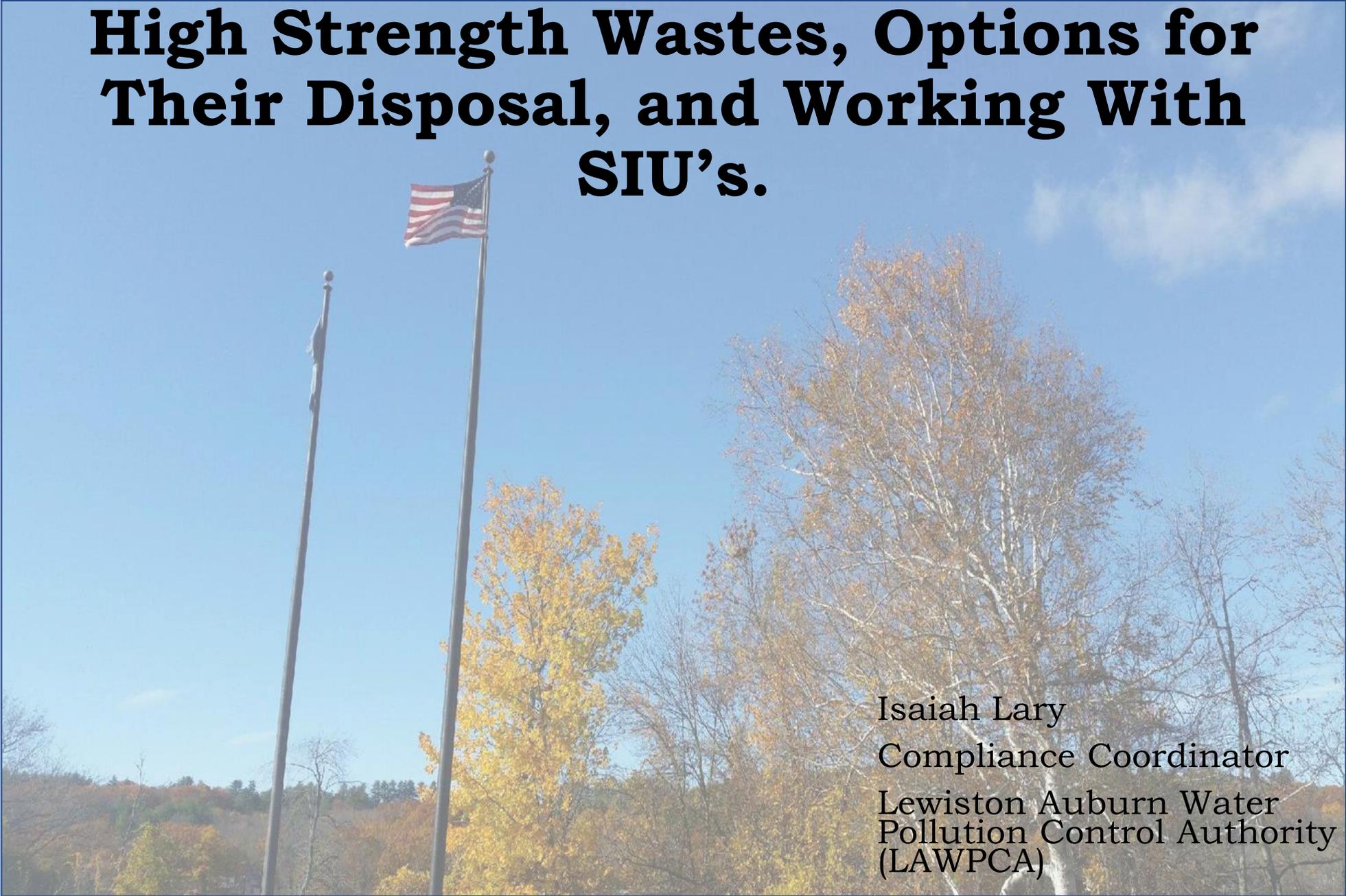
