BIOSOLIDS LAND APPLICATION PROGRAM
PUBLIC ENGAGEMENT SUMMARY

October 2017

Background

In 2014, the City of Winnipeg (the City) completed a Biosolids Master Plan. The Biosolids Master Plan is a 30-year vision for how the City will manage its biosolids in an environmentally sound, sustainable and cost-effective manner, while meeting provincial regulations.

The Biosolids Master Plan recommended land application as one of the key reuse strategies to recover and recycle nutrients from the City's biosolids. The City is now developing a Biosolids Land Application program with the help of input from the public, stakeholders and farm producers.

Engagement

Public engagement for the Biosolids Land Application program included the following:

Capital Region Workshop: A half-day workshop was held to invite stakeholders to provide input on opportunities, constraints, and community outreach strategies. Workshop participants developed guiding principles for the Biosolids Land Application program. Regional stakeholders included representatives from agricultural organizations, environmental organizations, government departments, and producer associations.

Municipal Stakeholder Meetings: Seven meetings were held with municipal stakeholders, including municipal councils, watershed basin commissions, and local groups. Municipal stakeholders shared input on opportunities, constraints, potential farm producer concerns, and potential public concerns, as well as approaches for odour management, leachate management, application rates, and monitoring and reporting.

Public Open Houses: The public was invited to two open houses to learn about the proposed program, potential application site areas, speak with the project team, and provide comments on the program. A survey was provided at the open houses to collect feedback. The public engagement materials and survey were also available online for those unable to attend either open house.

Farm Producer Discussions: The project team met one-on-one with interested farm producers to discuss property-specific information, nutrient management and farm agronomy.

Community Members at the Public Open House

Promotion

The Biosolids Land Application program was promoted using the following methods:

- Public Engagement Newsletter sent to approximately 5,500 subscribers on June 29, 2017, July 13, 2017, and July 27, 2017.
- Project updates through the City of Winnipeg's Facebook and Twitter account.
- Newspaper advertisements were placed in the Manitoba Co-Operator (June 29, 2017), The Headliner (June 28, 2017), and the Cartier Times (July, 2017).
- Project public open house invitations were posted in the towns of Rosser, Marquette, Grosse Isle, St. Francois Xavier, Oak Bluff, Sanford, Brunkild, Sperling, Starbuck, Springstein, and Elie on June 27, 2017.
- A radio advertisement aired July 7, 8, and 10, 2017 on 93.1 CFRY, a Portage la Prairie based radio station, three times per day (morning, afternoon, and rush hour).
- Notices were posted on the Rural Municipality of Macdonald, Cartier and Rosser websites in late June, 2017.
- One-on-one meetings with farm producers helped further promote the program and the public open houses throughout the summer of 2017.

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Engagement Activities		
Date	**Technique**	**Description**
April 4 2017	*Website Launch*	*The website featured background information, a timeline of events, frequently asked questions, and information on how to get involved.*
April 13, 2017	*Capital Region Workshop*	*17 stakeholders participated in a half day workshop. The workshop included a 30 minute presentation with a 10 minute question and answer period, followed by small group discussion and task work.*
May 18 to July 20, 2017	*Municipal Stakeholder Meetings*	*Red River Basin Commission (RRBC) Manitoba North Chapter, May 18, 2017, 7 p.m. to 8 p.m., Grosse Isle Community Hall, Grosse Isle. Approximately 30 members in attendance.* *RRBC Manitoba South Chapter, May 19, 2017, 10 a.m. to 11 a.m., City of Winkler Municipal Office, Winkler. Approximately 60 members in attendance.* *Partnership of the Manitoba Capital Region (PMCR), May 25, 2017, 10 a.m. to 11 a.m., PMCR Board Office, Winnipeg. 13 members.* *R.M. of Macdonald Council, May 23, 2017, 2 p.m. to 3 p.m., R.M. of Macdonald Municipal Office, Sanford. 7 individuals representing R.M. Council and Administration.* *R.M. of Cartier Council, May 23, 2017, 4 p.m. to 5 p.m., R.M. of Cartier Municipal Office, Elie. 8 individuals representing R.M. Council and Administration.* *R.M. of Rosser Council, June 13, 2017, 11 a.m. to 12 p.m., R.M. of Rosser Municipal Office. 5 individuals representing R.M. Council and Administration.* *Assiniboine River Basin Initiative, July 20, 2017, 10:30 a.m. to 11:30 a.m. Marion Street, Winnipeg. 1 member in attendance.*
July 11 and 12, 2017	*Public Open Houses*	*July 11, 2017, 4 p.m. to 7 p.m., Brunkild Memorial Recreation Centre, Brunkild.* *July 12, 2017, 4 p.m. to 7 p.m., Elie Veteran's Hall, Elie.* *A total of 12 people attended and 6 surveys completed.*
June 28 to July 28, 2017	*Online Survey*	*30 responses from within Manitoba.* *4 responses from outside Manitoba.* *For a total of 34 responses.*

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Opportunities and Constraints for Biosolids Land Application	
What We Heard	**How It Was Considered**
It is important that biosolids land application occurs with minimal risks to the environment.	To reduce risks to the environment, the program will include separation or setback distances from bodies of water, wetlands and groundwater features, no application on lands subject to flooding, application rates based on the farm producer agronomy, as well as consideration of the crop system, landscape features and soil conditions.
It is important that biosolids land application occurs with minimal risks to human health.	To reduce risks to human health, the program will include separation or setback distances to residential areas, cropping rotation and crop type restrictions for three years following application, as well as separation in time from land application to harvest.
There are gaps in the literature regarding the presence and potential harm of emerging substances of concern such as pharmaceuticals, antibiotics, etc. in biosolids.	Emerging substances of concern (ESOCs) in biosolids continue to be studied in Canada and around the world. The City will monitor ongoing scientific research on effects and mitigation measures. The biosolids land application program will comply with all applicable federal and provincial regulations, and it will operate under an Environment Act Licence from Manitoba Sustainable Development.
There is limited public awareness and public knowledge of biosolids as well as potentially uncooperative land producers and/or municipalities may prevent biosolids land application from occurring.	The City developed a series of public engagement materials in both technical and plain language to make program information accessible to people of all backgrounds. Farm producers and municipalities were engaged early-on in the program to ensure that their concerns are heard and could be addressed.
Program Details	
What We Heard	**How It Was Considered**
Soil properties, local drainage patterns, risk of overland flooding, and other existing nutrient application programs will influence the location of where the biosolids may be applied.	A Professional Agrologist will manage the biosolids application rates, which will be prescribed to agronomic rates and ensure the sites selected for land application are suitable.
Trucks delivering biosolids may damage gravel roads.	The City is committed to maintaining and/or repairing roads damaged by trucks delivering biosolids to storage sites and/or application sites.
The program should avoid applying biosolids near built-up areas, especially residential, to reduce potential impacts to community residents (i.e., odour, traffic, and dust).	The land application will not occur within 75 metres of any occupied residence (other than the residence on the land on which the biosolids are applied) and one kilometre of designated towns. Additionally, biosolids will be incorporated or tilled into the soil within 48 hours of application.

