

**VAMWA-MWCOG-MAMWA
Regional Biosolids Meeting
March 23, 2020**

Joint/Regional Options

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AQUALAW

Scope of the Issue, Options, and Data Needs

Scope of the Issue

Total MD Generated Materials

- Approx. 658,000 Wet Tons (WT)
 - Based on 2018 estimate

Total VA Generated Materials

- Approx. 499,000 WT
 - Based on 2019 estimate

Total DC Generated Materials

- 150,000 WT
 - Based on FY19 production numbers

**Total Biosolids Generated in Region =
1,284,000 WT**

Current Storage Availability

Storage in MD

- Prince George's Co. (Cedarville Lagoon, 45,104 cu. yds. capacity)
- Approx. 38,000 WT

Storage in VA (Routine Storage)

- Cumberland Co. (Nutri-Blend) (Roofed, 120' X 420')
- Goochland Co. (Nutri-Blend) (Roofed, 100' X 100')
- Fauquier Co. (Synagro) (Lagoon, 21,365 cu. yds. capacity)
- King and Queen Co. (Synagro) (Not operational as routine yet)
- King and Queen Co. (Recyc) (Roofed, 125' X 150')
- Approx. 78,000 WT

Not Enough Storage for Generated Amounts

Options: Joint/Regional Solutions

Over the Short Term (Next 5 Years)

- Add joint/regional storage
- Owned/operated by municipalities
- See slides below

Over the Long Term (Next 10 Years)

- Consider more capital-intensive options
- Biosolids-to-Energy (B-T-E)
- EX: Joint/Regional digesters with energy recovery
- EX: Joint/Regional incinerators with energy recovery
- See slides below

Step 1 for All Solutions

Must Do Some Data Gathering

- Firm up amount of VA, MD generated material
- Estimate additional biosolids generated
 - Over reasonable planning horizon
- Find a “benchmark” for a reasonable amt. of storage
 - Review other states, regions
 - How % of generated material should we have storage for?

MAMWA and VAMWA Could Assist

- Survey membership and request
 - Amounts of biosolids generated
 - Type of treatment
 - Land applied, incinerated, or landfilled
 - Existing on-site storage
 - Existing options for off-site storage
 - Future plans for biosolids management
- Similar to a VAMSA survey
 - Every year, request information on stormwater utility fees
 - Circulate results to full membership

Purpose for Data Gathering

Would Help Establish Future Needs

- For joint/regional storage and/or for joint/regional solutions

Allows Us To Direct our Own Path

- VA DEQ, MD MDE expect generators to plan for storage
- Benchmark research helps set a reasonable expectation

Approach Regulators with Solution

- Request then confirm we need X% storage for total generated

Short-Term Option Joint/Regional Storage

Potential Uses for Regional Storage

Year-Round Operational Flexibility

- Generators could send biosolids at any time

Seasonal (Winter) Purposes

- Ameliorate MD's winter ban
- Provide additional flexibility for generators in all 3 jurisdictions
- During parts of year when agricultural fields unavailable

Emergency Use

- Address unforeseen weather events (like 2018)
- Land application is unavailable (too wet)
- Landfilling is limited or costly (tipping fees too high)

Legal Challenges: VA

VA Code Requires Local Sign-Off on Storage

- "...no application for a permit or variance to authorize the storage of sewage sludge shall be complete unless it contains certification from the governing body of the locality...that the storage site is consistent with all applicable ordinances."
 - Va. Code § 62.1-44.19:3(A)(5)

Gives Localities Zoning Authority Over Storage

- "Localities, as a part of their zoning ordinances, may designate or reasonably restrict the storage of sewage sludge..."
- Cannot restrict storage on farm if farm is using biosolids and storage is no longer than 45 days
 - Va. Code § 62.1-44.19:3(R)

Challenges: VA (cont.)

VA Regulations Also Speak to Storage

- Cannot apply to DEQ for permit that authorizes storage
- Until you have complied with paragraph R (in slide above)
 - 9VAC25-32-550(A)

Only Routine Storage Is Impacted by Code

- On-site storage is limited to no more than 45 days
- Routine storage is long-term
 - Not at WWTP, facility must be preapproved by DEQ
- Routine storage is required for all land application projects
 - “if no alternative means of management is available during nonapplication periods”
- May not apply to DEQ until requirements of A 5 are met
 - 9VAC25-32-550(D),(E)

Challenges: VA (cont.)