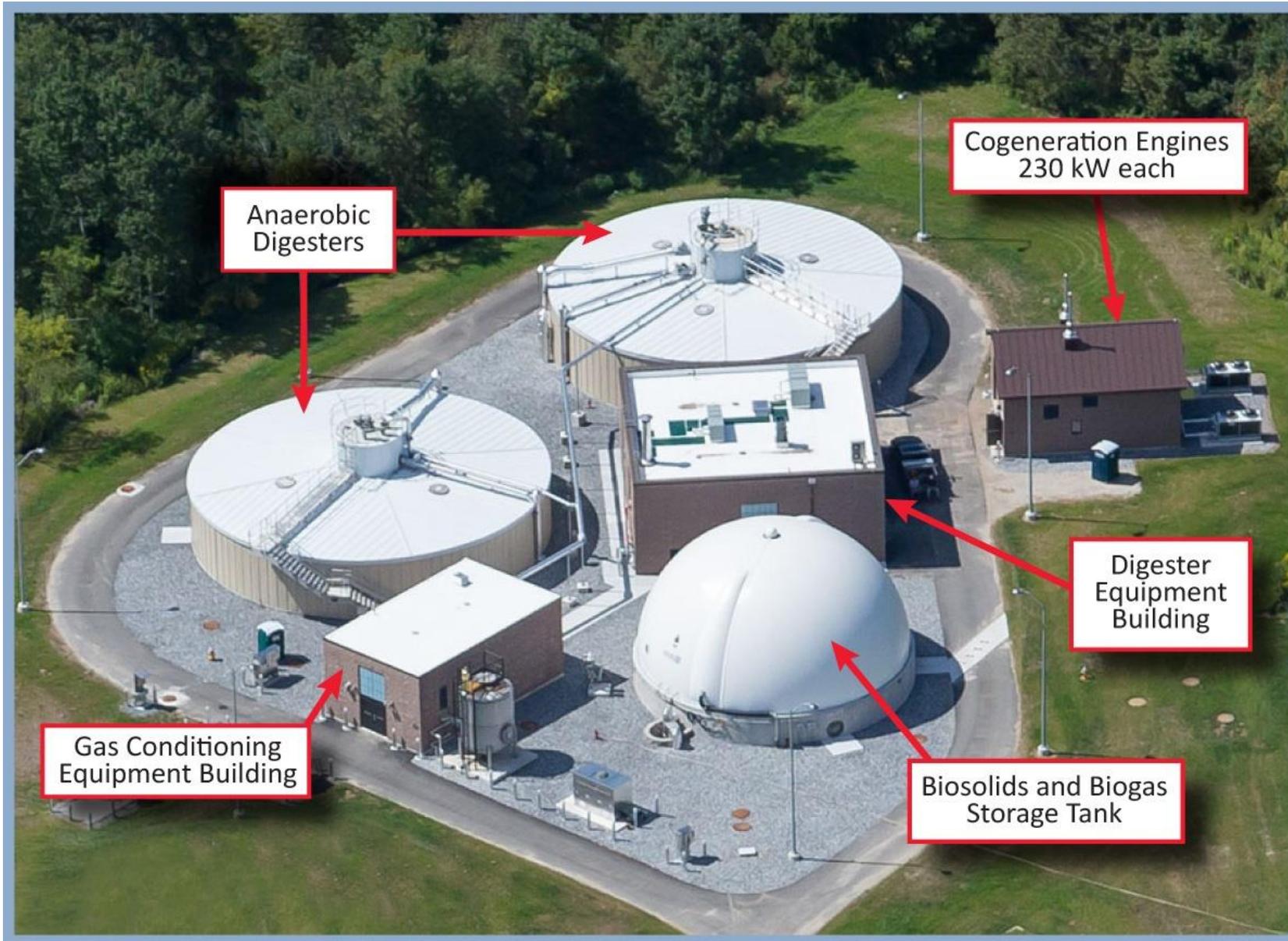


