table is already loaded with the literature values that EPA presented in the above mentioned Guidance Manual. These data will be henceforth called "default" data, a term made famous by EPA's earlier local limits calculator, PRELIM. Where site specific data are available these numbers can be overwritten and they will automatically be used in the headworks calculation. If a return to the default data is desired one can find a table of the EPA default data on the notebook page (DEFAULT). Because both tables present the pollutants in the same order, values can be easily copied from one to the other. When replacing data in the spreadsheet always follow the format of the existing value.

To view the calculation for a given pollutant click on the notebook tab for that pollutant. The screen will contain a list of all of the inputs that go into the calculation. If a value is one that is default data, the word "literature," "Goldbook," or "Regulation" will appear in the "source" column. If an input is one that can be made on the (DATA) page it appears in black. If the input is one that can only be made on that page it appears in purple. Unless stated all concentrations are in mg/l and all flows are in MGD. A discussion of each input is presented below.

Domestic Background

This input represents the average value of non SIU sources. It should represent those sources that will be assumed to be uncontrollable.

Instream Background

This is the measurement of the pollutant taken ABOVE the treatment plant outfall.

Plant Removal Efficiency

This is the average removal efficiency (in decimal percent) taken across the wastewater treatment plant for the pollutant under investigation.

Primary Removal Efficiency

If Secondary treatment inhibition is the controlling condition, this value can be important. It is the removal efficiency taken across primary treatment (if it exists).

Water Quality Standard (WQS)

The spreadsheet uses the EPA "Goldbook" water quality criteria as default for those cities that do not have an NPDES permit limit for the pollutant in question.

Ratio: Dissolved/Total

Secondary inhibition is a function of the dissolved metal form. However, almost all sampling is conducted for total metals. If one knows the average ratio of the Dissolved Metal to the Total Metal, this can be employed as a correction factor. Note: the correction factor will be a number less than one.

Inhibition of Secondary Treatment

This is the lowest concentration at which inhibition of secondary treatment occurs. A plant specific number is difficult to know, therefore, literature data is almost always used. The spreadsheet is set up with activated sludge as the assumed secondary treatment process. Secondary treatment inhibition values for trickling filters can be found in the (DEFAULT) table.

Sludge Digestion Inhibition

This is the lowest concentration measured in an anaerobic digester where inhibition of sludge digestion is observed. The author knows of no source of inhibition values for aerobic sludge digestion and therefore recommends that anaerobic default values be used. Site specific values for either type are difficult to know.

NPDES Limit

If an NPDES permit limit exists for the pollutant it will appear here. If the limit was entered on the (DATA) page the analysis with regard to water quality standards is disabled. Check with your Approval Authority to determine if you should evaluate for water quality considerations if an NPDES permit limit exists for the pollutant.

Sludge Disposal

The regulatory standards for land application of sludge are presented. The disposal limit is calculated based on the disposal site size and the acres available for disposal.

Growth/Safety Factor

If a safety factor is desired it should be entered in a decimal percent. Not all Approval Authorities require safety factors for all pollutants.

PLANT DATA

It is easier to input the plant data on the (DATA) page. However, if warranted it can also be adjusted on the page of the pollutant. Eight plant specific inputs exist. They are:

Non SIU Flow

Input the the non SIU average flow, i.e. the flows from domestic and commercial sources. It is assumed that these flows all have the average pollutant level reflected by the Domestic Background concentration already discussed.

Total Plant Flow (TTL Flow)

This is the average daily dry weather flow of the wastewater treatment plant. The program uses the difference between the total plant flow and the non SIU flow as the flow that represents those industries for which the local limit will apply.

7Q10

This is the 7Q10 flow of the receiving stream measured upstream from the wastewater treatment plant. If one is not evaluating for water quality effects (because one has NPDES limits instead) this number has no effect on the calculation.

Flow to Digester

This is the average daily flow, in MGD, to the sludge digester.

Sludge Flow to Disposal

This is the average sludge flow to the disposal fields. The total flow for the year divided by 365 will yield the best results.

Sludge Disposal Percent Solids

Use the average percent solids of the sludge flow reported above. Note that this is not a decimal percent.

Site Use, Years

Enter the expected or desired site life in years of the fields receiving the pollutant.

Site Size, Acres

Enter the acreage that will be available during the above reported site use period.

RESULTS:

The headworks calculation for the pollutant is presented in two forms. In a box entitled "LOCAL LIMITS" one will find the limit expressed as a concentration if it is applied uniformly to all industries whose flows are considered as SIU flows by the program. The Uniform Concentration limits are presented because this is the most popular method for applying a local limit. However, the plant's true local limit is a mass, therefore, the program shows the TOTAL allowable pounds per day that can be contributed to the plant from ALL SIUs together.

Each pollutant is evaluated for the most restrictive case. The program identifies this case and the word "Limiting" will appear next to the value. This is the limit.

