

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Attendance: Jan Sassaman, Bonnie Norwood, BJ Tipton, Linda Bowerman, Al Vickers, and Remus Smith

Staff: Gayle Wilson, Blair Pollock, Paul Spire, Wanda McCain, and Harv Howard

Guest: Bob Sallach, Louis Watts, Harvey Gershman

1. **Adoption of Minutes from June 5 SWAB meeting** Vickers moves to accept. Norwood 2<sup>nd</sup>. Passes unanimously
2. **Board Member Comments** Norwood states that I thought I knew what was going on at the Eubanks Rd. site but I rode by yesterday and all the trees were gone.

Wilson states that it was to improve safety by the entrance because it is hard for big trucks to get in and out and there was a lot of congestion. In the future we'd like to put asphalt down there.

3. **Alternative Waste Processing Technologies Study – Harvey Gershman, GBB Inc.** (Q&A) Puts out handouts for the presentation and gives a Bio.

Gershman states that there are two categories [of waste processing technologies]: those that you would be interested to buy if you were so inclined and those you are not interested to buy, even if you are inclined [to build some type of waste conversion plant].

There are three types of waste-to-energy: Mass Burn where you don't process the stuff before you burn it, Refuse Derived Fuel (RDF) where you process the stuff before you burn it, and Modular, which is a smaller scale mass burn. It is called "Modular" because you can bring pieces in on a truck and put it together. Where with a mass burn water wall system, you have to do field erection, more like a power plant than like a big coal plant. (Shows pictures of different plants that are larger scale mostly 1500 tpd in Broward Co. FL. in, 975tpd in Alexandria VA, Springfield MA 420 TPD). Plants are right in urban commercial areas. All three from mid-late '80's. *Points out architectural details that makes plants look more blended into area, e.g. sleeve over steel smokestack, panels on upper areas to simulate windows.*

Norwood asks how high is the stack and how far away is the plant from other operations.

Gershman states that it's generally 1½ times building height which means it could be 250 to 275 feet. You can build these things on small sites, you have to isolate them with physical barriers, for sound or visual aesthetics and you have to make them look nice, if they're in view of the City.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Norwood asks how high is the [waste] mound at the Eubanks Landfill now, for comparison.

Spire replies about 100 ft.

Gershman states that these plants have availability factors of 90% to 94%

Tipton asks about the disposal of the ash.

Gershman states that the ash goes to a lined landfill. In Europe the ash is kept separate and treated like hazardous waste. In the US it is combined generally and goes into a subtitle D landfill in a separate cell.

Sassaman asks what do you see in terms of differences between water quenched ash and dry ash?

Gershman states that in all these plants they are wet. It's a matter of how wet. Some are put through a bath and some through a shower, but the ash is still wet and it's OK.

Norwood asks how much water would a plant need to handle our waste.

Gershman states that I don't remember how many gallons per ton but you need makeup water. There is a lot of recirculation. There are wet cooling towers that consume water. You can use dry cooling towers with condensers but you lose efficiency. In the plant in Babylon NY that we worked on the water came from the water underneath the landfill that was polluting the groundwater and we sucked that out. Sometimes you can use treated wastewater.

Pollock states that in terms of the presentation to the Commissioners the notion of water consumption is significant, if they get past the \$100 per ton cost to operate.

Gershman notes that ownership is split evenly - public and private. Wheelabrator and Covanta are the major private owners of the plants. Publicly owned plants are mostly privately operated. Privately owned plants were installed because of certain tax benefits available in the late 80's and early 90's that are not available now. *He goes on to discuss Mass Burn compared to refuse derived fuel.* Most plants are mass burn by far, there used to be more modular plants before the clean air act. They became too expensive to retrofit. There are some RDF plants with fuel preparation on site. There are plants that are RDF processing only where fuel is shipped somewhere else and burned to create energy, those match up but they're different locations. There are 89 total in the US.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Bowerman asks how does the breakdown compare to the rest of the world. Is it similar? Do they prefer the Mass Burn?

Gershman states that there is a RDF dedicated boiler plant being developed in Scotland. Generally we don't hear about processing. Mass Burn is generally what's done.

Pollock states that when waste energy was being developed the notion explored by the Solid Waste Committee here in Orange County was towards developing a high-BTU fuel where the non-combustibles are removed to make a high quality fuel. Has that gone anywhere?