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Public Education and Awareness	
What We Heard	**How It Was Considered**
Educating the public on biosolids and wastewater treatment is important for meaningful public participation, and that efforts should be directed to making information easily available on the program.	The City developed a series of public engagement materials available at the in-person public engagement events and the program website. Public engagement materials were presented in both technical and plain language to make program information accessible to people of all backgrounds. In addition, the website and many of the public engagement materials have been translated into french.
The program should have scientific information available and include a transparent process through public reporting.	The City of Winnipeg biosolids are sampled and tested every two weeks for metals, nutrients (nitrogen and phosphorus), pH, and organic carbon content. The results are provided through the City's licensing and monitoring website (http://winnipeg.ca/waterandwaste/sewage/WPCClicenseMonitor.stm#complianceReports). Annually, the City of Winnipeg prepares biosolids compliance reports to summarize the biosolids testing data. These reports are available on the City's licensing and monitoring website. The results of the biosolids land application program, including site locations, soil sampling results and biosolids data will be available on the City's licensing and monitoring website.
The local municipal council and administration should be aware of biosolids land application occurring within their rural municipality	Once land application sites are selected, the City will notify the local municipal council(s) and administration(s).
Municipal councils, conservation districts, agricultural producers, and residents should be engaged through one-on-one meetings, small group meetings and open houses.	Throughout the public engagement process, the project team engaged with municipal councils, conservation districts, agricultural producers and community residents through in-person and online engagement opportunities.

BIOSOLIDS LAND APPLICATION PROGRAM
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Next Steps

The input provided by stakeholders, farm producers and the public informed program direction, principles, and details, as well as assisted with identifying potential application locations. Phase Two of the project is scheduled to begin in fall of 2017 and includes a pilot project, which will see the application of 5,000 wet tonnes (WT) of biosolids to farmland.

Concurrently, an Environment Act Proposal (EAP) is being developed for submission to Manitoba Sustainable Development. The EAP will outline the scope of the project, the approach, potential human and environmental impacts and applicable mitigation approaches. A technical advisory committee will review the EAP and if deemed suitable, MSD may grant an Environment Act Licence with terms and conditions for the City to operate the land application program.

Appendices

Appendix A – Capital Region Workshop Summary

Appendix B – Municipal Stakeholder Meetings Summary

Appendix C – Public Open Houses Summary

Appendix D – Public Engagement Materials

Appendix E – Survey Data

To learn more about the Biosolids Land Application program, please visit: winnipeg.ca/BiosolidsLandApplication

Appendix A

Capital Region Workshop Summary

Capital Region Workshop Summary

Workshop Date: April 13, 2017

Time: 9 a.m. to 12:30 p.m.

Location: 1600 Buffalo Place

INTRODUCTION

The City of Winnipeg (the 'City') is developing a Biosolids Land Application program. Biosolids are a nutrient-rich, solid by-product of wastewater treatment and when applied to agricultural land brings much needed nutrients to the soil. To introduce the project and collect input from regional stakeholders, the project team facilitated a Capital Region Workshop. The intent of the workshop was to present high-level program considerations and solicit input from organizations with regional interests and knowledge of the biosolids sector, policy and regulatory requirements and constraints, and local community issues and concerns.

WORKSHOP FORMAT

The Capital Region Workshop was held on Thursday, April 13, 2017, from 9 a.m. to 12:30 p.m. at WSP's office at 1600 Buffalo Place. The workshop included a 30 minute presentation with a 10 minute question and answer period, followed by small group discussion and task work. Fifty-four stakeholders were invited to the workshop, and a total of 17 stakeholders attended. Stakeholders in attendance represented provincial interests (i.e., agriculture, water, public health, and community and regional planning) and special interest groups.

Stakeholders worked collaboratively in small groups through a series of tasks presented in stakeholder workbooks. The tasks sought feedback and input on guiding principles, opportunities and constraints, as well as community interest and outreach strategies for the biosolids land application program. As stakeholders worked through each task, ideas and comments were recorded on large flip-chart paper, which were later shared back to the larger group. Stakeholders also had the option to record their individual comments in their workbook, which was submitted at the end of the workshop. Before leaving, stakeholders were asked to complete an exit survey which provided an additional opportunity for stakeholders to share general comments or questions they had regarding the material presented and the format of the workshop.

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WHAT WE HEARD

TASK 1: GUIDING PRINCIPLES

Question 1: *From your organization's perspective, what should be the guiding principles for the City of Winnipeg Biosolids Land Application program?*

The guiding principles suggested by stakeholders are presented as four themes:

- Protection of the Environment:
  - Environmental stewardship, surface water protection, prevention of nutrients and pathogens from entering the receiving stream, reducing greenhouse gases, agricultural awareness (the 4 R's, right rate, right time, right place, right source), and proper monitoring for environmental health.
- Protection of Public Health:
  - Emerging substances of concern (pharmaceuticals, personal care products, industrial contaminants, etc.), ensuring food safety, odour management, and application of the precautionary principle, good neighbour principle, and proper monitoring for public health.
- Public Awareness and Education:
  - Creating transparency, sharing knowledge, partnering with educational institutions, providing opportunities to learn about biosolids, demonstrating suitability using local scientific evidence, and monitoring and reporting.
- Building Relationships:
  - Economic benefits to farmers, and cooperative relationships with regulatory body, producers, and municipalities.

Stakeholders were asked to identify the guiding principles they considered most important for the Biosolid Land Application program. Stakeholders indicated that the guiding principles presented under the theme of protection of the environment is the most important followed by the guiding principles of protection of public health, public awareness and education, and building relationships.

TASK 2: OPPORTUNITIES AND CONSTRAINTS FOR BIOSOLIDS LAND APPLICATION

Question 1: *From your organization's perspective, what are the existing opportunities for the City of Winnipeg Biosolids Land Application program?*

Stakeholders indicated that applying biosolids to agricultural land creates opportunities that benefit agricultural producers, which include the reuse of nutrients as a soil amendment, improving soil structure, and increasing soil organic matter. In addition, stakeholders shared that biosolids land application would minimize anthropogenic waste being sent to the landfill, and thus, would likely increase the lifespan of the landfill. Stakeholders also noted that land application would increase carbon sequestration and reduce the production of greenhouse gases directly attributed to the City of Winnipeg. Educating the public on biosolids and wastewater treatment, as well as developing partnerships with neighbouring municipalities and academic institutions were also identified by stakeholders as opportunities for the program.

