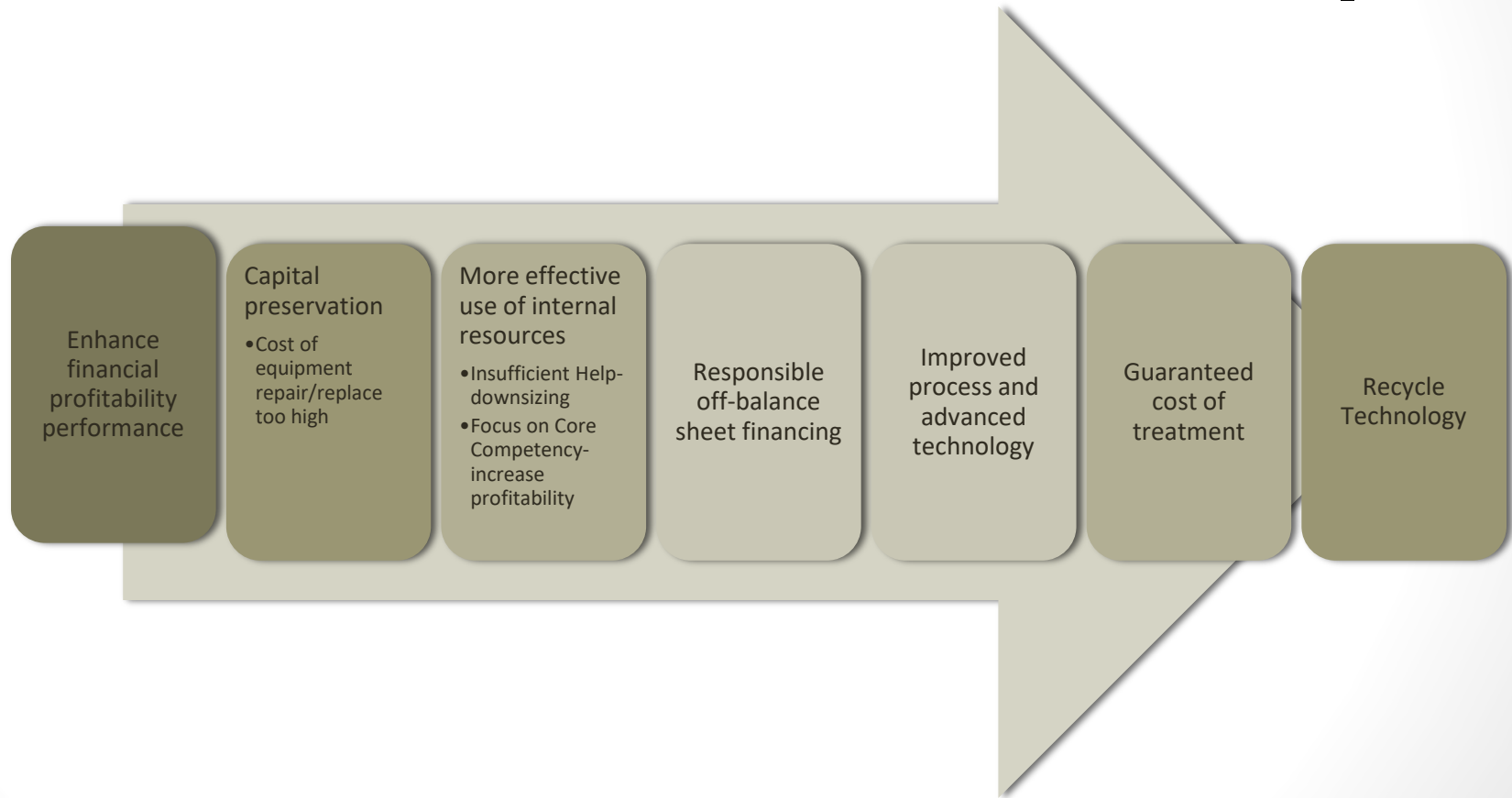
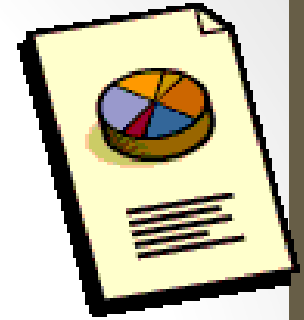