High Strength Wastes, Options for Their Disposal, and Working With SIU's.



Isaiah Lary
Compliance Coordinator
Lewiston Auburn Water
Pollution Control Authority
(LAWPCA)









230 Kw
GENERATOR



FEED STOCKS

DANGER
POTENTIALLY HAZARDOUS WATER
DO NOT DRINK

DANGER
NO SMOKING





Feedstock Acceptance

- What are feedstocks? - High organic strength liquids such as food waste slurry, brewery waste, dairy waste, and commercial grease. Airport deicing fluid during cold weather.
- Strength and measuring gas potential (COD of >50,000mg/L preferred) TVS is also used.
- Markets and Pricing
- Plugging and handling issues, odors, a need to balance benefits, expectations and solve problems – it takes patience.



Why does (LAWPCA) take feedstocks?

- Enhance volatile solids reduction in the anaerobic digester.
- Generates some revenue via tip fees.
- Enables a double savings when digesting high organic strength wastes that would otherwise be permitted to be discharged to our collection system: no aerobic treatment cost + biogas production and electrical generation = savings for rate payers.
- Provides a safe outlet for high strength organic wastes, helping companies be good stewards.
- Utilizes excess anaerobic digestion capacity (we like many POTW's, lost a large contributor of BOD in 2016).

Options for Disposal

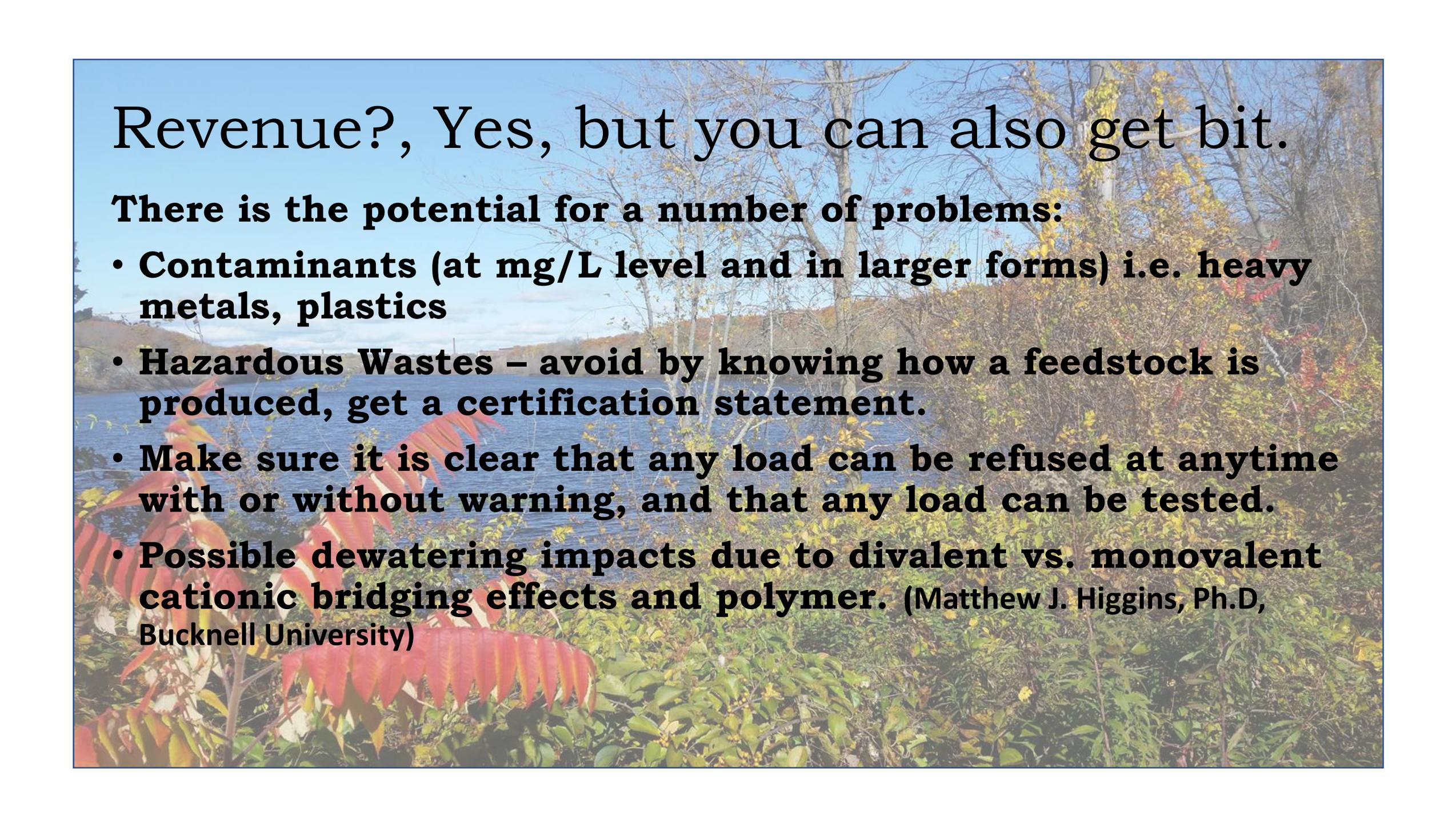
- Anaerobic Digestion (Your own digester, or to other digesters via companies that haul feedstocks for example AgriCyle, Agresource, Casella, Repurpose Energy, Cow Power, Boston Core to name a few – LAWPCA does not endorse any specific company.
- Aerobic Digestion
- Bring to a POTW to dispose of, via a dewatering roll-off can, septic receiving station to bleed it into the system, etc.
- Repurpose for animal feed (A company in Portland, ME – Re-Harvest), does this.
- Composting – high solids material may be able to be composted. (ME Compost School a good resource, NEBRA).