Question 2: *From your organization's perspective, what are the existing constraints for the City of Winnipeg Biosolids Land Application program?*

Stakeholders shared a number of program constraints, including costs, public perception, municipal and landowner cooperation, lack of data, and suitable land for biosolids land application. Stakeholders suggested that the costs to upgrade the North End Sewage Treatment Plant and program operation costs may outweigh the benefits of biosolids land

application. Stakeholders noted that limited public awareness and public knowledge of biosolids, as well as potentially un-cooperative land producers and/or municipalities may prevent biosolids land application from occurring. Stakeholders suggested that gaps in the literature, such as the potential harm of emerging substances of concern, as well as potential gaps in agronomic data may be a program constraint as this information is important for ensuring that land application is occurring with minimal risks to environmental and human health. The suitability of agricultural land to accept biosolids is an additional constraint suggested by stakeholders. Soil properties, local drainage patterns, risk of overland flooding, local concerns about agricultural bio-security, and other existing nutrient application programs will all influence the location of where the biosolids may be applied.

TASK 3: IDENTIFYING COMMUNITY INTERESTS AND OUTREACH STRATEGIES

Question 1: *From your organization's perspective, how may the Biosolids Land Application program affect municipal stakeholders, landowners, and community members?*

Stakeholders suggested that the program may result in community, environmental, and economic impacts, as well as the program may create general concerns and questions. Stakeholders specifically noted that the program may result in increased truck traffic resulting in additional dust being generated and wear on municipal roads, reduced property values, impacts to public health (i.e., odour, pathogens, and contaminants entering our food source), and nutrient loading to waterways impacting downstream communities. Stakeholders noted that municipalities and community members may ask what the value or benefit of biosolids land application is to their community. In addition, stakeholders suggested that environmental groups may seek information to questions regarding the nutrient properties of biosolids, the rate of crop nutrient uptake, and risks related to emerging substances of concern and bio-security. In addition, stakeholders also identified that the program may result in economic benefits for local agricultural producers.

Question 2: *Our next step is to engage with municipal stakeholders in areas where there are opportunities for biosolids land application. In your opinion, who should we engage with and how?*

Stakeholders suggested that municipal councils, conservation districts, agricultural producers and community residents be engaged through one-on-one meetings, small group meetings, open houses and social media. Stakeholders also suggested to attend and share information at local events organized by the community or special interest groups, such as tradeshows, educational events, community fairs, and fall suppers. When communicating with municipalities and local community members, stakeholders noted that all material should use plain language with relatable explanations. Stakeholders also added that finding allies and local community champions, such as scientists or engineers in the field, agricultural producers, and/or special interest groups, may further enhance the public engagement process by offering a neutral position and strengthen the science behind the program.

Question 3: *How can the project team best manage the issues that may be considered controversial about the program?*

Stakeholders suggested that efforts should be first and foremost directed towards actively getting the message out about the program. Billboards, television ads, attending local events, hosting open houses, and fact sheets with frequently asked questions were all suggested as ways to ensure that community members are aware of the program. Communicating why the City is pursuing biosolids land application, the environmental and economic benefits of the program, how the program will benefit communities, and the experience of other jurisdictions was suggested by stakeholders as information that may help alleviate concerns regarding potentially controversial issues. Stakeholders also noted that having scientific information available when requested, and committing to a transparent process through public reporting may be helpful. Being approachable, using humour, and making people comfortable were suggestions that stakeholders believed could also help manage any potential issue or concern raised by municipal stakeholders and/or community members.

NEXT STEPS

The feedback provided by stakeholders who attended the Capital Region Workshop provides valuable insight on the program from a regional perspective. The input received will be considered in the development of the Biosolids Land Application program, the location(s) of biosolids land application sites, and upcoming public engagement events with municipal stakeholders.

To support a transparent process, the presentation from the Capital Region Workshop and this memo will be directly shared with stakeholders who participated in the workshop as well as will be posted on the project website.

Appendix B

Municipal Stakeholder Meetings Summary

Municipal Stakeholder Meetings Summary

Meeting Dates: May 23, 2017 to July 20, 2017

INTRODUCTION

The City of Winnipeg (the City) is developing a Biosolids Land Application program. Biosolids are a nutrient-rich, solid by-product of wastewater treatment. When applied to agricultural land, biosolids bring much needed nutrients to the soil.

In April 2017, the project team facilitated a capital region workshop to solicit input from organizations with regional interests and knowledge of the biosolids sector, policy and regulatory requirements, constraints, and local community issues. The feedback provided by stakeholders who attended the workshop helped provide direction for the next phase of engagement: municipal meetings.

The project team reached out to municipal stakeholders, meeting with three municipal councils and three local groups from May to July 2017. The intent of these meetings was to present high-level program considerations, and to solicit information about opportunities and current environmental constraints to apply biosolids in the area west and southwest of Winnipeg. In addition, the project team asked municipal stakeholders for input on farm producer and public concerns, as well as approaches for odour management, leachate management, application rates, and monitoring and reporting.

MUNICIPAL STAKEHOLDERS

Lands in the Rural Municipality (RM) of Grey, RM of Macdonald, RM of Cartier, and RM of Rosser were identified for land application of biosolids. It was important that there were meaningful opportunities for municipal representatives to share the interests, priorities, and values of their municipality and constituents.

The project team requested to meet with the municipal councils of the RMs listed above to present project information and collect their input and potential concerns regarding biosolids land application within their municipality. The following table summarizes the meeting details:

	RM of Macdonald	RM of Cartier	RM of Rosser
Date:	May 23, 2017	May 23, 2017	June 13, 2017
Time:	2 p.m. – 3 p.m.	4 p.m. – 5 p.m.	11 a.m. – 12 p.m.
Location:	RM of Macdonald Municipal Office 161 Mandan Dr., Sanford, MB	RM of Cartier Municipal Office 28 PR 248 S, Elie, MB	RM of Rosser Municipal Office PR 221, Rosser, MB
Attendees:	Reeve, Councillors, CAO, and administration	Reeve, Councillors, and CAO	Councillors and CAO

Each meeting lasted approximately one hour, and included a twenty minute presentation followed by time for questions and discussion. A summary of our discussion and findings from each municipal council meeting is presented in this summary. The project team also offered to meet with the RM of Grey, however their council felt that they did not require additional information at this time.