Food Industry

Solution Options for
wastewater treatment
BOD and FOG removal
POTW charges and
Surcharges



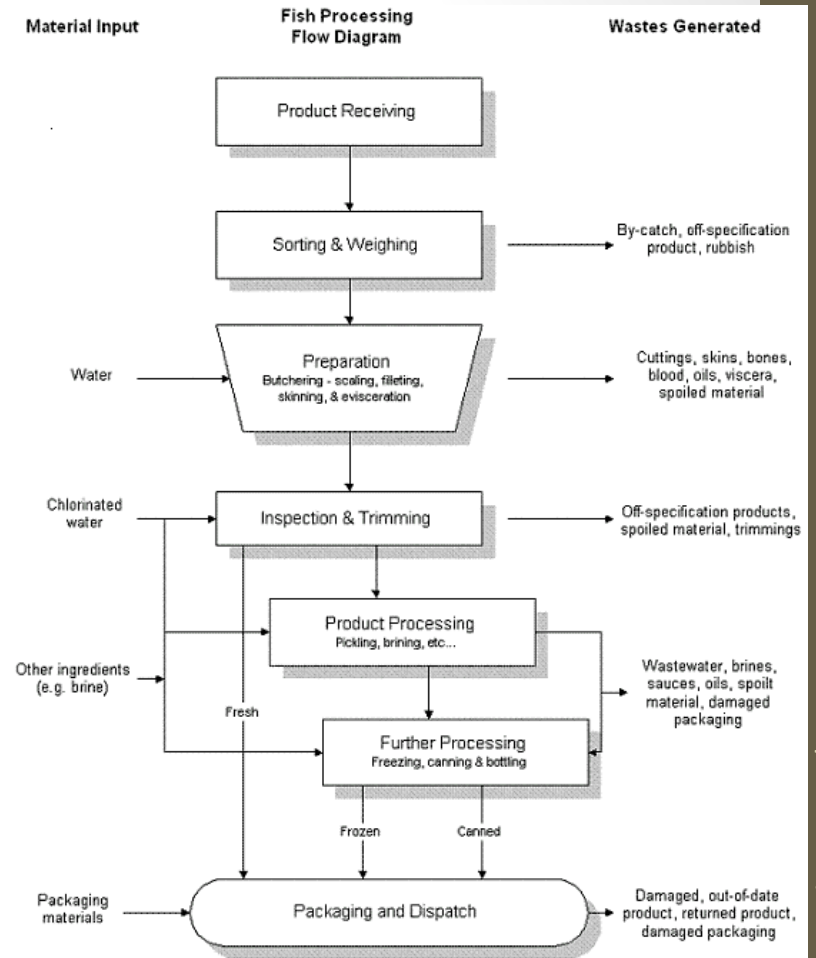
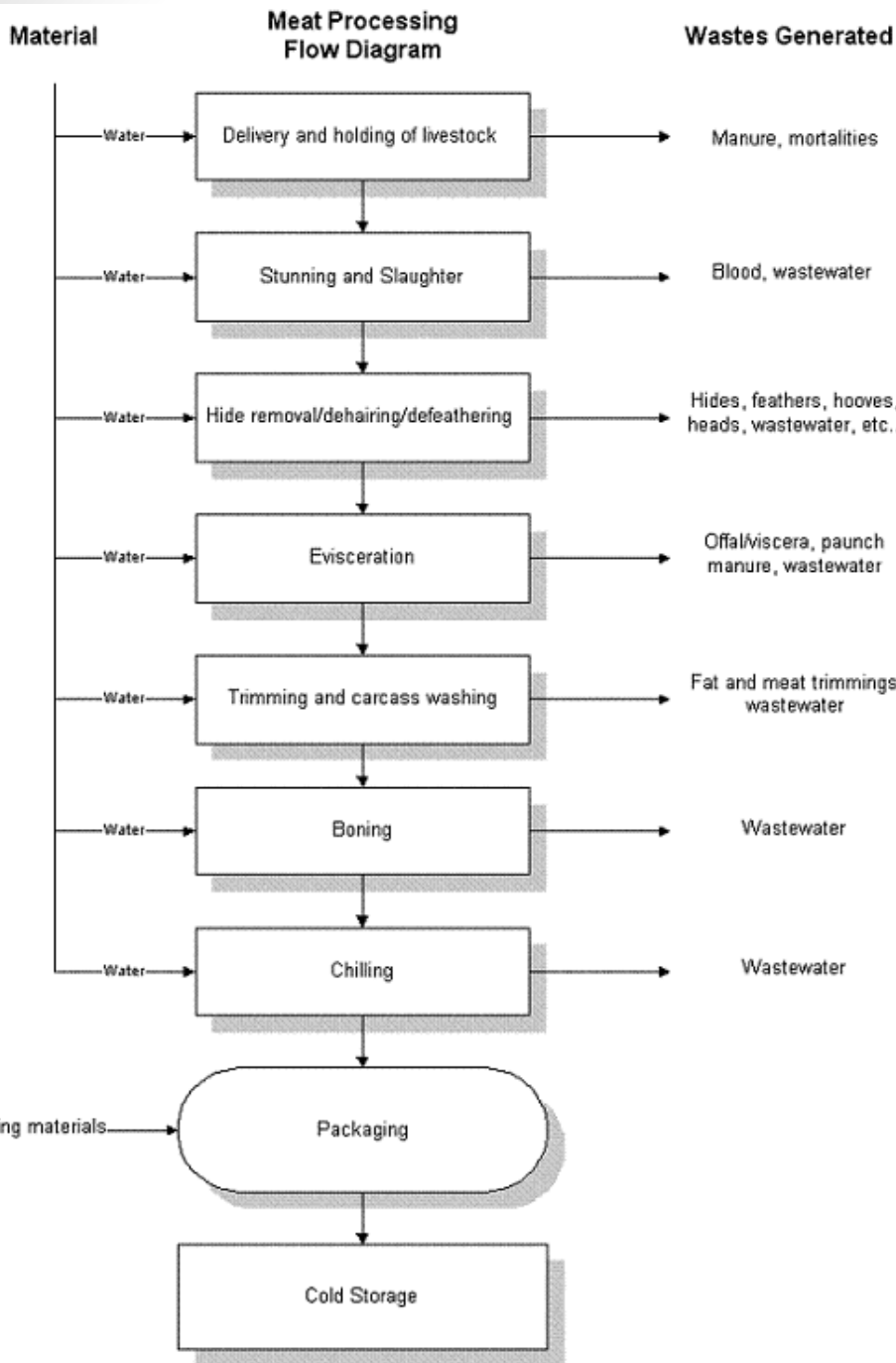
Customer Drivers- We have to reduce our costs

