Winnipeg
Water and Waste Department

BIOSOLIDS MASTER PLAN
FEEDBACK FORM AND DOTMOCRACY REPORT

March 2014

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BACKGROUND AND METHODOLOGY

In January 2014, the City of Winnipeg initiated a public engagement process to receive input on the options being considered for managing biosolids, as part of the Biosolids Master Plan.

Public feedback was collected from January 2 – 27, 2014. A feedback form and dotmocracy sheets were provided at two public meetings and through the website at http://wwdengage.winnipeg.ca/biosolids/

Public Meeting Date	Attendees
Tuesday, January 14, 2014	37
Wednesday, January 15, 2014	39

	Feedback Forms	Dotmocracy (varied per option)
Public meetings	26	25-34
Online on our website	3	2-8

The feedback form was administered in conjunction with "dotmocracy" questions at the public meetings. The objective of both feedback tools was to capture stakeholders' opinions on the options for Biosolids Master Plan. Both tools can be found in this reports' Appendices.

Due to the low response rate (34% for Feedback Forms at the Public Meetings), there is a higher degree of variability inherent in the responses received. As a result, it is not recommended to extrapolate the results to a general population.

Since the respondents of the feedback form and dotmocracy sheets are self-selecting, the results are not scientific and only a summary of the responses received. This means that no estimates of sampling error can be calculated and therefore no margin of error is attributed to the results in the report.

PROFILE OF RESPONDENTS

AREA OF CITY	TOTAL % (n=29)
Northwest (incl. downtown)	34%
Southwest	31%
Southeast	24%
Northeast	3%
Other	3%

Note: Non-response not included

AREAS OF INTEREST	TOTAL % (n=29)
Member of the general public	48%
Member of an interest group - Environmental	45%
Member of an interest group - Other	24%
Potential business interest	17%
Member of an interest group - Business	14%
Land owner	14%
Member of an interest group - Agricultural	10%

Note: Total will exceed 100% due to multiple responses

Other areas of interest mentioned:

- Trade/Business opportunities
- Consultant, academic
- Energy from waste
- Gov. of Canada, Provincial government
- Green party of Canada Wpg S Centre
- University prof/Green party of Canada environment critic
- Human health
- Composting
- Economic

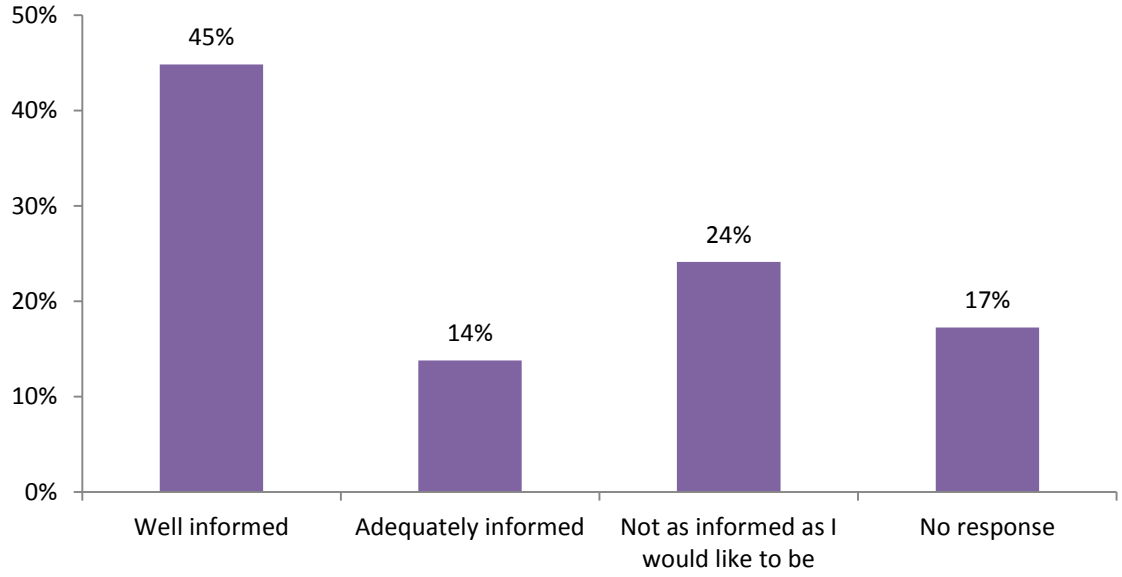
RESEARCH RESULTS

Feedback Form

Understanding of Information Presented

Most respondents were well informed (45%), with a quarter who were not as informed as they would have liked (24%).