Dewatering can lined with punch plate mesh and a 3.5 oz felt liner for dewatering of vactor material, LAWPCA grit, and other semisolid wastes.

But can't you generate lots of revenue with feedstocks?

- Listening to some presentations, you would think that accepting high organic strength/feedstocks is a fantastic way to balance all of your budgets.
- Make extra revenue, and buy an ocean front mansion in Arizona...
- Back to reality, which is somewhere in the middle.
- Feedstocks can be a source of revenue, but it takes a lot of teamwork to earn it.



Revenue?, Yes, but you can also get bit.

There is the potential for a number of problems:

- **Contaminants (at mg/L level and in larger forms) i.e. heavy metals, plastics**
- **Hazardous Wastes – avoid by knowing how a feedstock is produced, get a certification statement.**
- **Make sure it is clear that any load can be refused at anytime with or without warning, and that any load can be tested.**
- **Possible dewatering impacts due to divalent vs. monovalent cationic bridging effects and polymer. (Matthew J. Higgins, Ph.D, Bucknell University)**

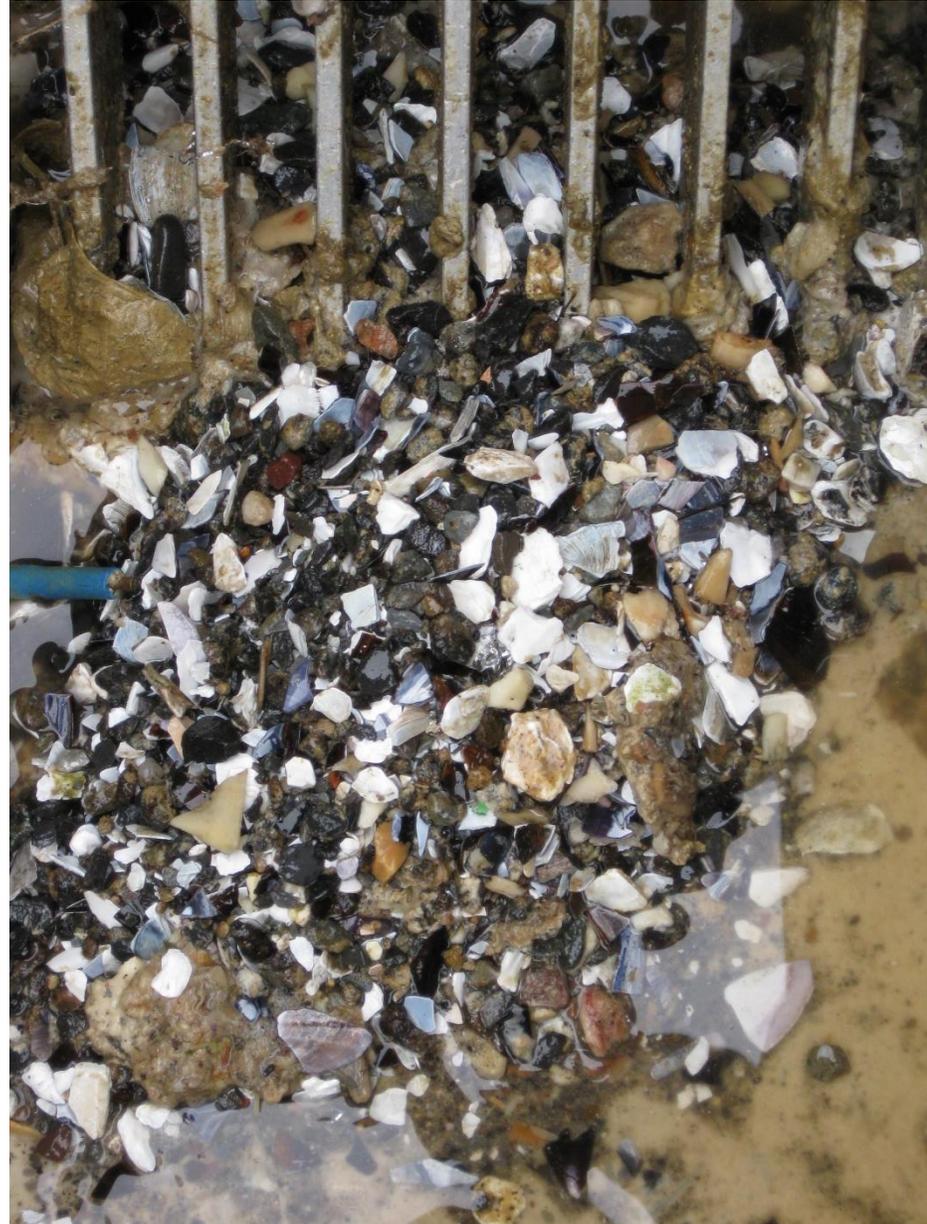
Headaches...

Grease Trap Waste Piled up in front of a $\frac{3}{4}$ inch bar rack in feedstocks receiving station, hauler was allowed to bring grease trap waste from a restaurant chain. This is the residue at the end. Also in another load there were tons of straws. Over time we ceased taking this material because of issues.



More headaches

Clam shell residue from a tanker that had previously hauled a load of shellfish processing wastes to another location, but the clam shells came out into our feedstock bar screen trough when they discharged a load of feedstock from another source.



Food waste processors do not want to haul water, they want to haul solids offsite.

Food waste slurries may start out in a nice flowable mix, but over time, the producer wants to just send out higher %TS. Solids also clarify into a floating mat while riding in an 8000 gallon tanker for 3 hours. Your fellow operators will LOVE pumping this material!



Here is a photo of screenings from a food waste slurry, this is actually not too bad of an amount, but it can be much worse and include plastic shards of food containers.



THE FOG STRIKES BACK...



