Composting at 4,000 Feet

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Presenters Background

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Municipality
EOCP Level III Operator
Compost Operator Level I
Gas Utility Technician

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Wastewater & Water Specialist
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Urban Systems Ltd.
Consulting Engineer Firm
Case Study – Sun Peaks Approach to Managing Organic Wastes

➢ Solid waste management through regional district
➢ Main issue – biosolids management
➢ Next issue – food waste
Biosolids

- Consist mainly of water
- Biologically active
- They contain the good, the bad and the ugly: nutrients, metals, plastics, pharmaceuticals
- They are not faeces but can contain gut micro-organisms
A Word About Pharmaceuticals

- Just one of the endocrine disrupting family
- Present in wastewater – through disposal and excretion
- Have different characteristics – some like liquid and some like solid
- **Found in very low concentrations**
- Testing challenges
- Biodegradation during wastewater treatment, sludge treatment and in soils
➤ Strict management and control in place – not always the case for organic products

➤ Federal Biosolids Strategy

➤ BC Organic Matter Recycling Regulation (OMRR)
# Organic Matter Recycling Regulation

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Purpose</th>
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</thead>
<tbody>
<tr>
<td>Reduce pathogens</td>
<td>Reduce risks to human health</td>
</tr>
<tr>
<td>Reduce biological activity</td>
<td>Reduce nuisance conditions – odour, attraction of pests</td>
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Biosolids – Perception is not reality!

- Perception – nasty, dirty, smelly & disease causing
- Confusion with sludge
- Bad perception through fear, misunderstanding and mishandling
- There are health risks
- Valuable – nutrient source
Life in the Real World
Challenges and Issues

➢ Main organic production is during winter months
➢ Resort elevation starts at 4,000 feet
➢ High snow fall conditions
➢ Cold winter temperatures
➢ Space constraints increase even more with snow!
➢ Relatively small size of the operation
Influent Flows and Biosolids Production

- Influent Flow
- Biosolids Production

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Finding Creative Solutions

- Land Application Re-Use
- On-Site Processing
- Off-Site Processing
- Landfill Disposal
- Landfill Re-Use
- Gasification & Incineration
- Many Other Options
Compost Pilot Trials

Access to Site During Summer

Static Pile Several Years Later

Trial Static Compost Pile Exposed
Compost Pilot Trials

Snow in the Winter

Site During Spring Melt
Making Trial a Reality

List of Things to do . . .

• Buildings and Composting Infrastructure
• New hydro service was required / Control System, containers and conveyors
• Mixing Equipment / Loading Equipment
• Wood Chips / Odour Control
The Process Building

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The Process Building
The Process Building
Compost Containers

CONTAINERIZED COMPOST SYSTEM
Odour Control
The Curing Building

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Curing

2012-02-21-01
Brought to Curing
Mar 27/12
Turned April 8/12
Available for Community Pickup
The Trials and Tribulations

- Site constraints with increasing snowpack
- Storage and access to woodchips – the risk of woodchips and snow blend!
- Reaching and maintaining temperatures for pathogen and vector attraction reduction
- Getting the blend right to match the bio-solids being produced
- Relying on others to move the containers
The Times It Didn’t Work

CompoTainer #2
Batch Started: 6/03/14
Batch Finished: 6/12/14
Total PFRP Days: 1.79
Total VAR Days: 5.42

- Top: Average: 53 C
- Bottom: Average: 43 C
- Ambient: Average: 14 C
- Exhaust: Average: 20 C

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The Times It Worked

CompTainer #3
Batch Started: 5/9/2020 1:56:14 PM
Batch Data Saved: 5/25/2020 10:40:00 AM
Total PFRP Days: 15.80
Total VAR Days: 15.80

Top Average: 67 C
Bottom Average: 67 C
Ambient Average: 10 C
Exhaust Average: 22 C

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The Triumphs

- Achieving a Class A Compost regardless of time of year
- Purchase of a roll-on-roll-off truck
- The building to cover the woodchips
- Model Site for how to compost bio-solids with no impact to the community or visitors

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The History

2012 – Initial Project – $650K
- Process Building c/w
  - 3 loading bays / 4 process control points
  - 4 curing bays
- Curing Building
  - Storage Area good for about a year

2017 – 1 more Container added – $75K

2019 – Built a storage building – $25K
- To keep wood chips dry

2020 – Expansion to a satellite system – $300K
- 2 to 4 Containers
- Control System & Blower (for air management)
## The Stats

**Operational costs for 2018**  
$100,000

- **Breakdown:**
  - Labour: $47,500
  - Hydro: $8,200
  - Woodchips, etc. delivery: $30,700
  - Screening: $8,800
  - Repairs: $3,400
  - Temperature probe replacement: $3,250

**Cost recovery = $0**
The Process

- 15 to 16 days in a container for high temperature phase
- Curing time around 15 days
- Each container can process approximately 5 m$^3$ of dewatered biosolids
- Annual biosolids production approximately 400 m$^3$ dewatered
- Annual woodchip use:
  - Estimated to be 1,200 m$^3$, with annual purchase and delivery cost approx. $15,000 to $30,000
- Mix woodchips to biosolids approx. 3:1
- Annual compost production……..
The Results
The Biggest Challenge
Miss-information!!!
Come See For Yourself

Tours are available!

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Questions?

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