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To help solicit additional feedback on the Biosolids Land Application program, the project team also met with local groups with municipal interests in the area west and southwest of Winnipeg. Feedback from the Capital Region Workshop suggested that the project team meet with the LaSalle Redboine Conservation District, the Portage la Prairie Community and Regional Planning Branch, the Partnership of the Manitoba Capital Region (PMCR), the Assiniboine River Basin Initiative (ARBI) and the Red River Basin Commission (RRBC) to discuss the program and seek their input. The following table summarizes the meeting details:

	RRBC Manitoba North Chapter	**RRBC Manitoba South Chapter**	**PMCR**	**ARBI**
Date:	May 18, 2017	May 19, 2017	May 25, 2017	July 20, 2017
Time:	7 p.m. – 8 p.m.	10 a.m. – 11 a.m.	10 a.m. – 11 a.m.	10:30 a.m. – 11:30 a.m.
Location:	Grosse Isle Community Hall PTH 6, Grosse Isle, MB	City of Winkler Municipal Office 185 Main St., Winkler, MB	PMCR Board Office 1749 Portage Ave., Winnipeg, MB	101-250 Marion St., Winnipeg, MB
Attendees:	Approx. 30 members	Approx. 60 members	13 members	1 member

The first three meetings consisted of a presentation followed by questions and discussion about the program. At the July meeting with the ARBI, the project team shared the open house materials with the ARBI followed by questions and discussion about the program. The project team contacted the LaSalle Redboine Conservation District and the Portage la Prairie Community and Regional Planning Branch to provide information on the project. A representative from the Portage la Prairie Community and Regional Planning Branch indicated that they will provide input when the Environmental Act Licence is circulated to provincial departments during the regulatory review process.

A summary of our discussion and findings from each special interest group meeting is presented in this memo.

WHAT WE HEARD

WORKING WITH LOCAL COUNCIL AND ADMINISTRATION

Municipal stakeholders shared that it is important that the local RM council and administration are aware of biosolids land application occurring within their areas. Council members commented that they expect to be contacted by residents if there are issues with the program and that having up-to-date information on the timing and location for biosolids land application will help council and administration address questions and concerns. Municipal stakeholders shared that once the Environment Act Licence is approved, RM councils are no longer directly contacted about the program by the Province; therefore, it was suggested that a program representative or farm producer inform the local RM council and administration about land application occurring within their RM by attending a council meeting. Comments from municipal stakeholders suggest that it is important that the program details are communicated to the RM prior to application.

Municipal stakeholders asked the project team whether the City will require municipal approval to spread biosolids in their RM. In addition, municipal stakeholders asked if allowing biosolids land application to occur will require an update to their zoning by-law. Comments from municipal stakeholders suggest that there are currently no municipal restrictions for spreading biosolids and that the decision to allow biosolids land application is ultimately up to the cooperating farm producer.

PROGRAM CONCERNS AND CONSTRAINTS

The following concerns and potential constraints to the biosolids land application program were identified by municipal stakeholders:

- Community members may be skeptical of the program because of their experience with the previous WinGRO program.

- Concerns about metal loading and metal concentration in the biosolids may be present.
- Concerns may exist regarding the presence of emerging substances of concern in biosolids, such as pharmaceuticals, antibiotics, etc.
- The program should avoid applying biosolids near built-up areas, especially residential, to mitigate potential impacts to community residents (i.e., odour, traffic, dust).
- Protection of water (surface and groundwater) is a concern. Specifically, whether nitrogen and phosphorus will be added to waterways.
- Sensitive and flood prone land near the Assiniboine River should be avoided. On a Canada Land Inventory (CLI) map, most Class 3 lands are flood prone.
- Manure from livestock operations are currently applied in areas west and southwest of Winnipeg. It is important that these sites are identified and avoided for land application of the City's biosolids.
- Weather may constrain when biosolids can be hauled to the storage site and/or application location. If it has been raining, local roads will be damaged by the equipment.
- Damage to road infrastructure from haulers is a concern. A commitment from the City to maintain and/or repair roads used to access storage sites and/or application sites is important.
- Participation from farm producers with Class 2 lands may be difficult. Farm producers with Class 3 or Class 4 may be more willing to accept biosolids.
- Concerns exist that farm producers may not incorporate biosolids right away. This will increase the odour and if it rains the material will spread. Direct injection may be preferred as it reduces odour and does not rely on the farm producer to incorporate.
- Farm producers may not be interested in committing to the program because it is a pilot project and may change in future years.

COMMUNITY AND FARM PRODUCER BENEFITS

Municipal stakeholders asked about the local benefits of biosolids land application. It was well understood that biosolids contain valuable nutrients, which have an economic value, and that individual farm producers who participate in the program will benefit financially in reduced fertilizer and soil amendment costs. However, municipal stakeholders asked about the benefit to the municipality or community as a whole. Municipal stakeholders also asked whether there is a fee for farm producers to participate in the program.

PROGRAM DETAILS

Municipal stakeholders were interested in learning specific details about the Biosolids Land Application program. This included:

- The number of trucks per day that will haul biosolids to the storage site;
- The quantity of biosolids that will be applied per acre;
- The estimated area that is required to spread 5,000 wet tonnes (WT) and 20,000 WT of biosolids;
- How the biosolids will be spread;
- How the hauler will load the material into the spreading equipment;
- If the City plans to monitor surface water;
- Whether the City will be testing biosolids for metal concentrations and emerging substances of concern;
- What Class the biosolids will be;
- Restrictions on applying biosolids close to populated areas and waterways; and,

- What type of in-field storage options the City is considering.

POTENTIAL AREAS FOR BIOSOLIDS LAND APPLICATION

Municipal stakeholders provided insight on areas within the RM of Cartier, RM of Macdonald, and RM of Rosser that may be suitable for biosolids land application as well as areas to avoid.

RM of Cartier

- Land in the southeast quadrant of the RM of Cartier is largely agriculture with limited residential, however access to these lands may be difficult.
- Land west of Marquette, north of PTH 26 within the vicinity of Two Mile Road may have potential.
- Land north of the Trans-Canada Highway is quite empty with only a few homesteads. The majority of this land is colony owned.
- There are two Regional Transportation Advisory Committee (RTAC) highways east of Elie and the land is largely agriculture with limited residential.
- From Starbuck to Dacotah, PR 332 is a Class B road with 90 percent restrictions.
- PR 248 is RTAC rated.

RM of Macdonald

- The area between PTH 2 and PTH 3 may have potential, especially in the west of the RM of Macdonald.
- South of Sanford there are hog operations and it is suggested to stay away from this area.

RM of Rosser

- Suggested to find land that can be accessed from a RTAC highway. RTAC highways in the RM of Rosser are PTH 7 and PTH 6.
- There are hauling limitations on PR 221 but the City can apply to the RM of Rosser for special permitting.
- Suggested to avoid areas where biosolids are currently being applied. There is one direct injection site on the south edge of the RM of Rosser and three major dairy operations that inject in the east of the RM of Rosser.
- There may be good sites in the southwest quadrant of the RM of Rosser.