VA Regulations Limit Operations

- Routine storage is supposed to be empty in summer
- “Storage of biosolids located offsite or remote from the wastewater treatment works during the summer months shall be avoided whenever possible so that the routine storage facility remains as empty as possible during the summer months...”
 - 9VAC25-32-550(E)(5)(b)

Limits Ability to Allow for Flexibility

- Use of a facility for year-round operational flexibility
- Could still be used for seasonal, emergency uses

Legal Challenges: MD

MD Code Directs MDE Not Issue Permit

- “The Department may not issue a permit to install...a sewage sludge storage facility until”
- “(1) The ...sewage sludge storage facility meets all zoning and land use requirements of the county where...the storage facility is to be located...”
 - MD Code ENV. § 9-233

Additional Notice for Facility Construction

- Public notice in local newspaper
- Copy of notice to local health official, local elected officials, any other county within 1 mile of facility
 - MD Code ENV. § 9-234(b)

Legal Challenges: MD (cont.)

Issuance, Amendment, or Renewal of Permit

- Requires public hearing
- “Before the Secretary issues, amends, or renews a permit to...install, materially alter, or materially extend a structure used for storage or distribution of any type of sewage sludge, the Department must hold a public hearing...”
 - MD Code ENV. § 9-234.1(b)
 - See also COMAR 26.04.06.29

Same Requirement Later in Code

- “The Department may not renew or amend a permit to install, materially alter, or materially extend a structure used for storage or distribution of any type of sewage sludge unless the Department holds a public hearing on the renewal or amendment...”
 - MD Code ENV. § 9-238(c)

Legal Challenges: MD (cont.)

MD Regulations Impose Requirements

- Facility must meet all local land use and zoning requirements
- Numerous requirements for construction and operation
 - EX: 1,000' buffer between facility and nearest off-site inhabited dwelling
 - COMAR 26.04.06.27(A),(B)

Broad Authority for MDE To Require More

- Department may issue permit for storage facility
- If facility will meet “[a]ny other conditions required by the Department to protect the public health and the environment”
 - COMAR 26.04.06.27(B)(18)

MDE Allows Stockpiling

Class A Materials Only

- Subject to extensive labeling requirements
- Negotiated by MAMWA in 2010
- Allows for stockpiling for up to 14 days on receiving site
- After 14 days must be covered
- Maximum 90 days stockpiling without a permit

MDE Does Not Allow Stockpiling of Class B

- MDE unwilling to consider during past discussions
- Concern is potential odor issues

Other Challenges: MD

Cost is Significant Issue

- Most recent cost estimates from 2012 GA session
- Dept. of Legislative Services estimated \$72 M in cap. costs
- To build enough storage for approx. 98,000 WT
- Estimated amt. needed for winter storage

Individual POTW Estimates Were Higher

- WSSC estimate at nearly \$90 M
- Anne Arundel Co. estimate at \$22-30 M

Other Challenges: MD (cont.)

Potential Public Opposition to Routine Storage

- Has been an issue in past
- Two potential sites considered, but not operational today

One Was WSSC Site

- WSSC proposed Site II composting facility in Silver Spring
- Had to abandon it due to citizen protests

Second Was Anne Arundel Co. Site

- Operated sludge lagoon for number of years
- Based on concerns by 1 neighbor
- MDE refused to reissue the permit in 2011
- County was forced to close the facility

Potential Solutions (VA and/or MD)

Seek Legislative Fix to Code Issues

- Request allowance for new type of storage – regional
- Add clear authorization in Code
- Revise regulations using fast-track process (VA)

Must Allow Localities Some Authority

- Not tenable to strip current authority over routine storage
- Unlikely General Assembly would accept less authority
- Over larger, regional facility

Potential Solutions (cont.)