Gershman states that no one has latched on to that. There was a plant in Bridgeport (CT) that tried make a powder fuel. It didn't work. It was too expensive. They had some explosions. If there are coal-burning plants, you can make a fuel that can go into that coal-burning plant from garbage. In some furnaces you can put a lot of RDF but you'd have to change how ash is handled. The utilities didn't like the fuel as it had too much glass, so that opening was lost.

Sassaman asks how much residual is there in the RDF processing.

Gershman states that what goes into a RDF plant is the same as a Mass Burn plant. You will end up with more residue from a RDF plant, but some of the residue isn't burned. In a Mass Burn plant all the residue has seen the heat. Typically 25% to 30% of what goes in is residue. Metals are 3-4% that can be recovered, the rest you have to get rid of. A good front end processing could get out more recyclables, you'd have less fuel coming out, but more recycling on the front end. In mass burn you don't have that opportunity.

Wilson asks how do you answer the question if there is a waste-to-energy plant why would you waste time and trouble to take out the plastic and paper because that will give the BTUs and increase your electricity generation. There is probably an environmental answer and an economical answer.

Gershman states that the environmental answer is you want to recycle for greenhouse gas reduction, and jobs. The economic argument is much stronger this year because markets are so strong. That may change on an island where imported fuel is so expensive. Why would one ship paper to China while importing expensive fuel oil. It is better not to have to make a plastic bottle again. Plastics are a waste product that someone found a use for. It's better to reuse this --- greenhouse gases, jobs, and economics.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Smith states that a garbage truck just left my house and he has a bicycle tire, a flat iron, a waffle iron and ten pounds of cardboard, there is no presorting in this system. It is dumped in?

Gershman replies yes. The iron would come out in the ash, bike tires will burn off, the wheel will be in the ferrous for recovery. Cardboard is burned, there is zero presorting. You'd rather not put the big metal items in the truck in the first place.

Pollock asks how much of the ability to capture the waste steam or hot water affects the economics of waste to energy?

Gershman states that generally the steam comes out of the back end of the condensing turbine. It is very hot. You can view your hot water system as your cooling tower. You are almost getting free energy. There is some efficiency lost but it is very small. If you were taking steam off at 300 to 400 psig, the steam would be worth a lot to a process customer. It is not a big efficiency loss for heating and cooling. If you have an industrial customer nearby it's very good. Baltimore takes off steam for district steam with an automatic extraction turbine and the market takes what it needs at different times of year. In Europe district energy is very common to most plants.

Norwood asks do you have a feel of how much heat that plant generates outside the building?

Gershman states that you walk outside you wouldn't know it. If the plant is run right you could stand here [gestures close to the door of the room] and not smell garbage or feel the heat. You might hear some noise from cooling towers or trucks going in and out.

Norwood asks how many people does the plant employ.

Gershman replies 60-70.

Wilson asks do you avoid yard waste.

Gershman replies no. You might avoid a slug of it, otherwise it would be mixed.

Smith asks if there is a Mass Burn here the cost would be 120,000 tons/year X \$225,000.

Gershman states that the smaller the plant, the higher per installed ton [of capacity] – \$275,000 X 300 tons [of daily capacity]. That's \$82,500,000. You don't want to be asking to get more garbage to make this work. You can go after other burnable tons like the combustible part of C&D or a big industry so you can substitute for those

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

recyclables you might pull out of the waste stream. The plant can last ‘forever’. There is no reason it can’t be here a 100 years from now.

Tipton states that if a cogeneration facility was looking for another non-coal piece of fuel source and the County wanted to make that fuel source, I know there is a cost to make it and to retrofit [the power plant]. Are you saying don't go there?

Gershman clarifies that this is UNC’s cogeneration plant we’re discussing. If you want to bring a fuel you have a cost to make the fuel of maybe \$60 to \$90 per ton then what is the value of the fuel against good quality coal (1% of less sulfur coal)? That needs a lot of careful analysis to do. We’re not doing that analysis here.

Wilson notes that this was discussed in the early nineties when they were retrofitting their boilers and they weren’t interested then.

Tipton states that the times are changing and they are considering alternatives fuels again.

Gershman says one would need an economic incentive, for example on the fuel in BTU equivalent, and to pay for the retrofits. Further, question is can you combine the garbage ash with the coal ash and continue to send it to its current destination.

You can manage the garbage at the coal plant on a relatively small footprint. It would be a challenge. Garbage is a low sulfur fuel. These plants are clean on the air emissions side. They’re all meeting the current air quality standards except for NO<sub>x</sub> where they are close to the permit limits. In fly ash they are over metal limits.