COMMUNITY OUTREACH

Municipal stakeholders suggested the following advertisement methods to reach community residents:

- Newspaper advertisements;
- Social media and postings on local Facebook groups;
- Advertise on the RM website; and
- Put up posters in communities.

NEXT STEPS

The information gathered from municipal stakeholders helped the project team deepen their understanding of the local issues, challenges, and opportunities related to biosolids land application for particular communities. This knowledge will help the project team further refine program details such as methods to communicate program details to the local RM

council and administration, buffer distances to built-up areas, in-field storage solutions, and the role of the City in maintaining road infrastructure damaged by hauling equipment.

To support a transparent process, this summary will be directly shared with municipal stakeholders who participated in the meetings and will be available to the public on the project website.

Winnipeg

Water and Waste Department • Service des eaux et des déchets

April 28, 2017

Invitation to Participate in the City of Winnipeg Biosolids Land Application Program

The City of Winnipeg is developing a Biosolids Land Application program. The program includes spreading biosolids, a by-product of wastewater treatment, on farmland with approval from landowners and the Province of Manitoba. Applying biosolids to farmland brings much needed nutrients to the soil and provides an opportunity to reuse wastewater biosolids.

As a representative of a Rural Municipality or municipal organization which may have interests in the project, we would like to meet with you. The intent of the meeting is to discuss, from your organization's point of view, the following:

- Opportunities and constraints for biosolids land application.
- Program options, approaches and potential application locations.
- How biosolids land application may affect landowners and community members.
- How to best engage with community residents and farm producers.

We would like to meet with you to discuss the project between May 8 and May 26, 2017.

Please contact WSP|MMM Group, the consulting firm for this project by May 8, 2017 to discuss meeting details, at *BiosolidsLandApplication@winnipeg.ca* or 1-888-882-3391. Should you be unable to attend, please forward this invitation to another representative of your organization, and/or contact us for alternative ways to participate.

For more information, please visit winnipeg.ca/BiosolidsLandApplication.

Thank you,

Moira L. Geer, CPA, CA
Acting Director

AEW/je

c: D. E. Griffin, P.Eng., Water and Waste Department

Appendix C

Public Open Houses Summary

Public Open Houses Summary

Date:	July 11, 2017	July 12, 2017
Time:	4 p.m. – 7 p.m.	4 p.m. – 7 p.m.
Location:	Brunkild Memorial Rec Centre 10 PR 305 Brunkild, MB	Elie Veteran's Hall 34 Main St. E. Elie, MB

INTRODUCTION

The City of Winnipeg (the City) is developing a Biosolids Land Application program. Biosolids are a nutrient-rich, solid by-product of wastewater treatment. When applied to agricultural land it brings much needed nutrients to the soil and provides an opportunity to reuse biosolids instead of disposing them in a landfill. The Biosolids Land Application program will be influenced by provincial regulations, public input, and characteristics of application sites, such as soil, slope, type of crop, and distance to water bodies.

In April 2017, the project team facilitated a capital region workshop to solicit input from organizations with regional interests and knowledge of the biosolids sector, policy and regulatory requirements and constraints, and local community issues and concerns. In May and June 2017, the project team met with three municipal councils and four special interest groups. The intent of these meetings was to present high-level program considerations and solicit information about opportunities and current environmental constraints to apply biosolids in the area west and southwest of Winnipeg. The feedback provided by regional and municipal stakeholders helped provide direction for the next phase of engagement, the public open houses.

PUBLIC OPEN HOUSES

Two public open houses were hosted to gather public input on the program development and site selection. The public open houses for the Biosolids Land Application program were held on Tuesday, July 11, 2017, from 4 p.m. to 7 p.m. at the Brunkild Memorial Recreation Centre, located at 10 PR 305, Brunkild and on Wednesday, July 12, 2017, from 4 p.m. to 7 p.m. at the Elie Veteran's Hall, located at 34 Main Street East, Elie. The intent of the open houses was to provide an opportunity for community members and interested farm producers to learn about the program, potential application sites, speak with project team members, and provide comments on the program. Presentation boards displayed text and graphics on the project background, timeline, program study area, program regulations and principles, program details and mitigation measures for human health, environmental, and nuisance concerns. Approximately 12 people attended.

The public open houses were advertised in several formats:

FORMAT	DATE	DETAIL
Newspaper Advertisements	June 28th and 29th, 2017	Manitoba Co-Operator
	June 28th, 2017	The Headliner
	July, 2017	Cartier Times (July Edition)
Social Media	June 28th, July 11th and 12th, 2017	Twitter (3 total posts)
	July 4th and 11th, 2017	Facebook (2 total posts)

FORMAT	DATE	DETAIL
Print	June 27th to July 12th, 2017	Posters in Rosser, Marquette, Grosse Isle, St. Francois Xavier, Oak Bluff, Sanford, Brunkild, Sperling, Starbuck, Springstein, and Elie.
Radio	July 7th, 8th and 10th, 2017	93.1 CFRY, Portage la Prairie based radio station, airing three times per day.

SURVEY

A survey was provided at the public open houses to collect feedback. The survey and open house boards were also available online between June 28 and July 28, 2017. This provided those who were unable to attend the public open house events an opportunity to review the materials and provide their input. A total of 40 responses were received (6 paper submissions and 34 online submissions) from individuals in Manitoba (36 respondents) and from across Canada (4 respondents).

For the purposes of the Biosolids Land Application program, survey responses that did not originate in Manitoba were analyzed and included separately from the other responses. The responses that did not originate in Manitoba will not be included in the Environment Act Proposal public engagement summary, as these survey results are not applicable to the regulatory jurisdiction, but have been included in this report.

PUBLIC SURVEY RESULTS SUMMARY – MANITOBA

Total Respondents, n = 36 (note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

CONNECTION TO STUDY AREA

Respondents were first asked to indicate their interest in the program and were encouraged to check all those that apply to them. The majority of respondents indicated they were a member of an agricultural group, environmental group or other interest group (17), followed by those identifying as 'other' (14), those identifying as an agricultural producer (8), and a small group identifying as being residents of the four target municipalities (7 total). Those that identified as 'other', indicated they were predominantly residents of the City of Winnipeg (8 out of 14 responses). The following table shows the question responses, ranked from highest to lowest:

Answer	Responses
A member of an agricultural group, environmental group or other interest group	17
Other (please specify)	14
An agricultural producer	8
A resident of the R.M. of Grey	2
A resident of the R.M. of Cartier	2
A resident of the R.M. of Rosser	2
A resident of the R.M. of Macdonald	1
Total Responses:	**46**

(Total respondents, n = 34, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

Respondents were then asked if they own agricultural land and to check all the locations that apply. The majority of respondents indicated the question did not apply to them (25),

followed by those who responded ‘other’ (4), and a group of respondents indicated they own agricultural land in either the R.M. of Grey, the R.M. of Rosser, or the R.M. of Cartier (5). None of the respondents indicated they own land in the R.M. of Macdonald. Those respondents who answered ‘other’ indicated they own agricultural land outside of the study area.