Could Also Seek State Funding

- For group of generators to fund project
- Multiple purposes for funding
 - Buy property for siting
 - Pay construction costs
 - Fund ongoing operations
- Over long term, having regional storage facility is a positive
 - Inadequate storage at the current time (see numbers above)
 - One site versus multiple smaller routine storage sites

With Incentives for Host Locality

- Allow locality to hire staff for long-term monitoring
- Regular interaction with facility operators, etc.

Success Story?

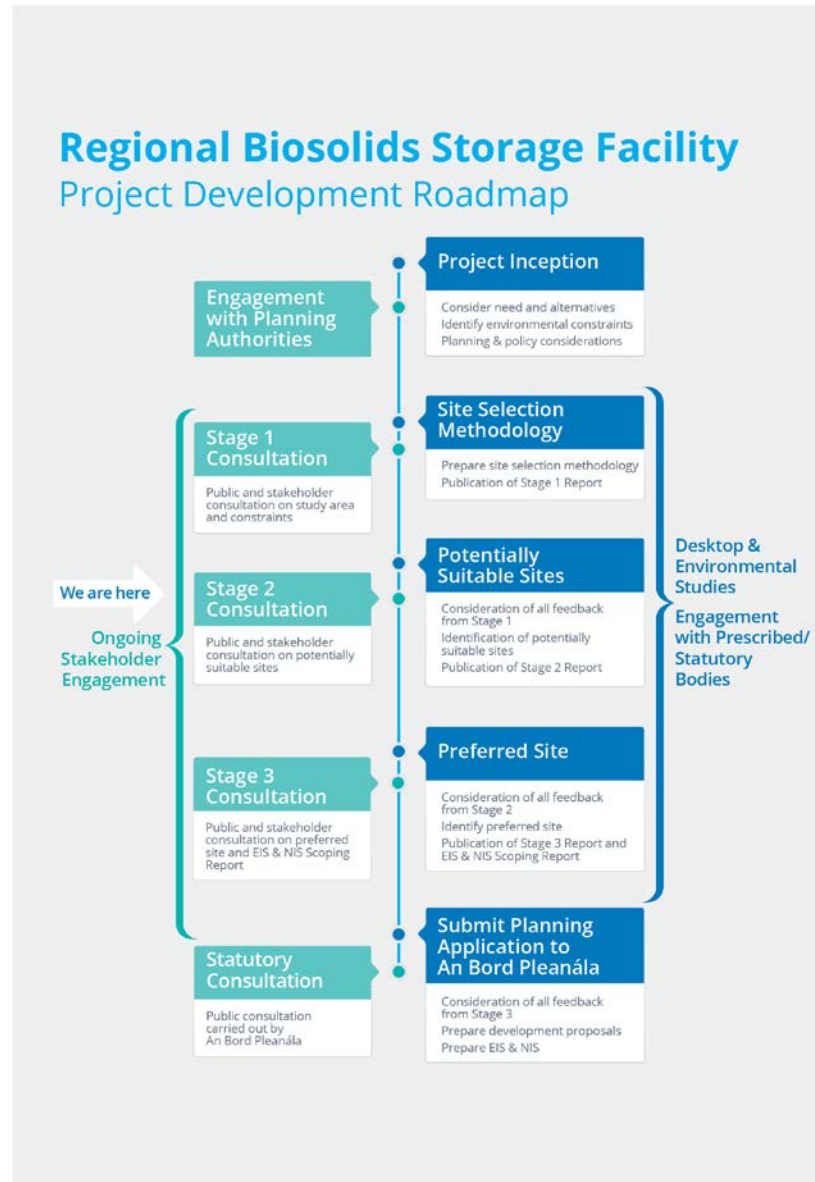
Irish Water Planning Regional Storage in Dublin

- Driven by projected growth in population
- Approx. 98% of biosolids used on agricultural fields
- Storage will be seasonal (land application only in spring, fall)
- Built on 11.4 hectare site (approx. 28.17 acres)
- Will store approx. 48,000 m³ (approx. 40,453 tons)

Benefits to Regional Storage Facility

- 1 site closer to WWTP, highways
 - Preferable to numerous smaller facilities in several communities
- Less space required for regional facility
- Lower traffic impact
- One team will manage the facility
 - “to a continuous standard thus enabling consistent high quality”

Success Stories (cont.)