Vickers asks if the facilities that are having trouble with NO<sub>x</sub> are in non-attainment areas.

Gershman states that that's where the pressure is. They want an across the board reduction in NO<sub>x</sub> and you can't really do it. *He details a technical discussion of the issue and indicates that one must inject ammonia into the system to do that. Then discusses modular systems, there are two manufacturers and an engineering firm that designs and licenses these plants. They have only one plant at 125 tons per day and that is a starved-air facility. He goes into detail on these plants.*

Gershman then discusses thermal gasification - Pyrolysis. You heat the matter without air and the matter gasifies and you get incomplete combustion, then you incinerate the gas in a boiler.

Pollock asks could you make gas, clean it up, and sell it into the pipeline and avoid a lot of the capital cost.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Gershman states that that is the thought. The volumes are a lot less but no one's doing this. We are now in the area [of technologies] that you shouldn't buy. It's not just technology, it's who's selling it. You want to buy technology that works from someone who will be there with it and ten years from now they'll answer the phone. I haven't spent a lot of time on these; I wait until they become real.

Bowerman asks what would be the advantage to that over anything else.

Gershman replies the quantity of emissions is much lower. We've seen pyrolysis projects come and go by "small" companies, like Monsanto and Union Carbide and they couldn't do it.

Sassaman states that I would think that with the gas some of the problems would be with the metals like mercury and also chlorine.

Gershman replies no comment. Some of the other gasification technologies are very expensive and there are a lot of demonstration projects. The ash is 'nicer' because they heat it further and it's a consistent, glassier material that is easier to use. Plasma arc technology is where you stick electrodes in the garbage and you zap it. *He then discusses the biological technologies.* You have to get a lot of material out then a biogas is produced and a soil amendment, not a fertilizer. I think this is worth watching.

Pollock states that in your report you mention a using the 'digestate' as fertilizer type soil amendment. You also wrote that it might tend to concentrate undesirable metals. Have they done any assays of the digestion?

Gershman replies I don't know if they have. It would be nice if they can make ethanol from garbage and people have worked on this for 30-40 years with corn stalks, or wheat straw, but not mixed garbage. There is some good work going on in Canada, but you wouldn't do this today. People are trying to use biotechnologies they've tested on five tons of wood and now they want to scale up to 200 tons of garbage.

What would happen if you were trying to build this? The public would ask why you weren't recycling more. You would have to get to 50% recycling before you could consider burning. Getting to 50% is not that easy. It's a suggestion we make if people are interested. Site selection is critical. Plants can look really nice. In general, larger is cheaper and if you can sell low pressure steam or hot water it's cheaper, public ownership is less costly. Longer term bonds are cheaper. High disposal costs play a part here. Your \$50 per ton disposal costs are medium, not high, like \$100 a ton in New England.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

We've looked at most of these technologies. We've had these more cursory look-sees and I don't know why people are spending so much money on studying things that don't work. The Hawaii County facility was a bona fide procurement, but because of the size it was too expensive for them. The two in Maryland are real and probably going to go forward. This study compared rail haul to Mass Burn.

Building blocks for a project include: Do you control the waste, willingness to sign up for this, do you have a site, a landfill for ash and bypass, capital, financability, a technology that works, compatibility with a high level of recycling and the political will.

Orange County is only 180 tons a day and it could go lower, the \$50 per ton is not super high. A 300-ton a day plant will pencil out at about \$100 per ton. County sponsorship would be needed.

Wilson notes that New Hanover County NC is looking at shutting their incinerator down now that the debt service is just about paid off. He asks that wouldn't another conclusion be this [waste-to-energy] is only economically feasible if partnered with another waste generator? If there were some way to increase the tonnage available through partnering with another generator then it would come more economically feasible.

Gershman replies that this is true.

Wilson further notes that when you talk to the Board, this discussion of size will be important. How many acres do you need five, ten or twenty?

Gershman states that six to ten is good for a facility of this size unless you need to put it on a smaller site.

Sassaman asks how rigorous are the permitting processes.

Gershman states that it's a lot worse than most other siting processes.

Vickers asks with a reasonable process how long would it take.

Gershman states that it takes two years to build it. It takes six months to finance it and about a year and a half to permit it. Then a year to procure it and negotiate with your contractor. There would also be a year to do a study and get ready for the procurement. This is about a six year project because you are starting from nothing.