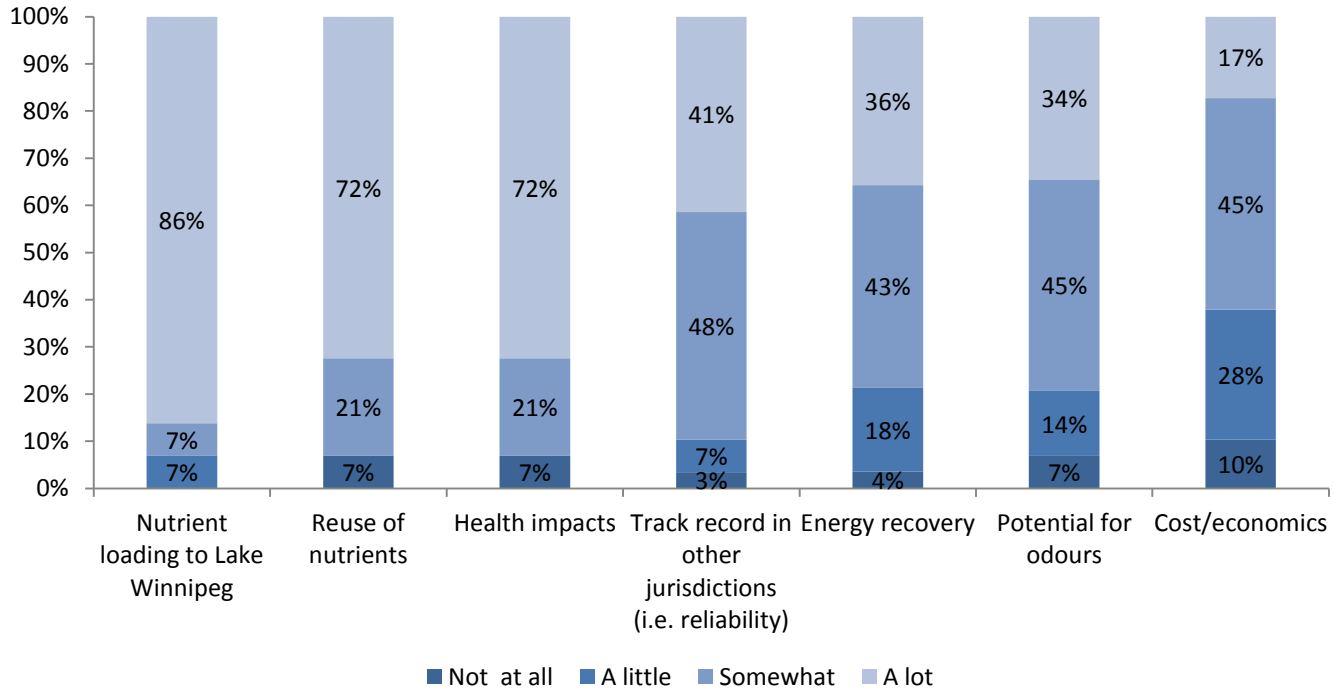
"How informed do you feel about the options being considered for the Biosolids Master Plan?" (n=29)



Concerns about the Biosolids Master Plan

The top concerns for respondents were nutrient loading to Lake Winnipeg (86% "A lot"), reuse of nutrients (72%) and health impacts (72%). The least concern for respondents was cost/economics (17%).

