DISPOSAL AND USES OF GLASS IN TRANSPORTATION **2/6/19**

MEETING MINUTES

# of participants – 60 meeting attendees

INTRODUCTION – David Jeffers, LRPC

- Thank you all for coming – this is the second roundtable we are able to have, the first was on composting back in December
- Professional development credits through NH DES (SWOT) will be applied to those in the solid waste sector

GUEST PRESENTATION – Mike Durfor, *Northeast Resource Recovery Association*

- Participant introductions to get a sense of representation – name and town/department
- How many of you think crushed glass can be used in any way in the transportation industry? How many don't think it can? How many have used it?
- 2 part presentation about PGAs and "cleaned glass" being shipped to Canada – an issue has been finding outlets for using crushed glass
- Presentation will cover regulations

PRESENTATION NOTES – PowerPoint is available on LRPC Solid Waste page

- State of NH requires professional development (one of only a few states in U.S) – aims to provide knowledge of what's dangerous, what's not and how to be safe
- NRRA provides tech. assistance to communities and schools
- Perform inspections in schools
- NRRA works to help with climate change and composting
- In the past, glass had to separated by color – unfortunately, markets are no longer there
- Zero contamination was the key then, now even more important today
- Issue to keep ceramics out – now working to avoid that being an issue
- 1999 – NHDES deemed PGA's a certified waste facility – developed own regulations
- Regulations state that you can use 100% glass in transportation if possible
- PGA glass meets NH DOT and NHDES standards
- Loureiro Engineering examined PGA in Keene - 100% of the PGA analyzed met the current standards for required grain size
- Glass is more frost resistant that gravel, meaning less frost heaves
- Accepted vs. unaccepted materials (*refer to ppt. on LRPC solid waste page*)
- Transfer station (TS) in New London inspects the glass and sends it to their PGA
    - One incident where a weed-wacker was found in glass at the PGA, needed to bring it back to TS for inspection – if left at PGA would have been $150/ton
- NRRA Members collect and store glass material and transport to a host site, NRRA hires crusher to turn into usable aggregate, host site either uses, sells, or gives back crushed material to NRRA members
- Can drop off glass and pick up later if there is little space at providers TS. Can pick up the material at no charge!
- Porcelain, tiles and glass can be used in PGA – cannot be used in clean class sectors because it will disrupt new glass color
- Issues with removing metal
- NRRA would like a community to have around 800 tons before sending it for crushing – final product looks like sand if sent through crusher twice
- Use loader to put glass into crusher, gets processed, forms another pile

- Corks, headlights, bottle caps, some metal and plastics – gets sorted out in sifter
- Problem materials - headlights, thermometers, light bulbs, automobile windshield glass
- For foundation backfill, glass can be either 3/8th or finer – depends on the project and what you decide to use.
- Need to weigh the delivery - Can use 3 different certified scales (in different locations) and use the average if no large scale is at the delivery site
- Common misconception that glass will be sharp and harm cars/people – if it's small enough, it will not be an issue. Sand makes glass, glass can be sand again.
- PGA is ideal to store outside, does not absorb or hold water
- Can be easily spread and compacted with other gravel – no potential for large rocks in glass (sometimes the case with gravel)
- New London PGA gave crushed glass to Colby-Sawyer College for many of their projects
- PGA can be used on hiking trails and/or used around tree trunks to prevent erosion
- Can use as "beach sand" – must run glass through the processor a few times
    - Some places in Florida are trying to re-establish beaches by doing this
- New London's glass disposal cost $22/ton in 2017 and they reused it all
- $65/ton in trash $110/ton to dispose as clean glass > try to find ways to save money
- Updated PGA facility site map – with clean glass sites and potential crushed glass sites
- In 2017, NH, VT, MA recycled over 10 million pounds of glass at $30/ton tipping fee
- From Oct. 2009 – April 2017 54,144 tons of PGA shipped to NRRA's Host sites at $30/ton (cost $1,624,320)
    - If same tonnage done as municipal solid waste (MSW) at $85/ton would have been $4,602,240
- Challenge to find host sites, more have been joining though
- One solution - "take back" programs in place to drop uncrushed materials and pick up PGA on back haul

More glass use solutions…

- Landfill cover
- Septic tank design
- DOT projects
- Amendment in exopolymer mats
- Carbon credits for using recycled materials
- LEED Credit for construction projects

- Recycled brick can be used for construction projects as well
- 2M Ressources Inc. is also a good resource - http://2mressources.com/en/
- Some organizations seem that they are looking for ways to reject the glass, but the reasons are not based on the quality of the product

INITIAL PRESENTATION QUESTIONS

1. Are there any restrictions for using PGA around water sources? – No setbacks set so far, because glass is like sand when crushed down enough. Certified waste derived products are not considered solid waste so they have different regulations
2. Are there any private businesses using it? Yes, just a part of their supplies
3. How many states are still doing a returnable container? Half of the bottles in Mass are not being returned that could be, so there is still a lot of glass being thrown away. NH is only state in NE without a bottle bill, but NH has invested in containers, signage, sites, to deal with recycled glass in lieu of that.
4. What is the cost to add glass to operations? Need a Permit By Notification to DES, do not need a permit to crush glass as long as following exempt regulations – still requirements and regulated

5. Heard PGA doesn't compact like gravel, is there any scientific tests? Yes, all have passed, the glass does compact well and is almost a 0% chance of large rocks getting in the way – refer to Springfield, MA projects for glass use
6. Is there any difference in the drainage efficiency of asphalt and sand? There are porosity differences, the water may take longer to get through asphalt. Glass does not absorb the water so it can filter well.
7. What is the cost of the crusher? About $150,000 -200,000. But – towns probably only need to use it in spring and fall. You can pay for a mobile crusher to see if you want to do the program. NRRA can help and do it for 2 years to see if it is something the town wants to continue.
8. Will the Wakefield facility ever open again? I believe so, but we need to demonstrate consistent movement. Ideal situation is you bring in a load of glass and take out PGA. Trying to keep it as local as possible.

