



Local Limits

WEAU Pretreatment Committee Training

Jeff Macfarlane

North Davis Sewer District

40 CFR Part 403.5(c)(1-4)

A faint, semi-transparent graphic in the background features a globe with several arrows pointing upwards from its base, and a circular arrow at the bottom, suggesting a cycle or process.

4 Different Ways to Say Basically the Same Thing:

- General prohibitions.
 - A User may not introduce into a POTW any pollutant which causes Pass Through or Interference.
- Specific Prohibitions
 - In addition...
- Categorical Standards
 - In addition...
- Local Limits
 - Each POTW shall develop and enforce specific limits to implement the General and Specific Prohibitions.

How are local limits developed?

1. Compile a list of Pollutants of Concern (POC)

- What pollutant limits are in your UPDES permit?

**PART I
DISCHARGE PERMIT NO. UT0621741
WASTEWATER**

I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. **Description of Discharge Point:** The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the Act and may be subject to penalties under the Act. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the Act.

Outfall Number	Location of Discharge Outfall
001	Located at latitude 42°03'04" and longitude 112°06'10". The discharge is through a 34-inch diameter gravity flow concrete pipe leading from the chlorine contact basin to an unnamed irrigation return drainage ditch adjacent to the Great Salt Lake.

B. **Narrative Standard:** It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.

C. **Specific Limitations and Self-Monitoring Requirements**

- Effective April 1, 2008, and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfall 001 as defined in Part VIII, and determined by the procedures described in Part I C.3.a. of this permit.
- Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Concentrations *			
	Maximum Monthly Average	Maximum Weekly Average	Daily Maximum	Daily Maximum
TRC, mg/l	25	35	NA	NA
BOD ₅ Conc. as Reported	85	NA	NA	NA
SS, mg/l	25	35	NA	NA
TSS, mg/l	85	NA	NA	NA
E. Coli No./100mL	138	157	NA	NA
TRC, mg/l	NA	NA	NA	2.5

- 2 -

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- 2 -

Sample the influent

Any pollutant in influent
>0.01 mg/L as a starting
point.

That list included:



Heavy Metals

- Aluminum
- Antimony
- Arsenic
- Cadmium
- Chromium
- Copper
- Iron
- Lead
- Mercury
- Molybdenum
- Nickel
- Selenium
- Silver
- Zinc
- Cyanide

Organics

- Volatile organics
 - 1,1,1-trichloroethane, methylene chloride, chloroform, etc.
- Semi-volatile organics
 - Phenolic compounds, etc.
- Polychlorinated biphenyls (PCBs) and pesticides
- 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

In original calculations:

MAHL for phenol: 113,979 lbs/day

for xylene: 195,555 lbs/day

for 1,1,1-trichloroethane: 348,646 lbs/day

Pollutants of Concern

- Must have reasonable criteria from which to develop an enforceable limit
 - UPDES permit limits for effluent

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 - UPDES permit limits for biosolids
 - Worker health and safety

Pollutants of Concern

- Must have criteria from which to develop an enforceable limit
 - UPDES permit limits for effluent
 - UPDES permit limits for biosolids
 - Worker health and safety
 - Etc.

Utah Division of Water Quality
Salt Lake City, Utah

ADDENDUM
Statement of Basis (Wasteload Analysis & TMDL)
Level I Antidegradation Review

Date: October 22, 2007
Facilities: North Davis Sewer District
Syracuse,
Receiving water: Great Salt Lake

Finding of No Significant Impact - Negative Declaration

The discharge from the above listed facility was evaluated for impact to its receiving water.

It has been determined that this discharge will not cause a violation of water quality standards (Utah Water Quality Standards, R317-2 Utah Administrative Code) in downstream receiving waters. Therefore, a wasteload allocation based upon water quality numeric criteria is not required.

Other permit limits should be set according to rules found in R-317-1.

