25 years in the Biosolids at LAWPCA

Challenges, Changes, Chances and Conclusions

Clayton (Mac) Richardson, P.E.
Lewiston – Auburn Water Pollution Control Authority
TREATING THE WASTEWATER

wastewater enters solids are screened temporary storage pumping primary sedimentation aeration clarification disinfection with chlorine

River

grit is removed from the sludge
dewatering chemicals are added
activated sludge is thickened

primary sludge is thickened
thickened sludge is dewatered
Where to go???

• Excerpt from 1973 Annual Report:

  “Solid Waste from our facility occupied much of our time during the year. It was finally agreed that we could dispose of the solid waste at or near the area of the Lewiston City Dump. Final arrangements were not completed during the year, but the Board was assured that satisfactory arrangements could be made with the City of Lewiston as time goes on.”
Early LAWPCA Issues

- Vacuum Coil Filters for Dewatering
- Start treating wastewater March 11, 1974
- Interim Landfill (River Road) two year life limit
- DEP issues first order to close temporary River Rd Site by June 1, 1979.
- CDM Estimates sludge disposal cost at $20 to $25 per ton
To Landfill or Not to Landfill

• 1980 DEP denies LAWPCA proposal for JSR landfill after assurances of approval
• Strong Public opposition to JSR site
• 1981 Trial of landspreading 1 acre at Lewiston Landfill 5 acres at Larabee Farm, Auburn.
• High Cadmium results – purchase AA Spectrophotometer
• Extend the truck garage
Land (or Land application) Ho!

- 1982 held a Farmer’s Seminar
- 1984 Construct Stacking Pad at Barker Farm
- Chairman objects to out of State opposition
- Maine starts testing for dioxins
- Suggestion made to call “Sludge” “Residual Waste”
- The great Dioxin Scare of 1987
- The Sludge Dam at River Rd LF deemed unstable, (compost facility site w/purch option abandoned)
<table>
<thead>
<tr>
<th>Month</th>
<th>'86 Farm</th>
<th>'86 Landfill</th>
<th>'87 Farm</th>
<th>'87 Landfill</th>
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<tr>
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<td>539</td>
<td>1502</td>
<td>371</td>
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<tr>
<td>Feb</td>
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<tr>
<td>Mar</td>
<td>1649</td>
<td>62</td>
<td>157</td>
<td>1811</td>
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<tr>
<td>Apr</td>
<td>1887</td>
<td>0</td>
<td>0</td>
<td>1606</td>
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<tr>
<td>May</td>
<td>1819</td>
<td>37</td>
<td>0</td>
<td>1896</td>
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<tr>
<td>Jun</td>
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<td>0</td>
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<td>Aug</td>
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<td>30</td>
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<td>Sept</td>
<td>1479</td>
<td>104</td>
<td>247</td>
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<td>Oct</td>
<td>1607</td>
<td>145</td>
<td>123</td>
<td>1542</td>
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<tr>
<td>Nov</td>
<td>1631</td>
<td>68</td>
<td>384</td>
<td>1361</td>
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<tr>
<td>Dec</td>
<td>1606</td>
<td>0</td>
<td>0</td>
<td>1727</td>
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<tr>
<td>Total</td>
<td>16,148</td>
<td>2,053</td>
<td>4,200</td>
<td>14,963</td>
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</table>
This is where I step In!

- CH2M Hill already working on Belt Press Proj.
- Interim stabilization of sludge bed and Second Interim Disposal Area proposed.
- Sept 1989 – Consent order to close Riv Rd LF
- Start sending solids to CWS for $65/ton
- Completed Lined Disposal Area –DEP will not allow its use.
- 1990 Trial “Comtek” Composting system.
Where do we go from here?

- Feb 1991 Hired CDM/TSI for phase 1 Compost Siting Study  44 sites considered
- Received approval to use LDA for 1yr + 1yr.
- Farmer’s Open House
- Option to Purchase 118 acre farm in Auburn
- Issued design/build RFP for compost facility as permitting with City of Auburn & DEP contin
- Two & a half years for total project completion
- Designed for 100% LAWPCA Production of 1990 (34 yd/day).
Sludge angers residents

By John Adams Young

BOWDOINHAM — Talk to farmers or superintendents of wastewater treatment facilities and they’ll all tell you sludge is great stuff — a valuable soil additive that can add essential nutrients to enrich soil.

In neighboring Richmond, Town Manager Nancy J. Churchill said in the past she has received complaints about sludge smells, but the three farms — all located near town — that accept sludge from Bath, Gardiner and Richmond’s own treatment plant have changed their operating procedures to keep the complaints to a minimum.

One of the biggest rules in Richmond, Churchill said, is no spreading of sludge on the week of the Fourth of July, when most people are outdoors for picnics.

In the past, Lisbon officials have also had to face complaints of homeowners living next to spreading areas, but Town Manager Michael L. Miller said he hasn’t received a single complaint this year.

Lee Townley, superintendent of the Lisbon treatment plant, said a recent expansion at the plant has allowed more flexibility in the timing of sludge spreading so that she can take advantage of better weather conditions.

Lisbon uses farms off River Road, on Bowdoinham Road and the Little Liver turf farm for sludge disposal.

and Townley said the best odor control is to spread on “a nice, cool breezy day.”

Public relations also enters the picture, Townley said. Neighbors who are informed ahead of time to expect “a day or two” of foul air will be less likely to complain. She said telling the sludge under immediately also helps control the odor.
1993 A very good Year!