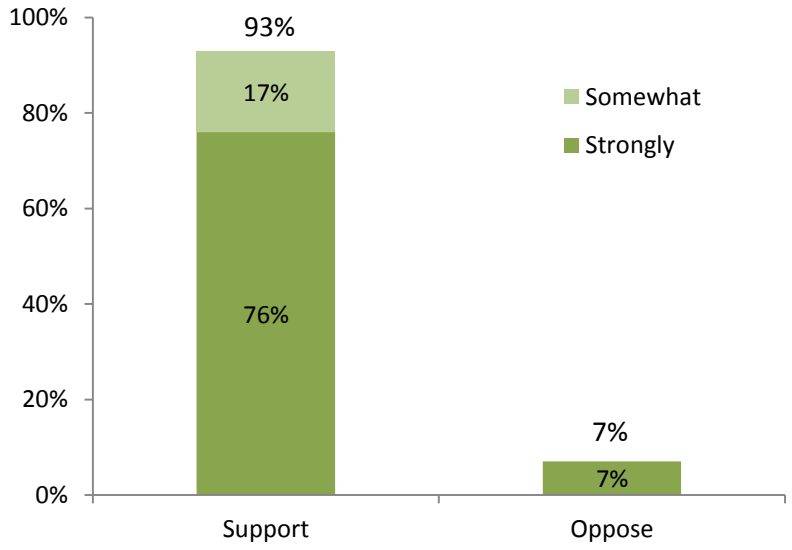
"When creating a Biosolids Master Plan, how much do the following concern you?" (n=29)



Support for Biosolids Master Plan

A strong majority of respondents (93%) support a plan that will increase the recovery of nutrients, even if it were to cost residents more.

"The City is developing a Biosolids Master Plan (BMP) that will determine how we will manage our biosolids in an environmentally sound, sustainable and cost-effective manner, while meeting Provincial regulations. Do you support a plan that will increase the recovery of nutrients, even if it were to cost residents more?" (n=29)



Need for Additional Information

About half of respondents (52%) provided a response when asked about needing additional information. Their responses are below.

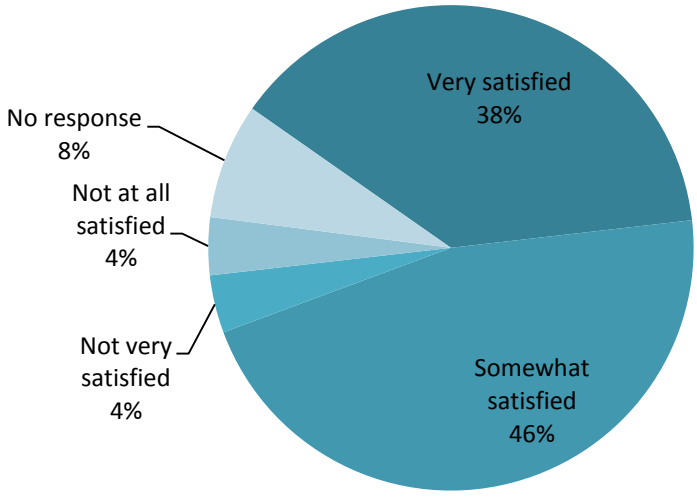
"Is there additional information we should be providing?" (n=29)

- "End users of the various processes and may be some quantification."
- "Perhaps a more comprehensive picture + understanding of current sludge/biosolids processing - offering school + public tours of waste water treatment plants."
- "The results of the RFI process."
- "More detailed history - this biosolids conundrum has been quite the SAGA over well more than a decade. Citizens need to be informed & realize that it's time for a decision, action & tax dollars to support."
- "More information on cost other than $ $$ $$$"
- "Actual dangers to humans and ecosystems. Statistics on gaseous emissions from Brady. Contribution to Lake Winnipeg destruction."
- "Possibly environmental impacts but you described these but what about simple ways how to understand this and more awareness campaigns."
- "Be specific on agricultural wet applications will it be for human consumption."
- "We obviously need to know about Carbon Footprint. We also need a good cost breakdown - 700 million plus is a lot of money!"
- "More public consultations with more background information on biosolids content."
- "Do transparent chemical analysis to ensure we do not contaminate lands, soils water table while supposedly enriching our soils with this "compost"."
- "City should only monitor - leave it to private resources to develop."
- "Risk assessment, environmental implications Details cost benefit analysis Statistical datas."
- "Details on what is required to meet regulations and concerns for land application including areal extent of required storage, storage options, and what changes are required from the WinGro program so as to spread at agronomically and environmentally appropriate rates."
- "Yes. I only learned at the open house that the sludge derives from anaerobic digesters that produce methane and heat as byproducts. There also should be consideration of all the organic waste streams together to see what process synergies might exist, such as the suggestion below. And more characterization and quantification of benefits would better provide for side by side comparisons."