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

Bowerman states that you have the cost of disposal at \$50/ton which I gather is what we are paying now, but what would we be looking for when shipping it out and shouldn't that be mentioned. I don't know how much it will change.

Wilson states that it won't be able to change too much but it will go up \$3 or \$5 per ton, but not orders of magnitude.

Bowerman asks how much control over that do we have with the gas prices.

Wilson replies not much.

Vickers asks what is the term of cost of transportation per ton mile that you all are using.

Wilson states that it would depend on what you are comparing it to. If ten years down the road you pay \$70 to \$90 a ton it might look better. We are not going to have a MSW landfill, so there's not that option to compare it to. Disposal space is still relatively cheap down here so it becomes mainly the cost of transportation. Unless you're more concerned with the carbon footprint. Looking at the carbon footprint at the macro level it may look better than hauling in a 200 mile round trip.

Gershman states that there is more to compare it to than just transfer and disposal. Given where economics are with these you want to minimize what you transfer and dispose. I think you have more than you can squeeze out on the recycling side. Work on that instead of thinking about a waste energy plant. If you do it right it will help keep your cost down to transfer and dispose.

Wilson states that the best thing that could happen is that Raleigh, Durham, or Greensboro decides to build a plant and we piggyback on their per ton cost.

Gershman states that even then you'd have to get to it. If the University were interested in your fuel you could look at that because you are taking advantage of an existing boiler. At your tonnage this is an expensive alternative. People will say 'we can recycle more, we don't need to have this much garbage shipped out.' That's my guess of the public's reaction.

In Santa Monica California the City established a 70% goal on MSW and C&D and they've closed the market. You must haul to a C&D recovery plant. They're going to implement food waste diversion from the commercial stream so the remainder becomes more "MRFable". The value of recyclables is a lot higher now, you have to be able to get into the collection side big time, closing the markets, go to mandatory. A lot of people don't want to do that.

- 4. Solid Waste Management Plan Work Group Process** Pollock states that next month we are trying to have a solid waste plan work group meeting to cover the finalization of work on the solid waste convenience centers and drop off centers decision making, and on the rural waste franchising decision-making. The dates that we are looking at are September 18<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup>.

- 5. Programs/Services Update**

*Solid Waste Operations Center* Wilson states that the completion date is still November 17<sup>th</sup>. They have ramped their work and things are coming along good.

*Transfer Station Siting Process* Wilson states that the consultant is now applying all the criteria. They have applied the exclusionary criteria and are moving toward applying the technical criteria to narrow the sites down and then they will apply the exclusionary to narrow it down further. There is a meeting scheduled for September to come back with a final list to the BOCC. The BOCC will start the public process and discussion and hopefully in November make a decision.

*Landfill Gas Recovery Project* Wilson states that negotiations are continuing and appear to be moving toward a final agreement. We will be coming back to this board to ask the SWAB to sponsor a public information meeting to explain to the public in and around the landfill where the gas will be generated and system installed and along the route to Carolina North.

Smith states that it looks like Carolina North is 20 years away. Will the landfill have gas then?

Wilson states that it will be at the tail end of the gas 20 years from now. It's my understanding that they are looking to have a structure there in the next three years.

*FY2008-09 Solid Waste Budget* Deferred

*Landfill Leachate Sewer Project* Wilson states that there is nothing new to report. We are still negotiating for an easement.

*Other*

- 6. Other Business** Norwood states that at the neighborhood meeting, Eubanks Rd. is not off the siting process. How did they word that?

Wilson replies I don't know how they worded it but Eubanks has not been eliminated by the BOCC for a possible transfer station site and it will be competing and have

Minutes – Regular Meeting  
Solid Waste Advisory Board  
August 7, 2008  
**Approved September 4, 2008**

applied to the criteria that have been selected. It may or may not fall out as the process continues.

Bowerman asks is there an area in mind [at Eubanks] that's large enough for that at that site.

Wilson states that there is an area there that's been there for a long time. That area has been reserved thinking that a possible transfer station would go there. That's on the north side of Eubanks Road just to the west and northwest of the convenience center.

Bowerman states that I thought that was smaller than what they were looking at.

Wilson states that it is smaller than 25 acres but it is located on an over 200 acre piece of property so it won't be eliminated for size, maybe for some other reason, but not size.

Smith moves to adjourn.

Norwood 2<sup>nd</sup>.

Adjourn 9:25pm

Next meeting September 4, 2008  
Southern Human Services