- February 19 Part 503 Rule promulgated
- March 10, start up Compost Facility
- MWWCA Biosolids Video
- Open House for Compost facility –Senator Mitchell attends
- VPS (Auburn Fiber) announces Auburn chosen for paper recycling facility.
Ongoing Challenges

- Calcium Saturation starting to limit land application
- Odor issues (Neighborhood advisory committee)
- Biofilter issues – fouled fabric, media breakdown, plugged pipe and air diffusion, humidification
- Public Sentiment against land application in Falmouth, New Vineyard, Knox etc.
- LAWPCA class B used for Westbrook Landfill closure
- Purchased Libby Farm – 208 acres abutting CF
- Kady BioLysis Trial imbroglio of 1999
NEBRA!

• “There is a movement underway to form an organization that can act as a strong advocate for biosolids in New England modeled after the very successful Northwest Biosolids Management Association in Seattle. The organizers envision paid staff that can provide public outreach, legislative input, and coordinate research efforts. I am not yet sure what the fee support would be, but I do believe that such an organization is becoming critical in our region. Unfortunately, in many places acceptance of beneficial use, rather for lime stabilized material on farm and forest lands or unrestricted use of compost is being challenged. All too often opponents are driven by fear, emotion, and a large dose of “not in my back yard”. I feel LAWPCA has put forth good effort in our area to inform the public and deal with these issues but the lack of support in other parts of the State and New England could ultimately harm the Authority and cost our rate payers. I will inform the Board further about this group as more is known.”

• NEBRA incorporated December 20, 1997
Ongoing Challenges (cont’d)

• Topsoil manufacturing Trial at Barker Farm
• 2000 National Biosolids Partnership Gap analysis Volume land applied hits historic low 1,565 yards
• 2001 Refurbish first turner at $110,000 -- Start shipping solids to GSI, Canada for composting – first mention of potential of A/D to reduce biosolids vol
• 2002 CATS appeals Land Ap permit to BEP – turn around in Land Ap – 5,066 yd (23.6%) to farms.
• 2004 DEP severely restricts use of Barker Pad, raises concern over nitrate in groundwater at CF
Challenges Still Ongoing!

• 2005 Constructed Finished Compost Pad at Compost Facility -- Truck in route to GSI Canada overturns in Solon, Maine telephone worker threatens suit – Compost Facility hits 70 cy/day throughput

• 2006/2007 Town of Brunswick approves by 6 votes a ban on all biosolids (class A & B). NEBRA, LAWPCA, NEO and others challenge in court on 1310 U, win -- Record volume of solids produced.

• 2008 proposed a feasibility study for Anaerobic Digestion – CDM hired Feb 2009

• 2009 Conceptual Design of A/D – replace DAF thickeners
Getting Anaerobic Digestion Done

• 2009 Board of Directors Tour of Nashua, Franklin – presentations to Lewiston and Auburn City Councils – ARRA no grant funding for our project

• 2010 Sealed leaking Manholes at CF biofilter (nitrate) -- VE study of preliminary A/D design (defer Co-gen) – More presentations to City Councils, Rotary, etc. – Certified NBP EMS.

• 2011 A/D meetings with DEP – biomethane potential study of LAWPCA solids – WEF Washington DC fly in – NEBRA study of outside feedstock sources -- Sept award construction to Methuen for $11,957,548 (co-gen bid alternate $817,000)
Getting Anaerobic Digestion Done (cont’d)

• 2011 Efficiency Maine Grant for co-gen $360,000 – Started construction in October – Groundbreaking Ceremony Nov 4.

• 2012 met with DEP to discuss changes in Land Ap from lime stabilization to anaerobic digestion – Employee groups toured Nashua and GLSD digesters.
## Project Cost and Debt Service

<table>
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<tr>
<th>Item</th>
<th>Amount</th>
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<tbody>
<tr>
<td><strong>Source of Funds</strong></td>
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<tr>
<td>State Revolving Fund (SRF)</td>
<td>$13,800,000</td>
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<td>Principal Forgiveness</td>
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<td>Efficiency Maine Grant</td>
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<td><strong>Total Cost</strong></td>
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<td>Anaerobic Digestion Debt Service</td>
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<td>Compost Facility Debt Service</td>
<td>(520,000)</td>
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<td>Net Debt Service</td>
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<td>Annual Operating Cost Savings Goal</td>
<td>&gt;$400,000</td>
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## Approximate Annual Savings from A/D

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<th>Item</th>
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<tr>
<td>Reduction in Land Application Program</td>
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<td>Reduction in Composting and Compost Revenues</td>
<td>170,000</td>
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<td>Elimination of Contract Disposal</td>
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<td>Reduced Plant Energy Costs</td>
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<tr>
<td>Co-Digestion of Other Organics</td>
<td>20,000</td>
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<td>Composting of Other Biosolids</td>
<td>180,000</td>
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<td><strong>Total</strong></td>
<td><strong>$960,000</strong></td>
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Maine Biosolids Use & Disposal 1997-2011

Year

Percent

Other
Landfill
Compost/N-Viro
Land Applied
### LAWPCA Budget and Biosolids Costs

<table>
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<tr>
<th>Year</th>
<th>O&amp;M Expenses (actual)</th>
<th>Residuals Budget</th>
<th>Residuals Actual</th>
<th>Residuals Percent</th>
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<td>475,000</td>
<td>702,737</td>
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<td>729,100</td>
<td>827,809</td>
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Conclusions

- The tail that wags the Dog
- At LAWPCA we have tried almost everything
- Cost Estimates should be viewed skeptically
- Multiple outlets and back up plans are needed
- Public Outreach and Employee Communication
- Biosolids & Organics are too valuable to waste
- What is our mission? – Protect the Environment!
Questions