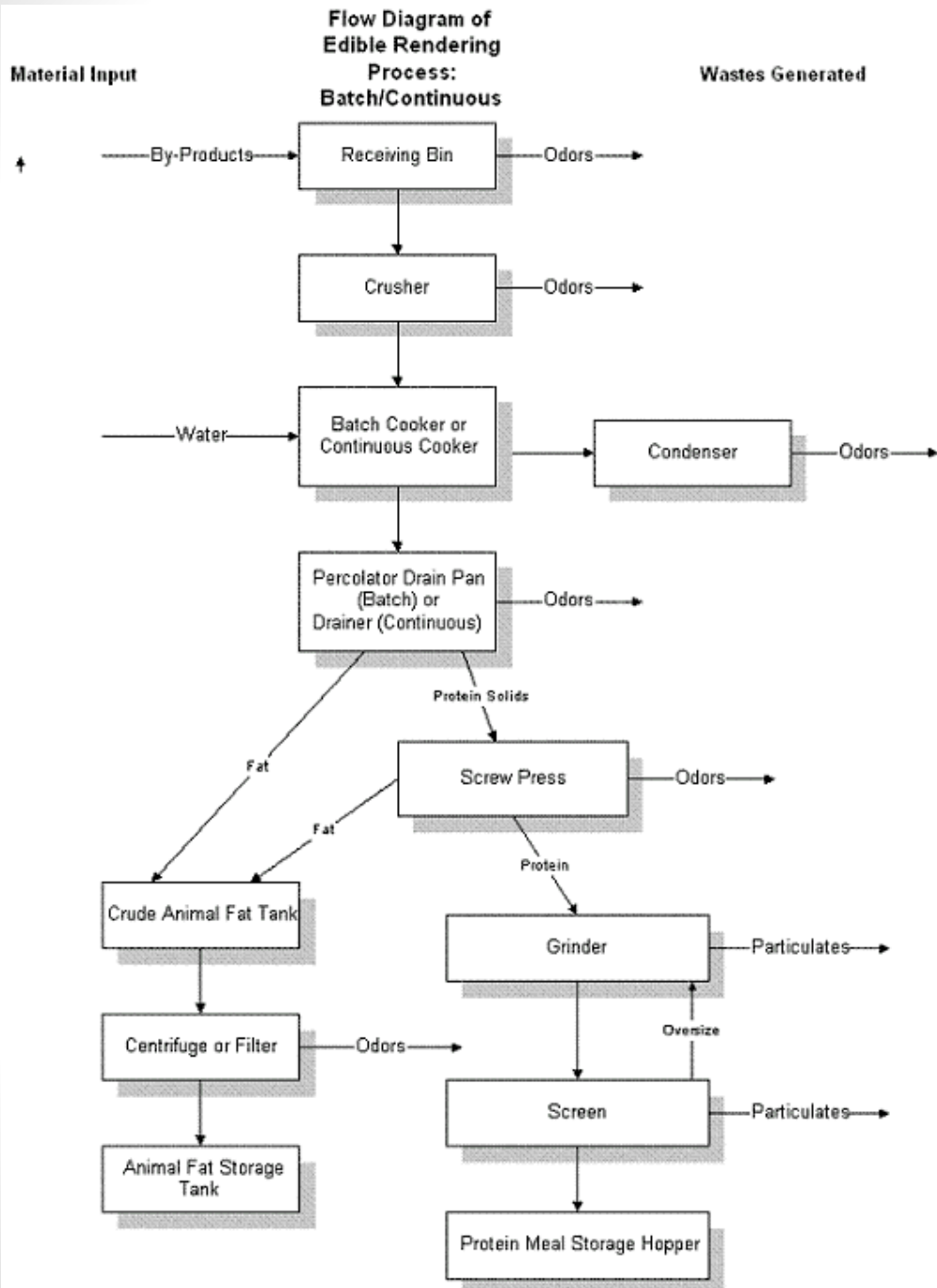


Meat processing- problem areas

- Hundreds of thousands \$ on POTW fees and surcharges
- Oil and Grease, blood
- Wide changes in loading
- pH
- Filaments
- Nitrification
- Odor control

Beef Processing
Pork Processing
Poultry Processing
Fish Processing
Rendering Process





Typical problems

- pH swing issues
- Blood
- Salts
- Ammonia
- Grease and Oils

Table 6.2: Relative Wastewater Treatment Costs		
Technology	Ref.	Relative Cost (\$/m ³ treated)
Screening	6.2.1	\$0.20
Gravity clarifier	6.2.2	\$0.30
Trade waste interceptor	6.2.2	\$0.05
Filtration	6.2.3	\$0.40
Floatation	6.2.4	\$0.70
Hydrocyclones	6.2.5	\$0.30
Centrifuges	6.2.5	\$0.90
Coagulation	6.2.6	\$0.70
Flow equalization	6.2.7	\$0.20
Aerobic lagoons	6.2.8	\$0.20*
Aerated lagoons	6.2.9	\$0.40*
Anaerobic lagoons	6.2.10	\$0.20*
Trickling filters	6.2.11	\$0.50
Activated sludge	6.2.12	\$0.90
Rotating biological contractor	6.2.13	\$0.50