Antidegradation Level I Review

An Anti-degradation Level II review is not required since the water quality will not be lowered by the proposed activity (e.g., a discharge to a dry wash where the effluent will not reach a stream or river; or, a UPDES permit is being renewed and the proposed effluent concentration value and pollutant loading is equal to or less than the existing effluent concentrations value and pollutant loading). (R317-2-12.4.2.b)

Prepared by:
Utah Division of Water Quality

"It has been determined that this discharge will not cause a violation of water quality standards (Utah Water Quality Standards R317-2, Utah Administrative Code) in downstream receiving waters. Therefore, a wasteload allocation based upon water quality numeric criteria is not required."

40 CFR Part 503, Table 3 metals for biosolids



Table 1

Pollutant	Ceiling concentration, mg/kg
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

Table 3

Pollutant	Monthly average concentration, mg/kg
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

Above Table 1=



Between Table 1 & Table 3=



Below Table 3=



Most Exposed Individual (MEI)



Most Exposed Individual:

- Produced and consumed 100% of his or her own food for 70 years in a home garden amended with biosolids.
- The food grown had the highest plant uptake rate for the 70-year period for each pollutant.
- Was at the age, sex, and physiological state for maximum absorption.
 - Was simultaneously male and female, pregnant, an infant, and a teen-age male.

Highly Exposed Individual (HEI)



Highly Exposed Individual:

- Produced and consumed up to 59% of his or her own food in a biosolids-amended garden for 70 years.
- Consumed food grown in biosolids-amended soil that contained the maximum cumulative permitted application of each pollutant.
- Food grown in the biosolids-amended garden had plant uptake rates determined by relevant data from field studies.

40 CFR 503

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Zinc	7500

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Concentration, mg/kg

<u>Mineral/metal</u>	<u>biosolids</u>	<u>vitamin</u>
Boron	<67	100
Calcium	67,667	133,330
Chromium	58	100
Copper	743	1,330
Magnesium	7,167	66,670
Molybdenum	18	50
Nickel	27	3
Phosphorus	20,000	32,000
Potassium	2,517	53,330
Selenium	8	13
Zinc	858	10,000



NDS D Pollutants of Concern:

- Arsenic
- Cadmium
- Copper
- Lead
- Mercury
- Molybdenum
- Nickel
- Selenium
- Zinc

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- **Arsenic**
- Cadmium
- Copper
- Lead
- **Mercury**
- Molybdenum
- Nickel
- **Selenium**
- Zinc

How are local limits developed?

2. Calculate a Maximum Allowable Headworks Load (MAHL) for each POC
 - Reduce that load by 15% for Safety (required)
 - Reduce it by 10% for Growth (required)

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Removal Efficiency

Cadmium			54%
CERCLA Treatability Manual	14%		
Local Limits Development Manual	68%		
Report to Congress	70%		
Region VIII Average	54%		
Determined by Testing	54%	2007 average of six samples	

MAHL Calculation

40 CFR 503 Table 3 for Cadmium	39 mg/kg
Cadmium Removal Efficiency	54%
Biosolids flow, lbs/day	15,108 lbs/day

Calculation: $(15,108/1,000,000*39)/0.54 = 1.09$ lbs/day

MAHL Calculation

40 CFR 503 Table 3 for Cadmium	39 mg/kg
Cadmium Removal Efficiency	54%
Biosolids flow, lbs/day	15,108 lbs/day

Calculation:

$$\left[\frac{\frac{15,108 \text{ lbs}}{\text{day}}}{1,000,000} \right] \times \frac{39 \text{ mg}}{\text{M mg}} = 1.09 \text{ lbs/day}$$