Success Stories (cont.)

Siting Decision Based on 21 Criteria

- In 4 broad categories
 - Environmental
 - Economic & Engineering
 - Planning
 - Social & Community

Site Chosen More Favorable For Most Criteria

- EX: Already zoned for heavy industry
- EX: Distance to biosolids source

**Long-Term Options
Joint/Regional
Biosolids-to-Energy**

Build Biosolids-To-Energy

Already Being Done on Existing WWTP Sites

- Digesters capture methane, convert to electricity
- EX: DC Water Blue Plains generates 10 MW electricity
- EX: Alex Renew has offset purchased energy by 32%

Future Joint/Regional Site Could Do the Same

- Accept residuals from multiple WWTPs
- Send materials to on-site digesters
- Generate electricity to run facility and/or send onto grid

Established Program to Sell Back to Grid

- Dominion (VA) net-metering program for solar generation
- Same type program with BGE (MD)

Projects Underway for Manures

Dominion Announced Deal in Late 2019

- With Vanguard Renewables
- Working with dairy farmers in GA, NV, CO, NM, UT
- Multiple projects will convert methane to natural gas
- Using anaerobic digestion, will send gas to gathering lines, then to conditioning facility
- Then to customers through existing network

Dominion Signed Agreement w/Smithfield Foods

- For agriculture-based renewable natural gas partnership
- Committed \$500 M over 10 years
- To convert methane from hog farms

Likely Both Projects Have Significant Benefit

- Qualify as renewable energy for purposes of state rqmnts.

Biosolids Incinerators

Future Regional Site to Burn Biosolids

- Could also accept other wastes
- MSW, industrial, or food wastes

Site Could Generate Power to Sell Back to Grid

- Large waste-to-energy facilities in operation already
- See next slides

One Complicating Factor is Emissions

- EPA issued final rule in 2016
- Federal rqmnts. for existing sewage sludge incinerators (SSIs)
- Applies to both multiple hearth and fluidized bed incinerators

Waste-To-Energy Operations (VA)

Covanta Facility on I-95

- Acting as an exempt wholesale generator (EWG)
- Sold entire output to Dominion until 2015
- Using power purchase & operating agreement (PPOA)
- Applied for FERC approval to sell into PJM market

Alexandria/Arlington W-T-E

- Has been in operation since 1988
- Generates 23 MW of energy per day
- Enough power for about 20,000 homes