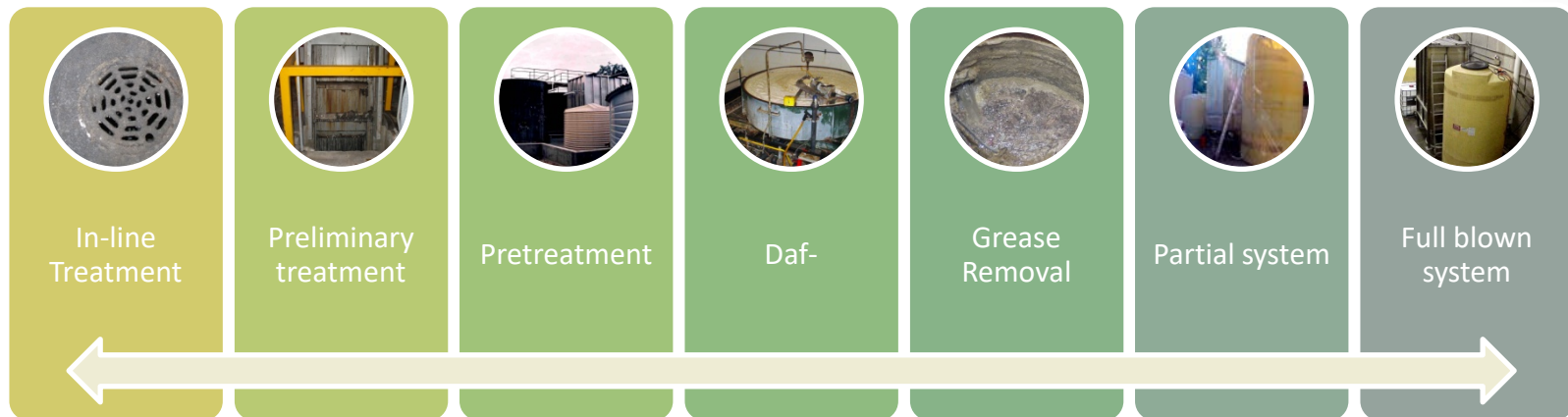
Order of magnitude costs for complete installations, including estimated cost of capital borrowing, depreciation on equipment, maintenance, utilities and material.

** land costs not included.*

Treated volume assumed to be 70,000 m³ per year.



Treatment Options- BOD, FOG reduction and Surcharge elimination



Upstream pits, drains and wet wells



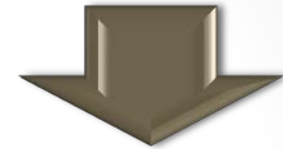
Solids, oils foaming, debris, septicity



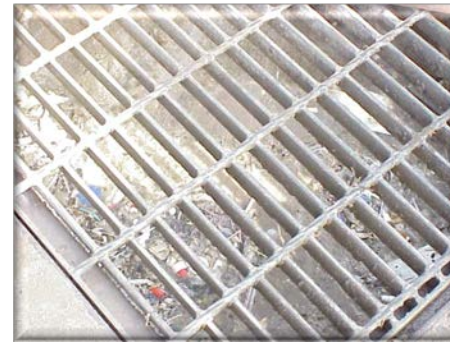
Bioaugmentation in drains and wet wells



*20-45% BOD reduction



depending upon time



Bioblocks for slow release

Liquids can be fed with a polymer pump on automated drip feed

Dry products used for concentrated applications

Preliminary Treatment

Screening (Bar Screens)

Removes large objects from entering the WWTP



Grit Removal

Protects pumps against excessive wear.



Flow Equalization

Equalizes flow over 24 hour period, reduces hydraulic surges

pH neutralization

Maintains pH within an acceptable range

Heat Exchange

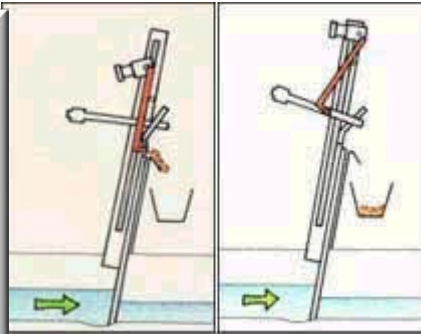


Upstream in the plant



Screening

- ✓ Protects pumps against excessive wear.
- ✓ Protects system from large debris



Screening



Flow Equalization



✓ Overcomes problems caused by variations in flow patterns

✓ Benefits:

reduced organic shock

pH stabilization

reduced solids washout

improved treatment (stabilize hydraulic retention time in primary and secondary units.