MAHL Calculation

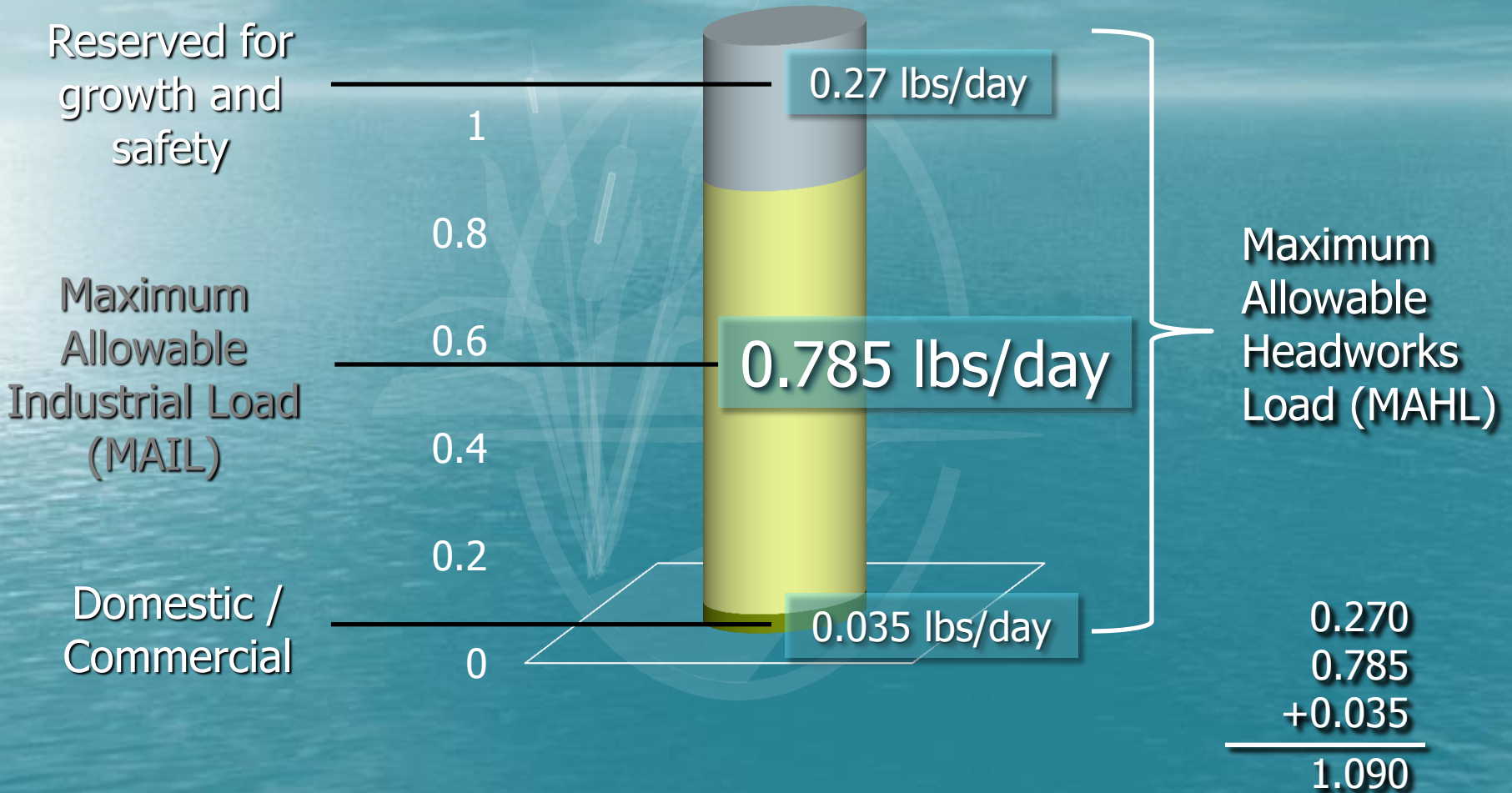
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Biosolids flow, lbs/day	15,108 lbs/day

Calculation:

$$\left[\frac{\frac{15,108 \text{ lbs}}{\text{day}}}{\text{Million}} \right] \times \frac{39 \text{ mg}}{\text{Million mg}} = 1.09 \text{ lbs/day}$$

