

# Winnipeg Biosolids SAC Meeting #2

November 18, 2013



# Outline

- Selection Criteria
- Biosolids Trends and Options
  - Compost
  - Land Reclamation
  - Landfill

# Selection Criteria

- Selection criteria that must be included:
  - Consider sustainable reuse of biosolids and/or end product(s)
  - Nutrient recovery and recycle
  - Cost
- What is sustainable reuse?\*

*\*CCME Guidance Document for Beneficial Use of Municipal Biosolids, Municipal Sludge, and Treated Septage*

# **SAC Discussion on Selection Criteria**



# CCME Considerations\* for Biosolids Management

- Usable product (marketability)
- Nutrients
- Safety
- Greenhouse gas emissions
- Pathogens
- Metals
- Vector attraction (birds, rodents, insects)
- Odours
- Energy

*\*Canada-Wide Approach for the Management of Wastewater Biosolids*

# CCME Biosolids Disposal and End Product Options\*

- Compost
- Land reclamation (mines, top cover in landfill)
- Landfill (not considered sustainable reuse)
- Land Application
- Thermal Oxidation/Combustion and energy recovery
- Pelletization for soil conditioner

*\*CCME Canada-Wide Approach for the Management of Wastewater Biosolids*

# Compost

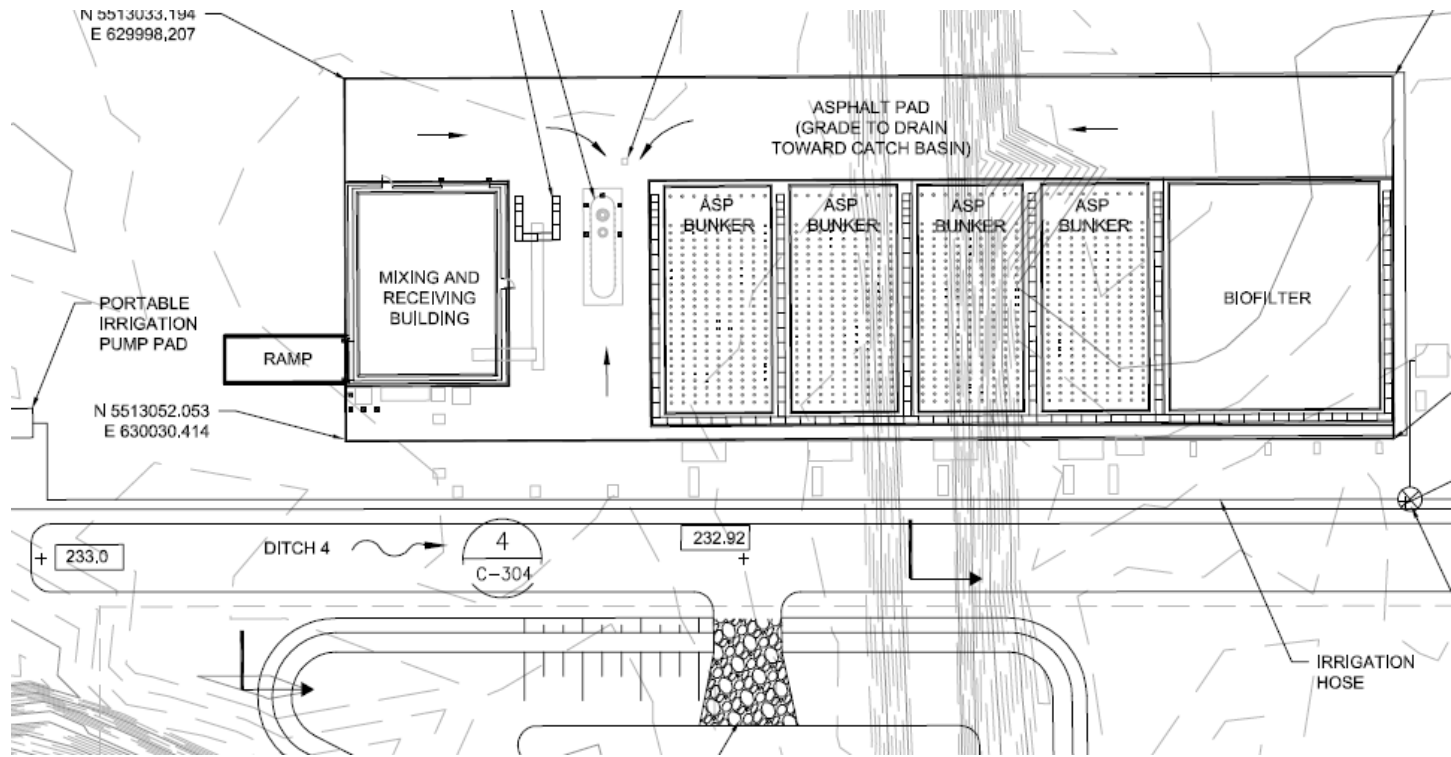
- Biosolids, woodchips, air, mixing, and time make compost