Satisfaction with Public Meetings

The majority of respondents (84%) were satisfied with the public meetings.

*"Overall, how satisfied are you with this Public Meeting?" (n=26)**



**This question was not asked to website respondents.*

Other Comments

Over seven in ten (72%) respondents provided additional comments:

- “I suggest pilot experiments to assess the availability of nutrients in the compost product. It's one thing having a nutrient-rich substance but availability of those nutrients for plant uptake quite a different issue.”
- “Keep an open mind and look at all options. Consider a larger plan than perhaps just biosolids.”
- “What about reframing the question to "What will have the greatest env. benefit?" rather than "which will have the last impact?" There is so much benefit in composting, especially if used on gardens, forests, etc...for enhancing plant growth + carbon sequestration.”
- “If there are unknowns re-the pharmaceuticals etc. in the biosolids, I don't think we should be considering using them on land that we are using to produce food. In my opinion, it would be best to apply the precautionary principle in this circumstance.”
- “Strongly support composting biosolids on a large & small scale. Strongly against landfill disposal, even as a fail safe option. The plan should strive for sufficient redundancies to not default to landfill disposal. This plan should lead innovation, not follow it. If a SSO green cart program would allow for a better program, the Master Plan should drive it, no the Waste Department's plans (which do include a SSO program). The cross-section of responses to the RFI may not have captured all interested parties and additional general solicitations should be allowed and sought. The current regulatory framework may require updating to support potential future options. This should not be a limiting factor. I look forward to a diverse range of options. For example, soil fabrication (mixing biosolids with sand, etc.) may be a year-round option.”
- “Should consider a landfill bioreactor for co-disposed solid waste and sludge.”
- “The event was fine. The problem is the delay to act. Get 'er done! If the solution must be as simple/do-able as possible (and of course, lowest cost), my recommendation is to go with the LAND APP option, however, it must be managed with GREAT RIGOR for all concerned. (In compliance with the Nutrient Mgt Regulation of course) Following further info & thought, if I change my mind I'll be certain to let y'all know! NOTE: Elements (e.g. Cu) are only micronutrients of value if deficient in the soil, so addition will enable better crop growth. Otherwise they're actually heavy metals that will accumulate in soil. Good explanation of CELL MASS & importance of soil type.”
- “Thermal oxidation coupled with some composting is the preferred option”
- “I find this supports sustainability and it would seem like a good way of recycling bio products and energy. I am glad the energy will grow when water is taken out I see this as a great opportunity to steer away from landfills and lagoons w/ oxatizing process.”