Answer	Responses
N/A	25
Other (please specify)	4
Own agricultural land in the R.M. of Grey	2
Own agricultural land in the R.M. of Cartier	2
Own agricultural land in the R.M. of Rosser	1
Own agricultural land in the R.M. of Macdonald	0
Total Responses:	34

(Total respondents, n = 32, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

Respondents were then asked if they rent agricultural land and to check all the locations that apply. The majority of respondents indicated the question did not apply to them (26) followed by a small group that responded ‘other’ (2). A smaller group of respondents indicated they rented agricultural land in the R.M. of Grey, the R.M. of Rosser and the R.M. of Cartier (5). No respondents indicated they rented agricultural land in the R.M. of Macdonald. For those who responded ‘other’, responses indicated they rent land outside of the four pilot project municipalities.

Answer	Responses
N/A	26
Other (please specify)	2
Rent agricultural land (tenant) in the R.M. of Grey	2
Rent agricultural land (tenant) in the R.M. of Cartier	2
Rent agricultural land (tenant) in the R.M. of Rosser	1
Rent agricultural land (tenant) in the R.M. of Macdonald	0
Total Responses:	33

(Total respondents, n = 32, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

INTERESTS IN BIOSOLIDS LAND APPLICATION

The survey asked respondents to best describe their interest in the Biosolids Land Application program. Respondents were encouraged to check all those that apply to them. Results were varied with the majority of respondents indicating protection of the environment (29) as the highest interest, followed by the protection of human health (20), then agricultural benefits (17), nuisance issues such as odour and traffic (14), economic impacts (10), and lastly ‘other’ (7). Those that selected ‘other’ included various interests, including job opportunities, climate change, and impacts on municipal transportation systems.

Answer	Responses
Protection of the environment	29
Protection of human health	20
Agricultural benefits	17
Nuisance issues such as odour or traffic	14
Economic impacts	10
Other (please describe)	7
Total Responses:	97

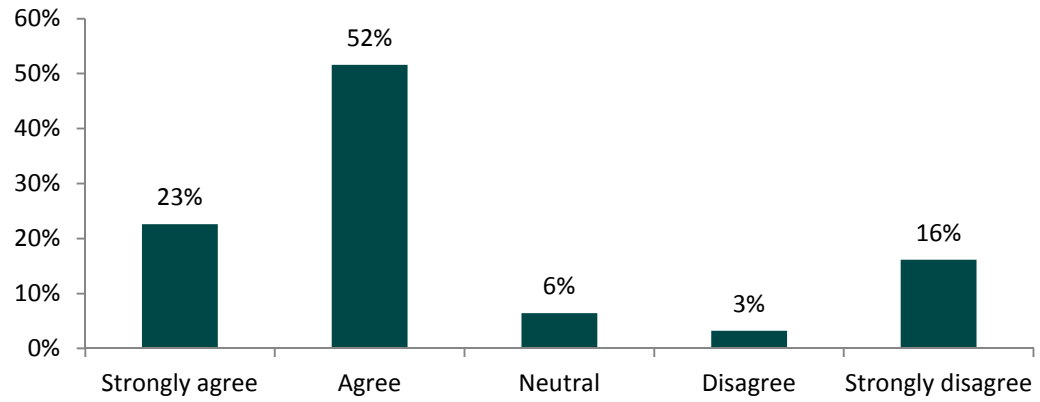
(Total respondents, n = 36, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

The survey asked respondents to share their comments on any specific interests they may have in the Biosolids Land Application program. A total of 16 comments were provided. The following is a summary of frequently shared comments:

- Concern over the potential for harmful effects to the environment and public health. Several comments indicate a strong opposition to the program in any form and suggest that:
  - Biosolids are toxic in nature and are not fit to be applied to farmlands;
  - Additional unbiased research is needed before considering biosolids application; and
  - The program should be terminated.
- Broad interest and support for the program and a general excitement for the economic prospects, the potential to divert biosolids from the landfill, and the benefit to local farmers.
- Biosolids are an environmentally friendly alternative to synthetic fertilizers and may help to reduce greenhouse gas emissions.
- Questions regarding nutrient values as well as bacterial content of biosolids.
- Interest in seeing specialized routing and specific maintenance programs to ensure truck routes are in good repair.

INFORMATION ON THE BIOSOLIDS LAND APPLICATION PROGRAM

The survey asked respondents if they felt the information about the Biosolids Land Application program provided either at the open houses or on the program website was helpful. The majority of respondents either agreed or strongly agreed that the provided information regarding the Biosolids Land Application program was helpful (23% strongly agree, 52% agreed). A smaller number of respondents indicated the information was not helpful (3% disagreed, 16% strongly disagreed). Lastly, 6% of respondents were neutral when asked if the information was helpful.



(Total respondents, n = 31)

For those respondents who did not find the information helpful, the survey asked what information they were missing. A total of 11 comments were provided. The following is a summary of the questions provided by respondents:

- Questions about how biosolids differ from regular agricultural manure including their rate of run-off, treatment process, and what is to prevent a double dosing of both on the same field.
- What research the City conducted in regard to the project.
- Interest in more information about the specific substances the City will be regularly testing for as part of the program.
- Information regarding the prevalence, toxicity and bio-accumulative dangers of identified, and unidentified emerging substances of concern in processed biosolids.
- How emerging substances of concern are being tested for, including sample size, frequency, and when these tests will be made public.
- More research to indicate if treatment processes are adequate to remove the associated risk of emerging substances of concern, as well as prions.
- Information on potential negative consequences of using biosolids were not well represented in the information provided by the program.

CONCERNS REGARDING THE BIOSOLIDS LAND APPLICATION PROGRAM

The survey asked respondents to provide any outstanding concerns they had in regard to the Biosolids Land Application program. A total of 21 comments were received. The following is a summary of the comments provided by respondents:

- Concern of potential odour entering into densely populated areas in Winnipeg.
- Concern regarding the toxins present in the Winnipeg sewer system that may enter into the biosolids used in the program. There is a desire to know what the City has planned to prevent individuals from pouring toxic chemicals down the drain.
- Concern regarding potential harmful effects of biosolids on the health of the environment and humans.
- Need for heightened enforcement of mitigation measures to ensure local producers are following correct procedure.
- Concern for the lack of buffer around the Assiniboine River. While there is a buffer for the flood control area of the Red River, no buffer exists for the Assiniboine River.
- General concern for the effects of prions, emerging substances of concern, and the toxicity of biosolids.