****Bioaugmentation and addition of nutrients to EQ tanks can reduce BOD and surcharges**



Installation of small tanks-For pretreatment prior to POTW

- Small tank
- Aerator
- N and P
- Bioaugmentation
- pH adjustment



Primary Treatment

American Petroleum Institute separator (API's)

Purpose:
Solids/Oils and Grease Removal



Dissolved Air Flotation / Dissolved Gas Flotation

- Circular
- Rectangular

Induced Air Flotation / Induced Gas Flotation

- Nozzle Type
- Rotor Type

Sedimentation (Primary Clarifier).



Grease



Nitrification issues at Meat packing plant

- High amines sent to local POTW
- Existing API and DAF
- Large storage tanks for grease concerted to use for bioaugmentation
- BioBlocks also used upstream



Troubleshooting



****Grease can have an extremely high BOD which can impact your surcharges**



Analytical Report

Client: Amwell - A Division Of McNish Corp
Project ID: VA - WWTP PO# 64120
Sample: Primary Tank #1 Pass 3
Sample: 7-3986-001

Date: 09/06/07
Time: 10:15
Date Received: 09/07/07
Date: 09/12/07

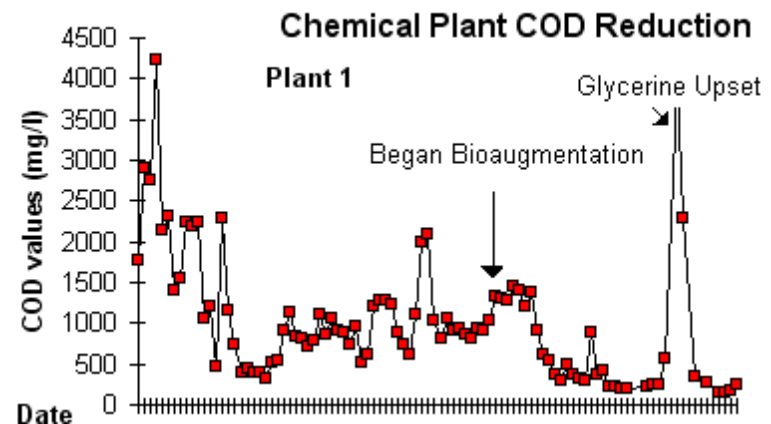
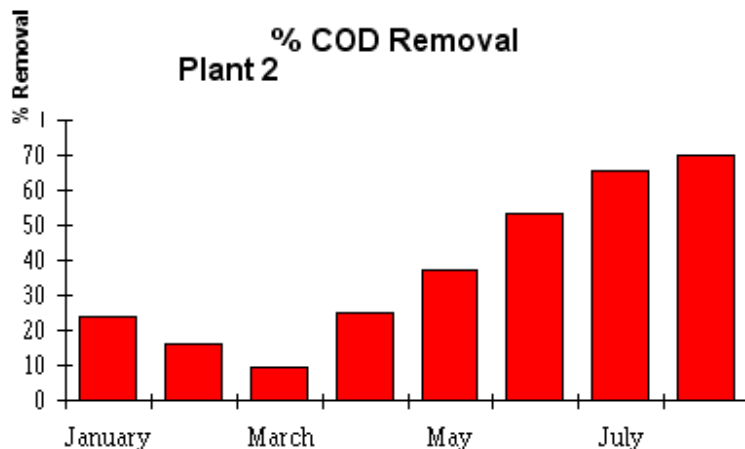
Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
Oil & Grease	748,000	10	mg/kg	09/12/0	9071B	P
Specific Gravity	1.00	1.00		09/11/0	2710F	N
COD	3,690,000	100	mg/kg	09/10/0	5220D	



Bioaugmentation

- **Bioaugmentation Case Histories**
- Two food and chemical plants that needed to pretreat prior to a local POTW. Bioaugmentation programs were implemented. At plant #2, COD removal was 24-39% prior to bioaugmentation. After only a few months on the program, the plant was achieving between 70-79% COD removal. Below, a graph of COD reduction at plant #1.