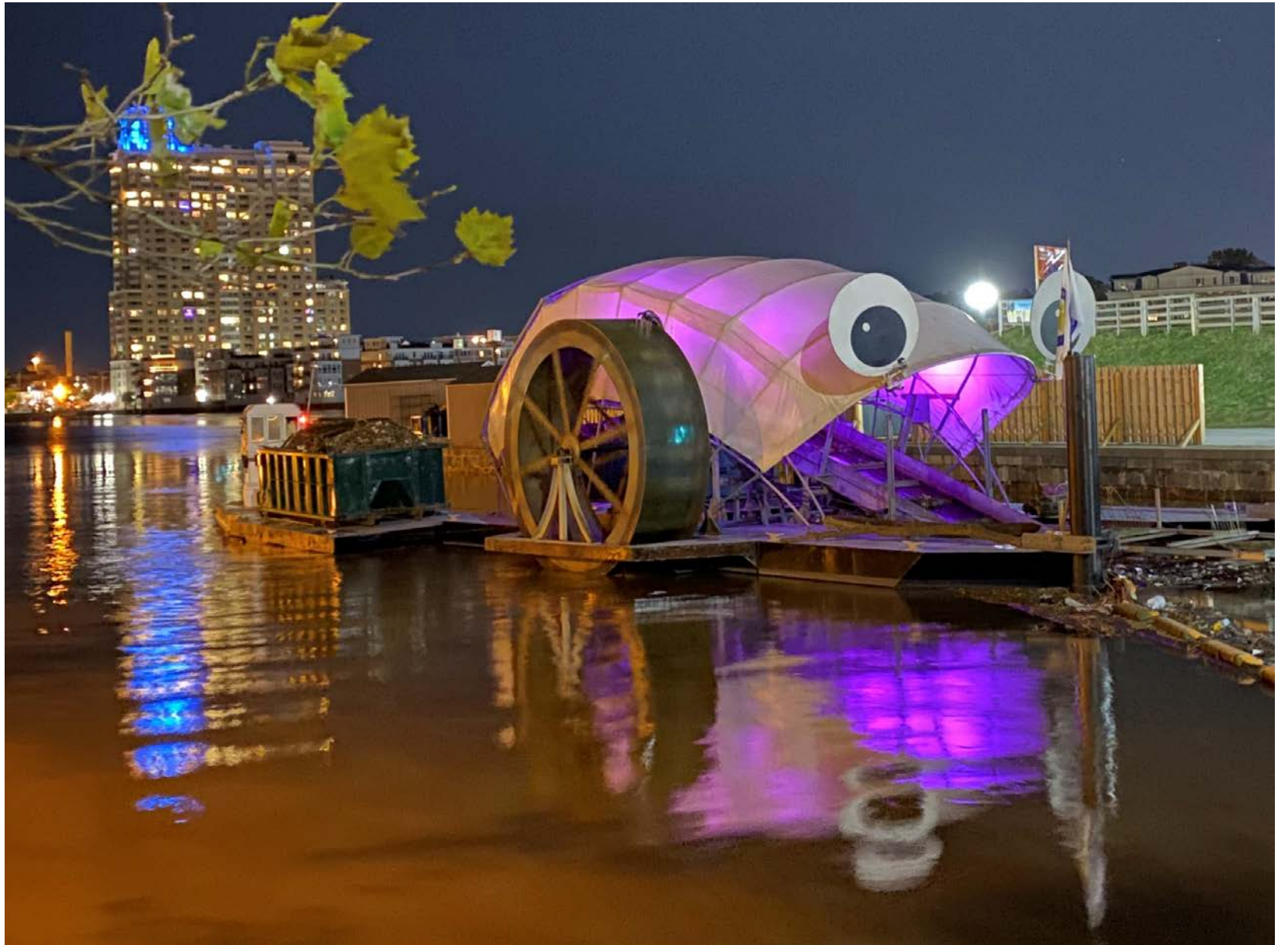
Waste-to-Energy Operations (MD)

Wheelabrator Baltimore Facility

- Manages up to 2,250 tons of waste per day
- Can generate up to 64.5 MW in power
- Also provides steam to downtown Baltimore heating loop
- Enough power for about 40,000 homes and businesses

Fed in Part by Mr. Trash Wheel

- Located in Inner Harbor
- And TED as of 2018 (South Baltimore)



Waste-to-Energy Operations (MD) (cont.)

One Risk in MD is Possible Designation Removal

- Currently W-T-E trash incinerators are clean energy
- Clean Energy Jobs Act of 2019 requires ½ of energy
- From renewable sources by 2030; all by 2040

Another is Local Oversight

- Wheelabrator has sued the City of Baltimore
- Along with Curtis Bay Energy
- Response to new City law in 2019
- Baltimore Clean Air Act
- Concerned new emissions standards will force closure

Closing Comments

2018 Weather Situation Identified a Gap

- Put generators at serious risk
- Contractors not entirely prepared to handle materials
- Inadequate current storage space
 - Some generators paying for storage option, some not
 - Those who were paying had priority in service

Generators Have Opportunity to Work Together

- To find solution to keep 2018 from recurring
- Shorter term, could develop regional storage
- Longer term, site regional biosolids-to-energy facility

Closing Comments (cont.)

Would Require Multi-Jurisdictional Buy-In

- Agree to project schedule, funding
- Support next steps with General Assembly, regulations
 - Either in VA or MD
- Agree to long-term operations through contract
 - Of regional storage and/or B-T-E

Would Likely Have Role for Contractors

- Land apply materials from routine storage
- Take materials from routine storage
- For composting, further treatment, etc.

QUESTIONS?

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The logo for AquaLaw, featuring the word "AQUA" in a light blue color and "LAW" in a dark blue color, both in a bold, sans-serif font.

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