- “In 2002, I was part of a team that presented the concept of a 'Living Machine' for the City of Winnipeg Wastewater future plan. An ecological wastewater facility using anaerobic, aerobic and designed ecosystems, the Living Machine has been tested around the world. It was invented by biologist John Todd, a canadian. A civic-scaled testing facility ran in Burlington, Vermont. To me, none of the proposed options come close to this visionary method.”
- “Consider SAGR (submerged attached growth reactor) Nelson Environmental”
- “Development should include expansion scenario based on population growth + stress on existing facilities to do what north main station is producing. The other two may have to expand and do it as well. So what would that cost?”
- “I assume that there is a lot more information on the WEB site, but I felt the quality of information provided in the PowerPoint could be better.”
- “Precautionary Principle of Health Safety. Please purify the toxins out of the sludge + liquid before dring it out - We do not need a compost with "toxic cocktail". One chemical contaminant is bad, two creates many unknown outcomes, three or more ??? There are many chemicals in one med'n Please experiment for ensuring safety. Citizens need to change their habits of dumping meds down the toilet. Also consider human elimination of excess meds i.e. - estrogen etc of birth control pills, "Lipitor"-type of blood pressure maintenance meds as the population ages... As pop'n ages, we will be ingesting more + more chemical combinations. Do responsible thorough research of existing plants -> Proven + Reliable technology is a requirement.”
- “The Biosolid Master Plan should further consider potential sources of biosolid contamination. Pathogens and parasites further monitoring and removal would help protect public health. Heavy metal contaminations are also a major concern.”
- “Proven technology can provide the best environmental solution. Look to composting!”
- “Anaerobic digestion on a larger scale has been done before. I feel that should be considered as well.”
- “Landfilling should not be considered even as a stop gap measure. Build proper storage to allow for downtime - Manitoba livestock producers have to store manure over winter and manage to do it. Your compost manager/engineer should talk to Dr. Kathy Buckley if they have not yet done so. Kathy works out of the Brandon Research Centre (AAFC) and has many years of experience composting hog and cattle manure in Manitoba conditions using both straw and woodchips as bulking agents and carbon sources. Her contact information is: Telephone: 204-578-6594 Fax: 204-578-6524 Email: katherine.buckley@agr.gc.ca”
- “I feel that the decision/input process is rushed, for both the City and the public consultation period. It would be good to have another option on the table, anaerobic composting/digestor. It would be good to have a two-stage approach to the public consultation.”

- “Looking upstream to the digesters, the process could yield more energy with New York City's new model of blending a slurry of kitchen wastes with sludge in the digestion chambers and then refining the biogas sufficiently to inject into Centra's system. See http://cleantechnica.com/2013/12/28/food-scrap-recycling-joins-wastewater-treatment-in-new-nyc-project/. I agree that ecologically sound, non-harmful beneficial uses are the right criteria to apply. Choices between options require some quantification of benefits. For example, in pelletization, how much energy is required for dehydration vs. energy potential of the pellets and can ash recycling be introduced to recover residual nutrients? If the return on energy invested is high, this is an interesting prospect that fits in with new provincial initiatives to develop the bioeconomy. There should be increasing Manitoba demand for heating if pellet stoves increase as a cheaper alternative to electric heat under rising prices and their dual second use as a fertilizer assures an alternate market (See http://www.gov.mb.ca/agriculture/pdf/the_manitoba_bioproducts_strategy.pdf and https://www.dropbox.com/s/pl5lqt6nptowypl/Biomass%20Economy%20Network%20Inaugural%20Meeting%20Report.pdf)”
- “They are all proven options. Why is it taking so long?”

Dotmocracy

Feedback on the Criteria

Respondents were provided eight criteria that were being used to evaluate the different options. They were asked either if they did or did not support the criteria.

Respondents at the public meeting were asked to fill in a dotmocracy circle only for the criteria they supported. The responses received were counted as votes. The overall number of respondents per criterion is not known. Online respondents evaluated the criteria on a yes/no basis and there were a total of 3 responses. Both are included in the summary below, where ecological sustainability and regional suitability were the most supported criteria.

Criterion	Votes
Ecological sustainability	19
Regional suitability	17
Regulation	15
Operational factors	13
Time to implement	9
Good neighbour practice	9
Stakeholders involved	7
Cost	5