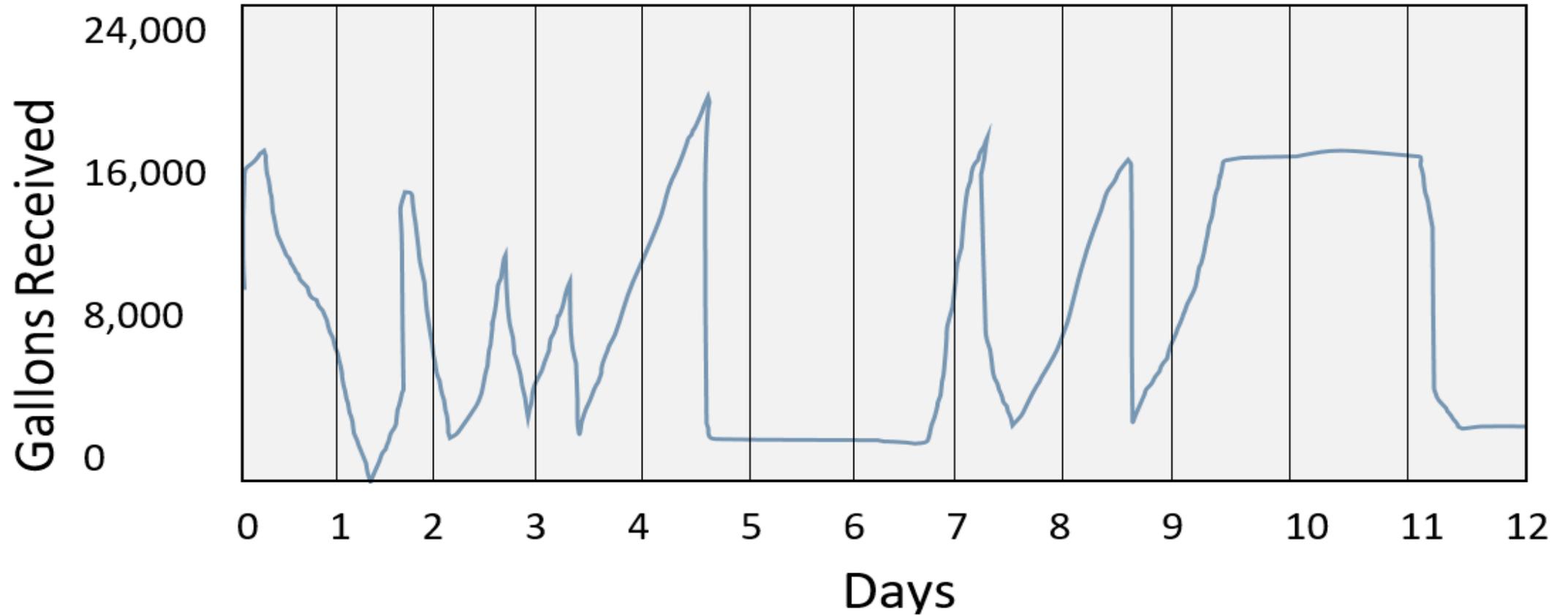
Just because
you can accept
it because it is
food waste...

Doesn't mean
it's always a
good idea.