ADDITIONAL COMMENTS OR QUESTIONS

The survey provided a final opportunity for respondents to share any additional comments or questions they may have had regarding the Biosolids Land Application program. A total of 14 responses were provided. The following is a summary of the comments or questions provided by the respondents:

- With proper management and proper application techniques, the program can be a success.
- Desire to know the total amount of biosolids the City is currently producing, and how much the program will offset this amount. A specific question was asked regarding the effect on fertilizer producers in Manitoba and if there will be any significant pushback.
- Certain areas proposed for the pilot project are often extremely wet in the springtime and tend to flood during high water events and during spring run-off. There is a desire to know where these lands drain to and what is being done to mitigate the unnecessary runoff of nutrients from biosolids.
- Staff at the open houses were well prepared and knowledgeable on the subject matter, and that the provided survey gave ample opportunity to share opinions in an open and clear way.
- Previous application program run by the City was a success and provided satisfaction to local producers.
- General uncertainty and rejection of the program, and would suggest invoking the precautionary principle. Responses suggested that using biosolids is unsafe for both human health and the environment.

SURVEY RESULTS – OUTSIDE MANITOBA

(TOTAL RESPONDENTS, N = 4)

CONNECTION TO STUDY AREA

Respondents were first asked to indicate their interest in the project and encouraged to check all those that apply to them. The majority of respondents selected ‘other’ in their interest to the project (3), followed by members of an agricultural group, environmental group or other interest group (2). For those who identified themselves as ‘other’, respondents indicated their place of residence as British Columbia.

Answer	Responses
Other (please specify)	3
A member of an agricultural group, environmental group or other interest group	2
An agricultural producer	0
A resident of the R.M. of Grey	0
A resident of the R.M. of Cartier	0
A resident of the R.M. of Rosser	0
A resident of the R.M. of Macdonald	0
Total Responses:	5

(Total respondents, n = 4, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

Respondents were then asked if they owned agricultural land and to check all those that apply. Three respondents indicated they owned agricultural land outside of Manitoba (3), while one respondent identifying themselves as not owning any agricultural land (1).

Answer	Responses
Other (please specify)	3
N/A	1
Own agricultural land in the R.M. of Grey	0
Own agricultural land in the R.M. of Cartier	0
Own agricultural land in the R.M. of Rosser	0
Own agricultural land in the R.M. of Macdonald	0
Total Responses:	4

(Total respondents, n = 4)

Respondents were then asked if they rent agricultural land and to check all those that apply. All respondents indicated this question did not apply to them.

INTERESTS IN BIOSOLIDS LAND APPLICATION

Respondents from outside Manitoba indicated a strong majority for the protection of the environment (4), protection of human health (4), nuisance issues such as odour and traffic (4), economic impacts (4), and a slightly smaller number of responses for 'other' (3).

Answer	Responses
Protection of the environment	4
Protection of human health	4
Nuisance issues such as odour or traffic	4
Economic impacts	4
Other (please describe)	3
Agricultural benefits	0
Total Responses:	19

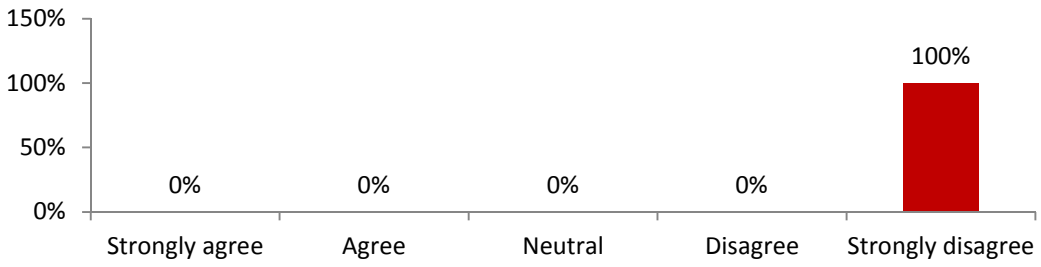
(Total respondents, n = 4, note: answers to the public survey were not mandatory and therefor, some questions include less than total responses)

Respondents were asked to provide comments on any specific interests they have in the Biosolids Land Application program. A total of 4 comments were received. The following provides a summary of the comments:

- Responses suggested a general desire for more research into the potential harm of biosolids application by researching the health of individuals living near biosolids application and those who live further away.
- Responses indicated a general mistrust of the program citing there are special interest groups benefitting from these programs in Canada and the United States.
- Responses indicated a desire for more information regarding the potential negative impacts of biosolids, and further indicate the project information seems biased in its presentation.
- Responses indicated a desire to end the program to protect human life and reduce future medical costs.

INFORMATION ON THE BIOSOLIDS LAND APPLICATION PROGRAM

The survey asked respondents if they felt the information provided about the Biosolids Land Application program was helpful. All of the respondents from outside Manitoba strongly disagreed (100%).



(Total respondents, n = 4)

For respondents who did not find the information helpful, the survey asked what information they were missing. A total of 4 responses were collected. The following is a summary of the provided responses.

- Additional scientific cases from independent researchers need to be provided that oppose the use of sewage on farmland and forests.
- Desire for equal amounts of information to be provided, both positive and negative in their presentation.

CONCERNS REGARDING THE BIOSOLIDS LAND APPLICATION PROGRAM

The survey asked respondents to provide any outstanding concerns they had in regard to the Biosolids Land Application program. A total of 4 comments were received from respondents outside of Manitoba. The following is a summary of the comments provided by respondents:

- Broad concerns for biosolids land application citing current petitions to the Canadian Federal Government, a failure to test for emerging substances of concern, lack of information on pharmaceuticals and industrial waste entering the waste stream in Winnipeg, the addition of airborne spores, and the need for increased setbacks that take into account strong winds.
- Ample independent research is being conducted that provides contradictory findings on biosolids land application.

ADDITIONAL COMMENTS OR QUESTIONS

The survey provided a final opportunity for respondents to share any additional comments or questions they may have had regarding the Biosolids Land Application program. A total of 3 responses were provided. The following is a summary of the comments or questions provided by the respondents:

- Alternatives including pyrolysis (e.g. thermochemical decomposition of organic materials) and gasification are two waste-to-energy solutions that should be considered rather than land application.
- Emerging substances of concern and, specifically prions, pose a significant risk to human health and the health of the environment.

NEXT STEPS

The feedback from the open houses and survey provides valuable insight on proposed program details from a community perspective and is being considered in the next steps towards developing the Biosolids Land Application program. In addition, the feedback

received also helps reaffirm the guiding principles developed from the regional and municipal stakeholder workshop, which included:

- Protection of the Environment;
- Protection of Public Health;
- Public Awareness and Education; and
- Building Relationships.

Feedback gathered through the public engagement process will be considered in the development of the Biosolids Land Application program, the location(s) of biosolids land application sites and included in the Environment Act Proposal.