Feedback on the Options – Public Meetings

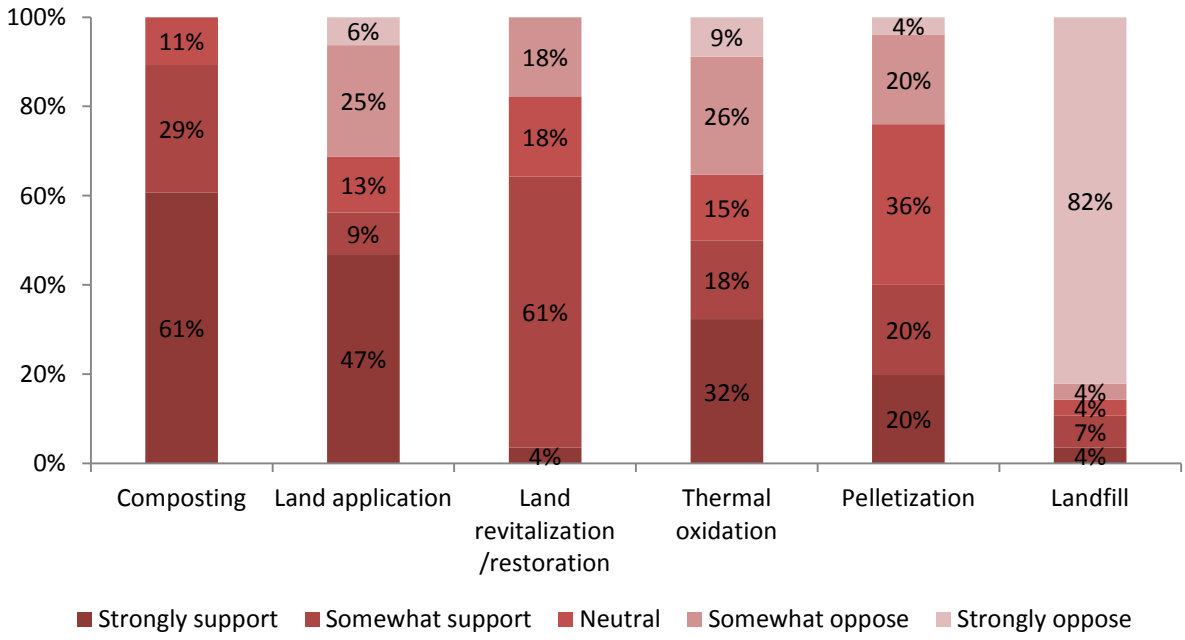
Respondents were provided six options that were being considered to manage biosolids. By assigning a value to the responses a mean could be calculated, where a higher mean correlates to a greater support for the option.

5 = Strongly support
4 = Somewhat support
3 = Neutral
2 = Somewhat oppose
1 = Strongly oppose

Option	Mean
Composting	4.5
Land application	3.7
Land revitalization/restoration	3.5
Thermal oxidation	3.4
Pelletization	3.3
Landfill	1.5

The most supported option is composting, while the least supported is landfill.

"When creating a Biosolids Master Plan, how much do you support the following options?" (n=25-34)



Feedback on the Options – Online on our Website

Respondents were presented the options on two web pages, rating each option using a 5-star scale. 1 star showed the least support and 5 stars showed the most support, where a higher mean correlates to greater support for an option. This system only allowed for a mean to be calculated.

The first three options were found on the first webpage with the remaining three following on a second webpage. The splitting of options caused a drop-off in voting. Because of the variation of number of votes, a degree of caution must be applied in comparing the different sets of options.

Option	Mean	Votes
Land application	4.5	8
Thermal oxidation	2.5	8
Pelletization	3.5	7
Composting	3.5	3
Land revitalization/restoration	4.0	2
Landfill	1.0	2

APPENDIX A

SURVEY

Winnipeg

Water and Waste Department • Service des eaux et des déchets

BIOSOLIDS MASTER PLAN FEEDBACK FORM

Please provide your postal code: _____ _____ _____ _____ _____ _____

Please indicate the nature of your interest in this study:

- ☐ Member of the general public
- ☐ Potential business interest
- ☐ Member of an interest group:
  - ☐ Environmental
  - ☐ Agricultural
  - ☐ Business
  - ☐ Other: _____
- ☐ Land owner
- ☐ Other: _____

1. How informed do you feel about the options being considered for the Biosolids Master Plan?
   - ☐ Well informed
   - ☐ Adequately informed
   - ☐ Not as informed as I would like to be