Cadmium

1.09 lbs/day

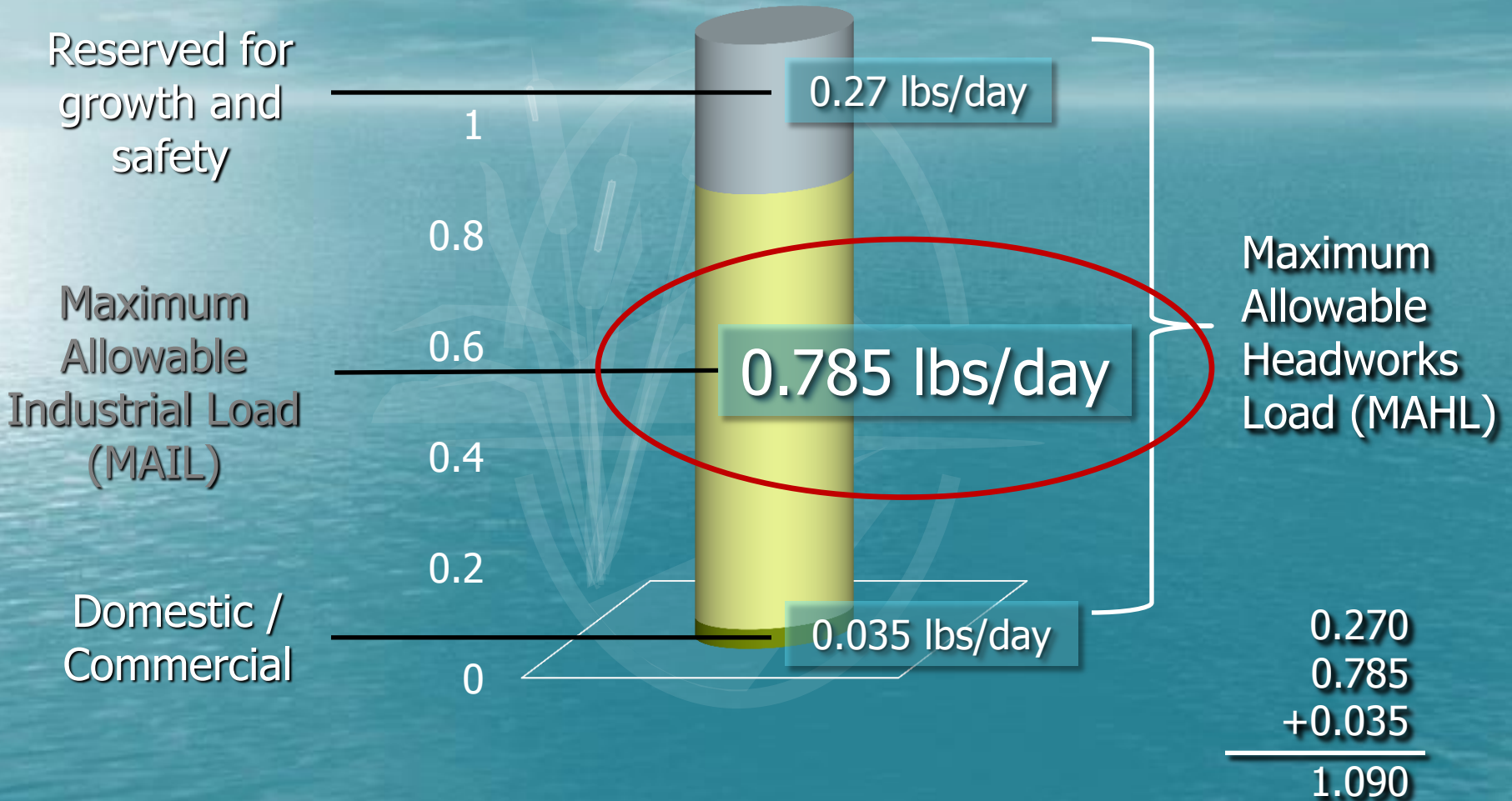


How are local limits developed?