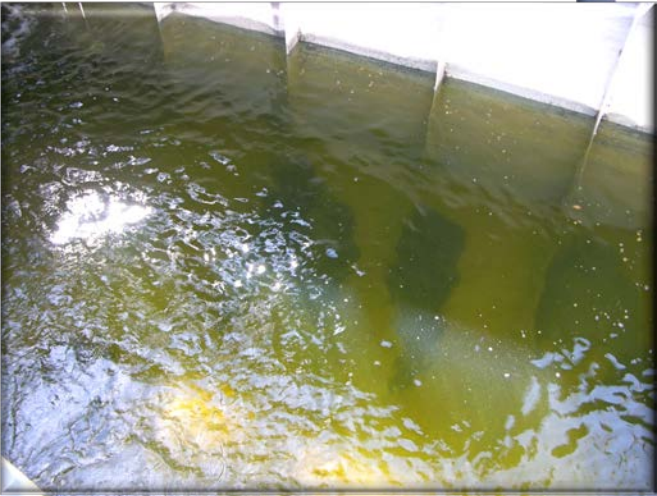
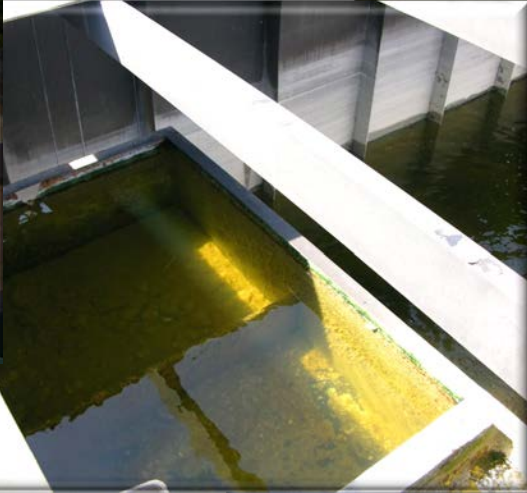
Texas Barbecue- Before Bioaugmentation



Texas Barbecue – After Bioaugmentation



** Existing plant



Wastewater ELearning Training

- Online computer-based training
- Interactive courses with videos, photos, & quizzes
- Convenience and flexibility at individual pace
- No travel expenses or hassles.

WastewaterElearning.com/elearning

www.EnvironmentalLeverage.com

Online ELearning: Wastewater Training Courses Overview

Control and Minimization of Total costs of operations is always necessary, but guaranteed reliability and long term sustainability are the keys to transport your wastewater treatment system above and beyond normally targeted measures. These wastewater training programs are based upon years of experience and accumulation of practices on actual performance of thousands of treatment systems. These wastewater training programs have been consistently successful in teaching people how to be proactive and achieve their goals of reducing Total Costs of Operation while also achieving compliance.

You will learn step by step procedures which will enable you or your operators to develop quick, easy to establish system checks to control and monitor your system in order to predict upsets, minimize energy and chemical usage, and avoid costly repairs and unnecessary maintenance procedures.

These courses have been pre-approved for Wastewater CEU's in Alaska, Arkansas, California, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Indiana, Louisiana, Maine, Massachusetts, Minnesota, Nevada, New Jersey, Kentucky, New York, North Carolina, Rhode Island, South Dakota, Tennessee, Vermont, Washington, Wisconsin and West Virginia. Some states do not require pre-approval. If you need these approved for your state, please contact our office.

These courses are eligible for CEU's, Contact Hours or PDH (Professional development hour) in Alabama, Arizona, Maryland, Virginia, South Carolina, Utah and more to come.

Now approved in Canada for Nova Scotia and Saskatchewan.

****Some states give different credits than others. Not all states give credits solely based upon contact hours. Please contact our office if you need to know the approval codes and credit hours for your specific state.**

Just Released ***

Secondary Clarifiers, Secondary Biological Wastewater Treatment systems, Nitrification and Denitrification, Spanish Wastewater Basics, Filamentous Identification Introductory Course Coming Soon :Filamentous ID the Easy Way

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