2. When creating a Biosolids Master Plan, how much do the following concern you?

	Not at all	A little	Somewhat	A lot	Don't know/ Doesn't apply
a) Potential for odours	☐	☐	☐	☐	☐
b) Nutrient loading to Lake Winnipeg	☐	☐	☐	☐	☐
c) Reuse of nutrients	☐	☐	☐	☐	☐
d) Cost/economics	☐	☐	☐	☐	☐
e) Health impacts	☐	☐	☐	☐	☐
f) Energy recovery	☐	☐	☐	☐	☐
g) Track record in other jurisdictions (i.e. reliability)	☐	☐	☐	☐	☐

3. The City is developing a Biosolids Master Plan (BMP) that will determine how we will manage our biosolids in an environmentally sound, sustainable and cost-effective manner, while meeting Provincial regulations. Do you support a plan that will increase the recovery of nutrients, even if it were to cost residents more?
   - ☐ Strongly support
   - ☐ Somewhat support
   - ☐ Somewhat oppose
   - ☐ Strongly oppose
   - ☐ Don't know/Doesn't apply

4. Is there additional information we should be providing?

_____

_____

_____

5. Overall, how satisfied are you with this Public Meeting?
   - ☐ Very satisfied
   - ☐ Somewhat satisfied
   - ☐ Not very satisfied
   - ☐ Not at all satisfied

6. Do you have any comments regarding the Biosolids Master Plan or the options we are considering?

_____

_____

_____

_____

_____

_____

_____

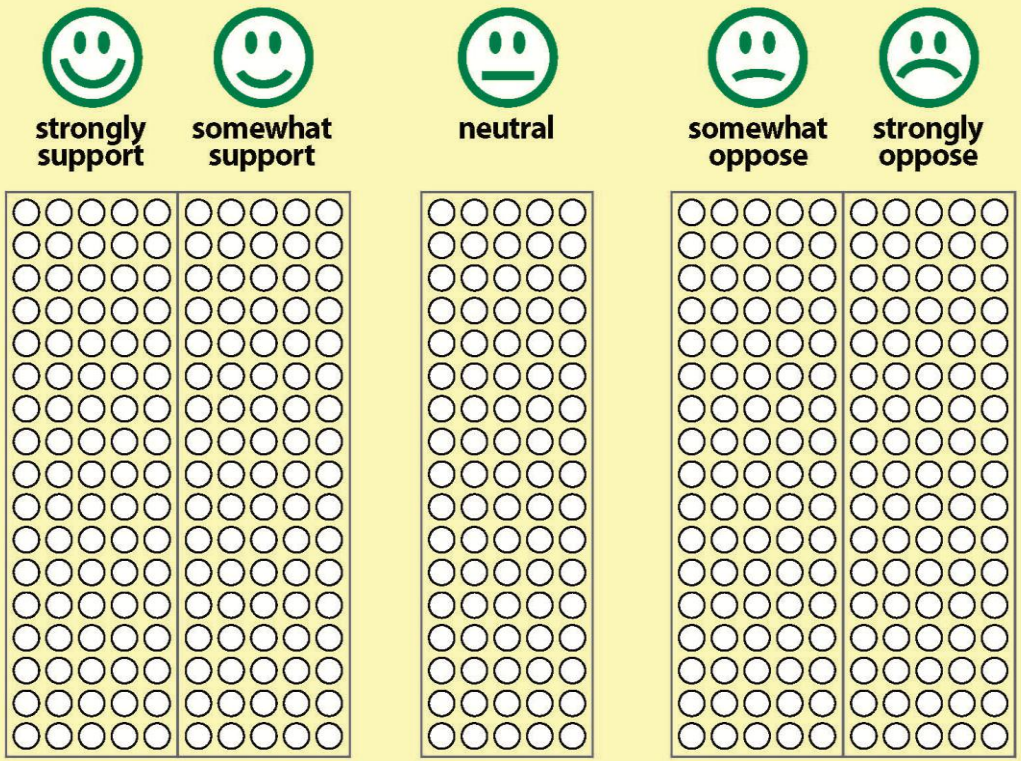
_____

Thank you for your feedback.

APPENDIX B

DOTMOCRACY SAMPLE

How much do you support
composting for managing biosolids?



Biosolids MASTER PLAN

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