3. Calculate a Maximum Allowable Industrial Load
- 4. Allocate to industrial users**

Cadmium

1.09 lbs/day



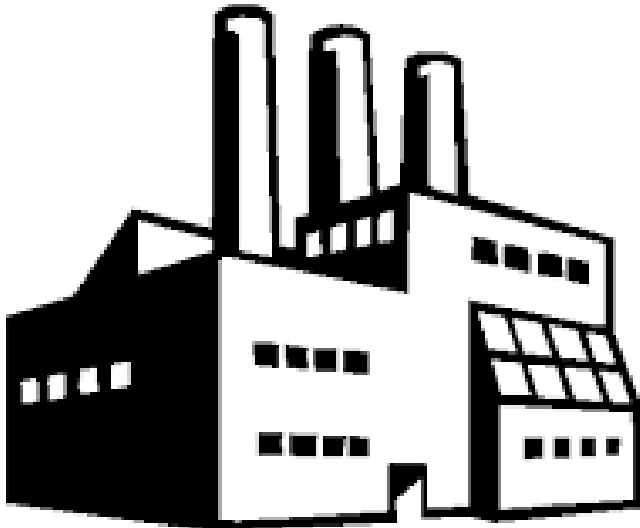
Uniform Allocation

MAIL: 0.785 lbs/day

Total Affected IU flow:
0.2544 MGD

$$\frac{0.785 \text{ lbs/day}}{(0.2544 \text{ MGD} * 8.34 \text{ lbs/gal})} = 0.37 \text{ mg/L}$$

254,400 gpd



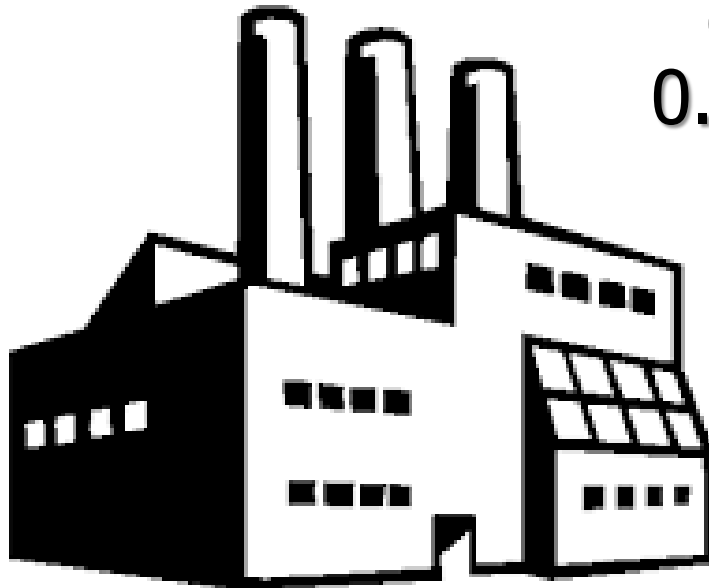
Local Limit: 0.37 mg/L
(Monthly Average)

433 limit for cadmium is 0.07 mg/L

One more step

- The most stringent limit of the local limit or categorical standard applies.

Mass Allocation



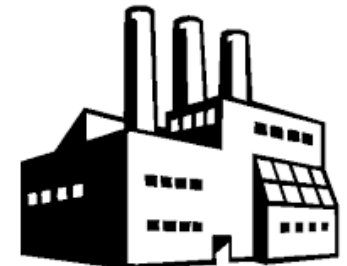
(220,000 gpd)
0.679 lbs/day

0.029 lbs/day
0.077 lbs/day
+0.679 lbs/day
0.785 lbs/day



(25,000 gpd)
0.077 lbs/day

(9,500 gpd)
0.029 lbs/day



Uniform Concentration

Pros

- Flow “snapshot” up front
- No regular calculations required
- Same limit for each IU

Cons

- IU could meet limit by diluting

Mass Allocation

Pros

- Dilution doesn't matter

Cons

- Requires flow data when sampling
- Requires regular calculations
- Different limit for each IU



Allocate
equitably