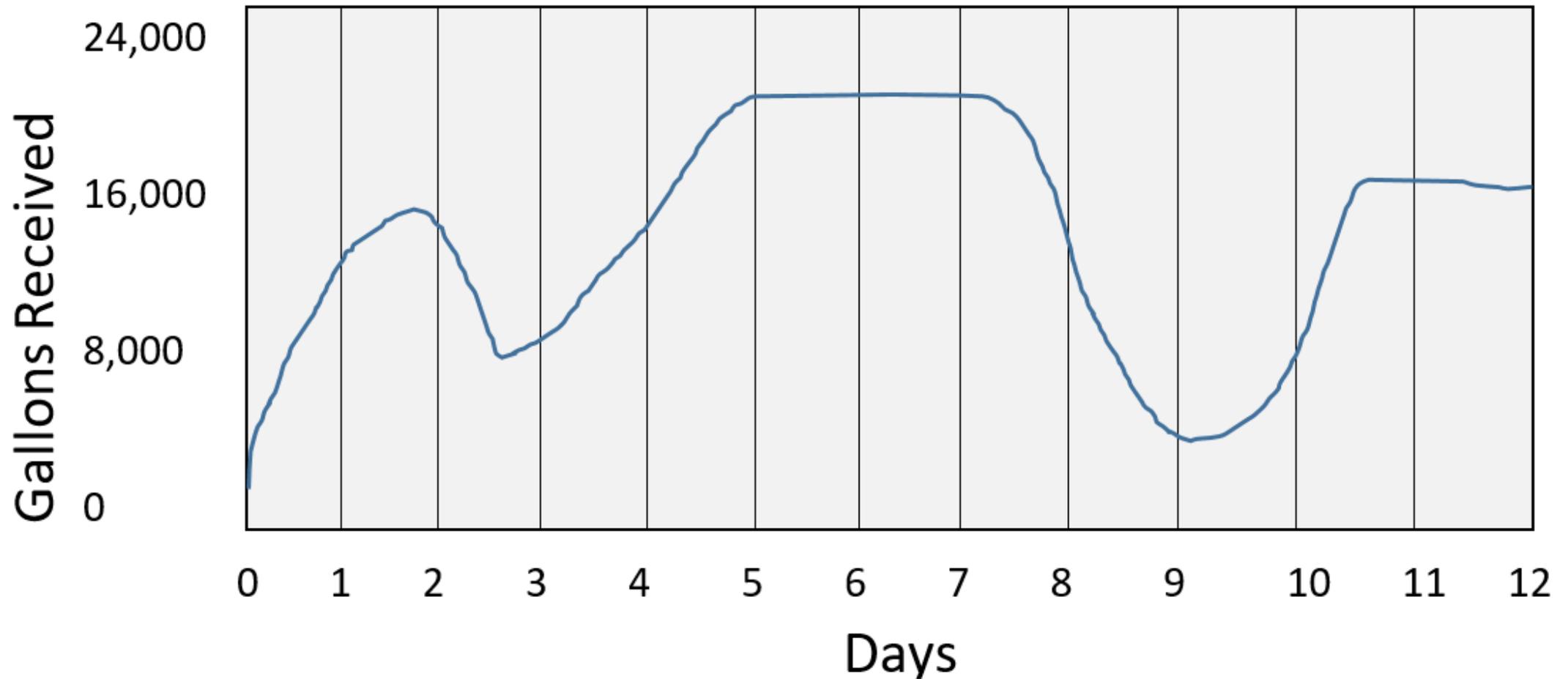
Prevent Headaches by:

- Getting test results for the proposed feedstock
- Setting up a permit for the waste
- Always be present for the first load, then check periodically when loads are delivered, look, smell, talk with the drivers. Before delivery, make it clear what rules/expectations are for drivers and deliveries.
- Determine how it will be delivered, gravity, pumped up into tank, hose coupling sizes? etc **Ahead of time.**
- Take it slow – take one load of a new material the first week and monitor for process upsets, and proceed carefully.
- Don't put all your (or their) eggs in one basket, encourage them to have backup disposal options.
- Be flexible and work through it – there is often another way.

From Earthquake Seismograph (sort of!)