# Compost: How is it done?

- Biosolids and woodchips mixed together
  - Woodchips provide carbon, structure, breathability
- ‘Mixture’ is composted for four weeks with air
  - Aerated by blowing air or vacuum
  - Biological reactions heat mixture and kill pathogens
- Compost is stored for three to four weeks for curing and testing
  - Cools compost
  - Ensures reactions are complete



# Winnipeg's Pilot Compost Facility



Total size equivalent to approximately 3 football fields

# Compost: Who is involved?

- Can be publically or privately operated/distributed
- Provincially regulated
- Stakeholders and Users
  - Regulators (MB Conservation)
  - City of Winnipeg
  - Soil mixers
  - Parks and recreational facilities
  - Garden centers

# Where is Composting Done?

- Western Canada:
  - Kelowna/Vernon, BC
  - Edmonton, AB
  - Banff, AB
  - Abbotsford, BC
  - Calgary, AB (procurement/design stage)
  - Winnipeg, MB (pilot)
- Moncton, New Brunswick
- Quebec (9% of biosolids composted)

# Compost Key Success Factors

- Bulking agent (woodchips)
  - Reliable source of woodchips at reasonable cost
- Metals
  - Compost/biosolids must have sufficiently low metals
- Pathogens
  - Temperature and duration
- Odour
- End use of compost
  - Compost must be used offsite

# Compost Summary

## Advantages

- Sustainable reuse
- Utilize nutrients
- Easy to store and handle
- Strong demand as soil amendment
- Satisfies an existing need

## Disadvantages

- Potentially odorous
- Expensive (\$\$\$)
- Dependent on bulking agent
- Land/space required

# SAC Discussion on Composting



# Land Reclamation

- End product (compost, ash, pellet) applied as top cover
  - Prevent erosion, contain garbage and promote plant growth

# Land Reclamation: How is it Done?

- Landfill a potential reclamation site
- Biosolids end products used for final cover
- Could be applied by City or private contractor
- Landfill demand not strong enough for all of City's biosolids



# Land Reclamation: Who is Involved?

- Stakeholders
  - City of Winnipeg
  - Residents close to landfill
  - Manitoba Conservation
  - Sludge and biosolids haulers and spreaders

# Land Reclamation Success Factors

- Requires access to landfills
- Demand of product: reclamation typically limited to less than 15% of global picture
  - Ottawa 12% (biosolids used for landfill top cover)
  - Quebec 2% (land reclamation)
  - USA 3% (land reclamation)

# Land Reclamation Summary

## Advantages

- Beneficial reuse
- Nutrient utilization
- Satisfies existing need
- Cost, depending on pretreatment (\$ - \$\$\$)

## Disadvantages

- Labour and logistics
- Requires pretreatment
- Limited access/demand in Manitoba

# Landfill: How is it Done?

- Biosolids mixed with municipal waste on site and disposed in landfill
- Not considered sustainable reuse
- City or private contractor can dispose

# Landfill Success Factors

- Access to landfill with sufficient capacity
- Need solid waste to mix with biosolids
- Odours

# Landfill Summary

## Advantages

- Cost (\$)
- Reliable disposal
- Less disposal restrictions

## Disadvantages

- Does not utilize nutrients
- Does not utilize energy
- Decreases landfill capacity
- Odours
- Greenhouse Gas

# **SAC Discussion on Land Reclamation and Landfilling**