OPEN DISCUSSION – (David Jeffers, LRPC) - Are there communities here that have used glass or PGA in some of the transportation projects?

Brad Harriman (Ossipee) – We have used if for culverts and we're contemplating using it in sidewalk project coming up

David Ford (Wolfeboro)- We used crushed glass as structural fill. Used in drainage projects instead of stone and wrap fabric. Biggest issue is contamination and issues with people getting nervous about it being mixed and when it comes up to the surface. It may end up in someone's lawn or in the road shoulder. PGA came from Wakefield facility. Quality Assurance and Quality Control (QAQC) needed. Didn't realize that it could be grinded down to look like sand and be that fine, but it must cost more to send it back through – right now it's $35/ton to bring it in. Have you talked to UNH T^2 about using it in their program?

Marilee (UNH T^2) – Yes, we would like to have that conversation!

Mike Faller (Meredith) – We used it in a lot of culvert and parking lot projects. Glass came from self-generated – have a crusher (smaller) at the point where we need another one.

Meeting Attendee 1 – How quickly did it wear out?

Mike Faller – A lot. We change the crusher knives 2 or 3 times per season ($2,000 to change, labor not included – about $7500 per year needed/year) – Meredith produced about 1,000 tons crushed glass/year

David Jeffers – For those of you who are not using it, why not? What more information do you need? Has anyone tried it and not using it now?

Chris Therriault (Moultonborough) – We used it in the past for pipe culverts – however, people freaked out about it. There is a common perception with the glass product being unsafe and that it's used on the surface.

Barnstead Road Agent – We used it in one culvert last year. Crusher belongs to solid waste district, so we have unlimited supply of crushed glass. Our product is even finer than what was shown in sample jars passed around. Big reason for why we aren't using it anymore is because of rumors regarding usage. This presentation has done a good job resolving those usage fears and we would like to now use it a lot more because it's also free!

Meeting Attendee 2 – If I understand correctly, the state only manages 20%? How is it that municipalities can use more than that?

Mike Durfor (NRRA) – Towns can use 100% - 20% allows for larger material to be included to hold the material together more.

Meeting Attendee 3 – Where is the contamination 'visual' coming from? If we grind it down to look like sand, why do people think it looks contaminated?

Mike Durfor – Contamination is happening when we get it from the residents. If we use crushed glass to restore a beach, we just refine it more – however, glass is very hard to crush compared to rebar and other materials. Crushers have a short life span and is difficult to crush. The glass crusher used in Littleton, Wakefield, etc. is mobile and takes 6 and 8 days, including transportation, to crush 800-1000 tons. Owner maintains machinery and rents out to communities that want to use it.

Meeting Attendee 4 – Seems like high maintenance equipment, need to have a high volume of glass to lower out the cost. If it dreaks down, do you want to invest the big bucks when you know you have a small supply?

Meeting Attendee 5 – Contamination also happens when DPW takes it out to their site, loading it in and out of the trucks some gets caught and people see it and get worried. If there's 1% of contamination, it becomes a connotation that you can no longer use it

David Jeffers – Is this something that groups want to pursue? Are there things which need to be done that LRPC can help with? Clearly there are some challenges for communities. Are there other options people want to explore?

Meeting Attendee 6 – How much tonnage of glass is going into landfill or being recycled for each town? Knowing these quantities as a region would be a good start to determining if we want to move forward. Are we processing 10% or 90%? The trucking cost is really the issue.

Mike Nork (NH DES) – There is data and reporting info on DES website, much more general, not as much specifics – limitations from DES to provide more current information. Data is typically through 2015.

Meeting Attendee 7 – The PGA site map handed out depicts a dozen facilities around NH – What is the ideal number? Is there a limit?

Mike Durfor - When you get to about 20-30 miles out from a facility, it becomes an efficiency issue. Now that recycling revenues are down; transportation costs are more apparent that before. You must consider how much volume will be available in that area. Communities that have switched to single stream are going to be forced to take it out in their machinery but it may lower their maintenance costs for other machines their glass touches.

Chris Therriault – I think the biggest question is, what are communities doing with the glass right now? In Moultonborough, it all comes together in a single stream. As a whole picture we need to determine the challenges for communities to either start recycling glass separately (dual stream) or figure out another way.

Mike Nork – Just to point out, NHDES has low staffing and there a very few labs that run tests for specs of specific projects. We can't write regulations about uses of glass without the evidence to state, "OK, X is good to be used for Y" – we'd like communities to test these projects and report your results so we can have that information for other folks.

ADDITIONAL RESOURCES:

1. NRRA Webinars and Operator Training Workshops: https://nrra.net/resources/usda-grant-presentations-webinars/