OTHER NOTEBOOK PAGES

SUMMARY

This page presents a summary of the headworks analysis. For each of the ten pollutants the domestic/commercial mass loading is presented along with its percentage of the total loading from all sources. Likewise, the total allowable mass that can be discharged from all SIUs and its percentage of the total from all sources is presented. If a safety factor was included, the mass held in reserve is also shown as is the total mass acceptable from all sources.

If one entered values for the average plant influent concentrations the average actual mass at the plant headworks is presented. This is then compared to the Allowable Load from all sources.

Clicking on the button marked "Unifrm Cnctrn" will show the local limits for all pollutants as a uniform concentration if it is to be applied using that method. Also a table is presented that lists the limiting factor behind the limit developed for each pollutant.

OTHER

This page allows for the development of a local limit for any other conservative pollutant of concern. Note that the input criteria are all in purple. Therefore, all such inputs must be made on this page.

NONCON

The Guidance Manual includes formulas for evaluating for non-conservative pollutants. They are incorporated here. Note that some of the inputs are different (they appear in blue) and that they all won't fit on one screen.

POLLUTANT SCREENING

The Guidance Manual presents a method (p. 2-22) for screening to determine when one MUST perform a headworks analysis for a particular pollutant. This method is found on notebook page (SCREEN). If the input values are entered as defined by the column the program will state whether an analysis is needed or not.

PRINTING THE SPREADSHEET

Generally the spreadsheet can be printed two ways. On almost all pages a print button can be clicked that will print that individual page. However, it may be more efficient to print from the notebook page (PRINT). Here one can find a button that will print the input page, the ten metals/cyanide results (three pollutants to a page), and the summary page all at once. All pages can be printed from the (PRINT) page.

Also, when one prints the (SCREEN) page from the (PRINT) page, the printout will be expanded to show the screening criteria. If a 0 appears in the column the pollutant passes the screening criteria. If a 1 appears column the pollutant fails that element of the screening criteria. When the screening analysis is printed from its own page the criteria are not shown.

TABLE of "DEFAULT" VALUES

The following tables are taken from the EPA's Local Limits Guidance Manual

	Removal Efficiencies			Domestic Level	@h=100 WQS*	Inhibition Levels	
	Primary	Act Sldg	Trkl Fltr			AS	Digestion
Ag	20%	75%	66%	0.005	0.00012	0.25	13
As	NA	45%	NA	0.003	0.19	0.1	1.6
Cd*	15%	67%	68%	0.003	0.0011	1	20
CN	27%	69%	59%	0.041	0.005	0.1	4
Cr	27%	82%	55%	0.05	0.2	1	100
Cu*	22%	86%	55%	0.061	0.012	1	40
Hg	10%	60%	50%	0.003	1.2	0.1	NA
Ni*	14%	42%	29%	0.021	0.16	1	10
Pb*	57%	61%	55%	0.049	0.032	0.1	340
Zn*	27%	79%	67%	0.175	0.11	1	400

*Hardness Dependent (This table assumes Hardness=100)

all values in mg/l unless stated

PUSH BUTTONS TO PRINT

Metals/Cyanide

- Print Data page, all metals/cyanide and Summary
- Print Nonconservative Pollutant
- Print "Other" limit
- Print Data page
- Print EPA default values
- Print Screening exercise, expanded form
- Print summary of mass loadings

- Print Arsenic
- Print Cadmium
- Print Chromium
- Print Copper
- Print Cyanide
- Print Lead
- Print Mercury
- Print Nickel
- Print Silver
- Print Zinc

<code>cyanide</code>	<code>lead</code>	<code>mercury</code>	<code>nickel</code>	<code>silver</code>	<code>zinc</code>	<code>cadmium</code>
<code>(SelectBlock ~CN.A1.H18)</code>	<code>(SelectBlock ~Pb.A1.H18)</code>	<code>(SelectBlock ~Hg.A1.H18)</code>	<code>(SelectBlock ~Ni.A1.H18)</code>	<code>(SelectBlock ~Ag.A1.H18)</code>	<code>(SelectBlock ~Zn.A1.H18)</code>	<code>(SelectBlock ~Cd.A1.H18)</code>
<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>	<code>(Print.Orientation Portrait)</code>
<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>	<code>(Print.Print_To_File Yes)</code>
<code>(Print.Block ~CN.A1.H18*)</code>	<code>(Print.Block ~Pb.A1.H18*)</code>	<code>(Print.Block ~Hg.A1.H18*)</code>	<code>(Print.Block ~Ni.A1.H18*)</code>	<code>(Print.Block ~Ag.A1.H18*)</code>	<code>(Print.Block ~Zn.A1.H18*)</code>	<code>(Print.Block ~Cd.A1.H18*)</code>
<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>	<code>(Print.DoPrint)</code>
<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>	<code>(SelectBlock PRINT.A1.A1)</code>

`(Print.Block ~HELL_PA3_J225*)`
`(Print.doPrint)`
`(SELECTBLOCK HELL_P.A1)`