Analyzing Your Resources

To Start Your Own Processing Plant

Tom Frank

WWETT Show 2019
Tim Frank Septic

• Family Owned Since 1966
  • 3rd Generation now on board
  • 4th Generation up and coming

• Located in Northeast Ohio
  • Snow belt
Screening & Storage

Grease

Sewage Sludge

Portable Toilet Waste

Septage

Screening & Storage

Dewatering Process

Sludge Cake

Water
Not Just a Machine

• Things to Consider
  • Why are you building a dewatering facility
  • Is it a good fit
• Research
  • Field Trips
  • Networking
• Time
  • All of these take time, including actually running the dewatering facility
Things to Consider: Your Company

• Gallons per year pumped
  • Septage
  • Grease
  • Other

• Current disposal options & limitations
  • Current costs at WWTP
  • Travel time to and from WWTP
  • Hours of acceptance
  • Volume accepted
  • Materials accepted
  • Seasonal
Things to Consider: Your Employees

- How many
- Dedicated
  - Buying into the project
- Drivers or trained professionals
  - Setting the bar
Things to Consider: Your Customers

- Loyal customer base
- Are you a professional company, or a name they found online
- What is your branding
  - How will a dewatering facility help deliver value to your customers
Things to Consider: Your Competition

• Their disposal options
• Are they competition or just names on the internet
• Do you work together on any projects
• Would a joint disposal facility be an option
Things to Consider: Explore all Options

- One size does not fit all
  - Find what is best for your situation
  - Bigger is not always better
- Bulk transportation to WWTP
- Screen and discharge
- Partnering with farmers for land application
- Repurpose existing buildings or abandoned WWTP
- Partner with WWTP
Things to Consider: Location

• Rural vs. Urban
• Final disposal options
  • You still have to get rid of water and sludge cake
• Local, county, and state ordinances
• Odors
• Zoning
• Utilities
Research

• Field Trips
  • NAWT Symposiums
  • See how other facilities did it

• Networking
  • Talk to other facility owners to find out what worked and what did not
  • Local WWTPs
  • Farmers
'Normal sewage' means sewage which when analyzed shows by weight a daily average of not more than 250 parts per million of suspended solids; not more than 200 parts per million B.O.D.; not more than 8 parts per million phosphorus; and not more than 25 parts per million ammonia-nitrogen.
Components

• Receiving station for monitoring outside loads

• Screening
  • Bar Screening: Garbage, debris, wet wipes
  • Fine Screening: Hair, smaller trash
  • (Do not Grind – will come back to haunt you)

• Liquid Storage
  • Mixing, thickening, periods of high volumes of pumping
Liquid Storage

• Mixing
  • To ensure homogenous blend for easier dewatering

• Thickening
  • Ability to get your feed to the right consistency

• Periods of high volumes of pumping
  • Allows extra storage during busy periods or emergencies

• Unexpected breakdowns with dewatering equipment
  • Allows extra storage for maintenance & breakdowns of dewatering equipment
Separation

- Polymer
  - Dry
  - Liquid
- Lime
  - Safety
  - Storage
    - Bulk
    - Bag
- Both
Dewatering Equipment

• Volume
  • Desired amount to be dewatered per day

• Size
  • Area the equipment is to be located

• Final disposal of cake and effluent water
  • Final disposal options will dictate how dry the cake has to be and water cleanliness
Dewatering Equipment

- Mechanical vs. Gravity
Final Storage

• Storage for dried cake
  • Inclement weather
  • Equipment malfunctions
  • Proper land application

• Liquid Storage
  • Inclement weather
  • Proper land application

• Oops Batches
  • Spot to dry bad dewatered batches
Final Disposal

• Disposal vs. Reuse
• Effluent water
  • Discharge to publicly owned treatment works
    • May require further filtration
  • Spray irrigation
  • Subsurface irrigation
• Sludge Cake
  • Landfill
  • Land application
  • Additional treatment processes
    • Composting, Thermal drying, etc.
Basic Layout Principles