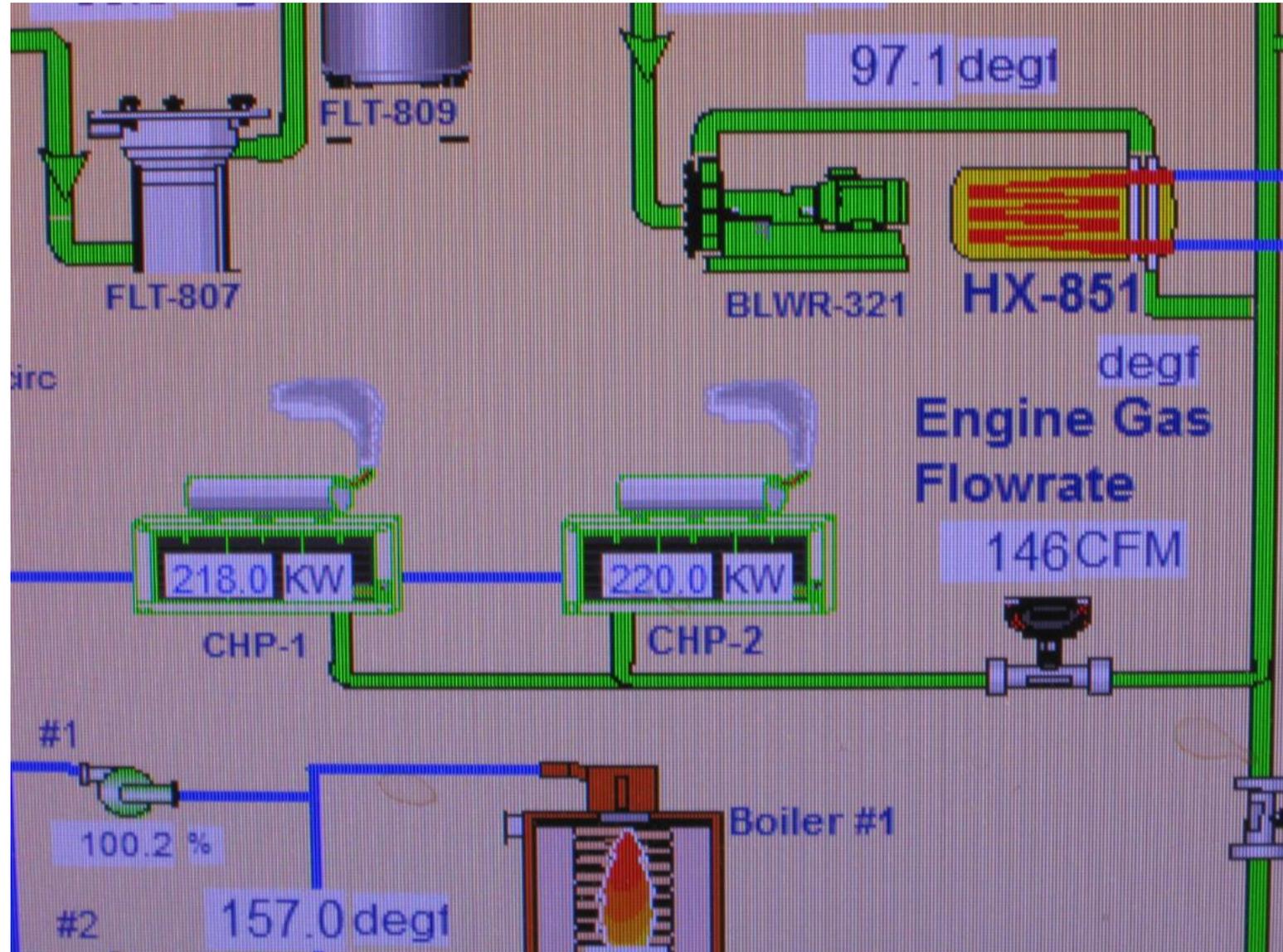
To Sine like wave (sort of)



Teamwork is essential (among other things)

- “Two *are* better than one; because they have a good reward for their labour.”
- Be aware of multiple needs, interests, limitations, and points of contact – regular communication with all groups is important.
- You are working as a liaison between your plant, the public, the industry(ies), broker(s) and hauler(s). You must protect your plant from upsets, interference, digester issues, permit exceedances, hazardous atmospheres and/or wastes. Think how it can affect the plant, and what could go wrong (and what could go right!). Work through it.
- In short, you need to make a somewhat harmonized process out of what is typically a chaotic mess at first glance. And...
- It all changes week to week – like most things in wastewater treatment, it is not “set it and forget it” you will continually adapt.

As a team, we push through the challenges!



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