• Let gravity be your friend
  • Elevated equipment
  • Let gravity help move water between components

• Outside facilities
  • Precipitation – outside storage (lagoons) and rain do not mix
  • Temperature – freezing, impeding achievement of discharge numbers

• Odors – Indoor or Outdoor
  • Don’t be a smelly neighbor

• Plan for expansion & flexibility
The Team

• You “the expert” and your employees
  • Office staff
  • Technicians
  • Operator
    • Will impact equipment choices
• Engineer
  • Picking the one!
• Accountant
• Banker
• WWTP
Other Equipment

- Pumps
- Mixing & Blending
- Conveyors
- Front end loaders
- Roll-off truck / Dump truck
- Confined space entry training and equipment
Business Plan

• Does it make cents
  • Will you save money, time, or allow for increase opportunities

• Put in on paper
  • Painting a pretty picture for investors, banks, and government entities

• Lean on your team members for help

• Consider separating pumping business from dewatering company
Local & State Officials

- Be prepared to educate
- Present your plan
  - Donuts
- Be confident
- Get er’ done attitude!
- Be a professional
- Make them part of the team
Permits

• State or local
• Reflect materials processed
• May take time
• Lots of correspondence
• Facility storm water consideration
• Will impact operator choices
Construction

- Recycling of machines
- Repurpose of materials
  - www.govdeals.com
- My crew or hiring
- Putting it all together safely.
- Can be functional and safe and not have to look pretty
Any Questions?
NAWT Hiring an Engineer
DEVELOPING A TEAM

National Association of Wastewater Technicians
Your Problem

Mixed waste
{Your truck}

Solids

Liquid
Your Vision

WHO YOU ARE AND WHERE YOU ARE GOING
Visioning

Your Markets
Your Regulations
Your Resources

YOUR VISION: ROAD MAP
Business

Management

Septage

Biosolids {Sludge}
  - Small community systems
The Next Steps
Planning
Buying
Building
Operating

Throw it on the wall & see what sticks
YOUR FACILITY PLAN

Interviewing your team
◦ Your Company
◦ Accountant
◦ Engineering
◦ Banking
◦ Attorney
◦ Marketing
Engineer

- Permitting
- Design
  - Plans
- Costs
- Operation
- Learning vs. Knowing
- Fighting vs. Following
Flexibility in Your Facility
Piping
Lines
Technology adds
BUILDING & OPERATION

Your Choices
It will take time
You will be the **EXPERT**
General Engineering
Gravity is Your Friend
Grit is a Problem

Earlier is better
Deal with trash
Safety
In your Company

Safety Plan
- Fire
- Medical
- Personal Protection
- Clothing

Spill Plan
- Waste
- Perception
Parent failing to comply with “Safety Plan”

Any Questions?

AFRA
Polymer

A polymer is a chain of organic molecules made up of many repeating units.

\[
(CH_2 \rightleftharpoons CH)_n \cdot (CH_2 \cdot CR)_m
\]

\[
| \quad | \\
C=O \quad C=O \quad CH_3
\]

\[
| \quad | \quad | + \\
NH_2 \quad HN-(CH_2)_3 \cdot N \cdot CH_3
\]

| \\
CH_3

Ex. A PAM cationic polymer

Allows for Separation
Mixing
A place to take a peak
STORAGE
Benefits of Storage

‘Bigger is better’

Early helps

Operation

Performance
  ◦ More consistent

Cost?
Flexibility

Dealing with Issues
  ◦ Weather
  ◦ Breakdowns

Piping

Bad Loads
  ◦ Plan for receiving
  ◦ pH
Odor Control

Thanks to:
BAY PRODUCTS, INC.
## Odor Control SUMMARY
### Compounds Treated

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<th>Hydrogen Sulfide</th>
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<tr>
<td>Biofiltration</td>
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Facility Outline

Odor Control

- Solid waste
- Grit
- Storage

Processing
- Transfer
- Thickening
- Dewatering

- Solids
- Effluent
- Treatment

Receiving

Final Resting
Questions

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