Appendix D

Public Engagement Materials

Biosolids Land Application Program
Programme d'épandage de biosolides

The City of Winnipeg is exploring opportunities to apply biosolids, a nutrient-rich, solid by-product of wastewater treatment, in the area west and southwest of Winnipeg such as the R.M. of Macdonald and the R.M. of Cartier. Please join us at one of two open houses to learn about the proposed program and provide your feedback.

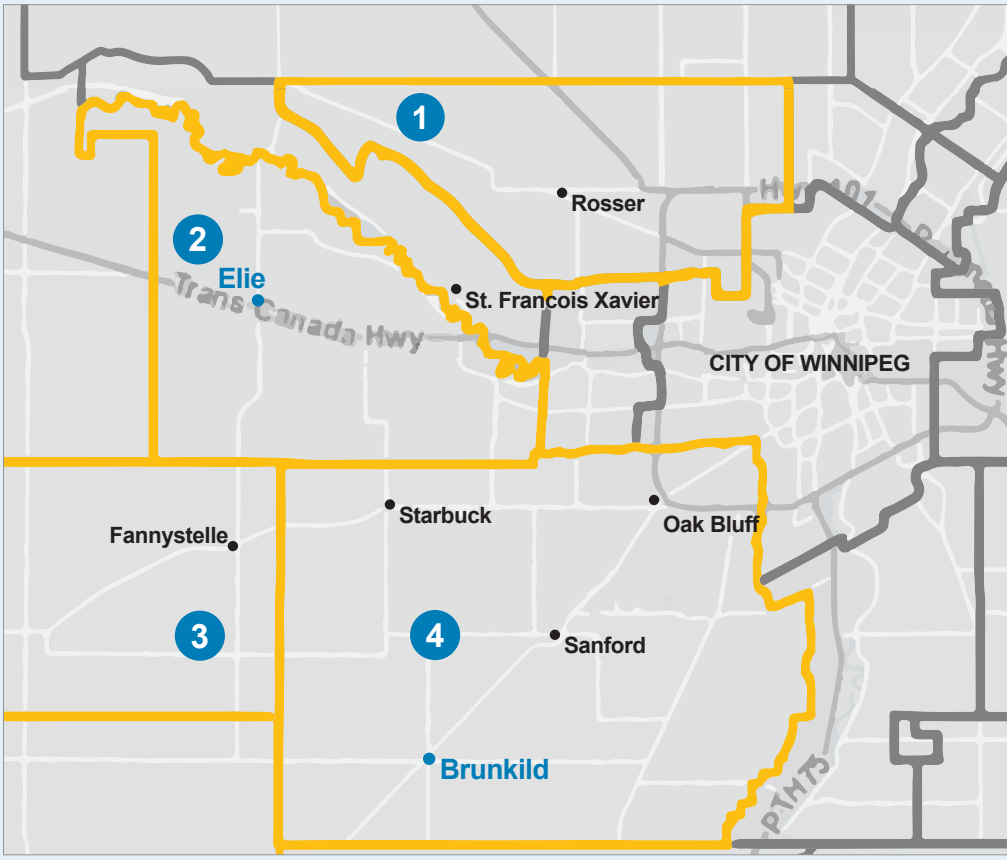
La Ville de Winnipeg envisage la possibilité d'épandre des biosolides, des sous-produits solides du traitement des eaux usées, riches en éléments nutritifs, dans les régions à l'ouest et au sud-ouest de Winnipeg, dont la M. R. de Macdonald et la M. R. de Cartier. Veuillez vous joindre à nous à l'une des séances portes ouvertes pour en savoir plus sur le projet de programme et nous faire part de vos commentaires sur celui-ci.

Date: July 11, 2017
Time: 4 p.m. – 7 p.m.
Location: Brunkild Memorial Rec Centre, 10 PR 305, Brunkild, MB
Format: Drop-in (come and go)

Date: July 12, 2017
Time: 4 p.m. – 7 p.m.
Location: Elie Veteran's Hall, 34 Main St. E., Elie, MB
Format: Drop-in (come and go)

Date : le 11 juillet 2017
Heure : de 16 à 19 heures
Lieu : Brunkild Memorial Recreation Centre, 10, route provinciale secondaire 305, Brunkild, Manitoba
Format : Portes ouvertes (entrée libre)

Date : le 12 juillet 2017
Heure : de 16 à 19 heures
Lieu : Elie Veteran's Hall, 34, rue Main Est, Élie, Manitoba
Format : Portes ouvertes (entrée libre)



Rural Municipalities of: (1) Rosser, (2) Cartier, (3) Grey, and (4) Macdonald
Municipalités rurales de (1) Rosser, (2) Cartier, (3) Grey et (4) Macdonald

For more information, visit **winnipeg.ca/BiosolidsLandApplication**.

For inquiries or for those who require alternate formats, French documents or interpretation in order to participate, please contact **Brock Feenstra** at **1-888-882-3391** or **BiosolidsLandApplication@winnipeg.ca**.

Pour de plus amples renseignements, visitez **winnipeg.ca/epandagedebiosolides**.

Si vous avez des questions, ou si vous avez besoin d'un format de présentation différent, de documents en français ou de services d'interprétation afin de rendre votre participation possible, veuillez communiquer avec **Brock Feenstra**, au **1-888-882-3391**, ou à **biosolidslandapplication@winnipeg.ca**.

CITY OF WINNIPEG BIOSOLIDS LAND APPLICATION PROGRAM

PUBLIC OPEN HOUSE

PROJECT BACKGROUND

- Biosolids are a nutrient rich, solid by-product of municipal wastewater treatment. The City of Winnipeg (the ‘City’) produces approximately 50,000 wet tonnes (WT) of biosolids per year.
- Biosolids land application is the practice of applying biosolids to soil to supply nutrients and improve soil quality.
- From 1990 to 2010, the City of Winnipeg applied biosolids to farmland under the WinGRO program. The WinGRO program ended due to changes to provincial regulations. Since 2011, the biosolids have been disposed at the Brady Road Resource Management Facility (landfill).

- In 2014, the City completed a Biosolids Master Plan. It recommended that the City develop strategies to reuse the biosolids, including: composting, soil fabrication and land application.

TIMELINE

2017 | 2018 | 2019 | 2020

PHASE 1: Public Engagement and Environment Act Proposal

Capital Region Workshop

Municipal Meetings

Public Open Houses

Producer Engagement

Develop Database

Environment Act Proposal

JANUARY - OCTOBER 2017

WE ARE HERE

PHASE 2: Pilot Land Application

Province approves pilot application

5,000 WT pilot application

Monitoring and reporting

AUGUST - DECEMBER 2017

PHASE 3: Full Land Application

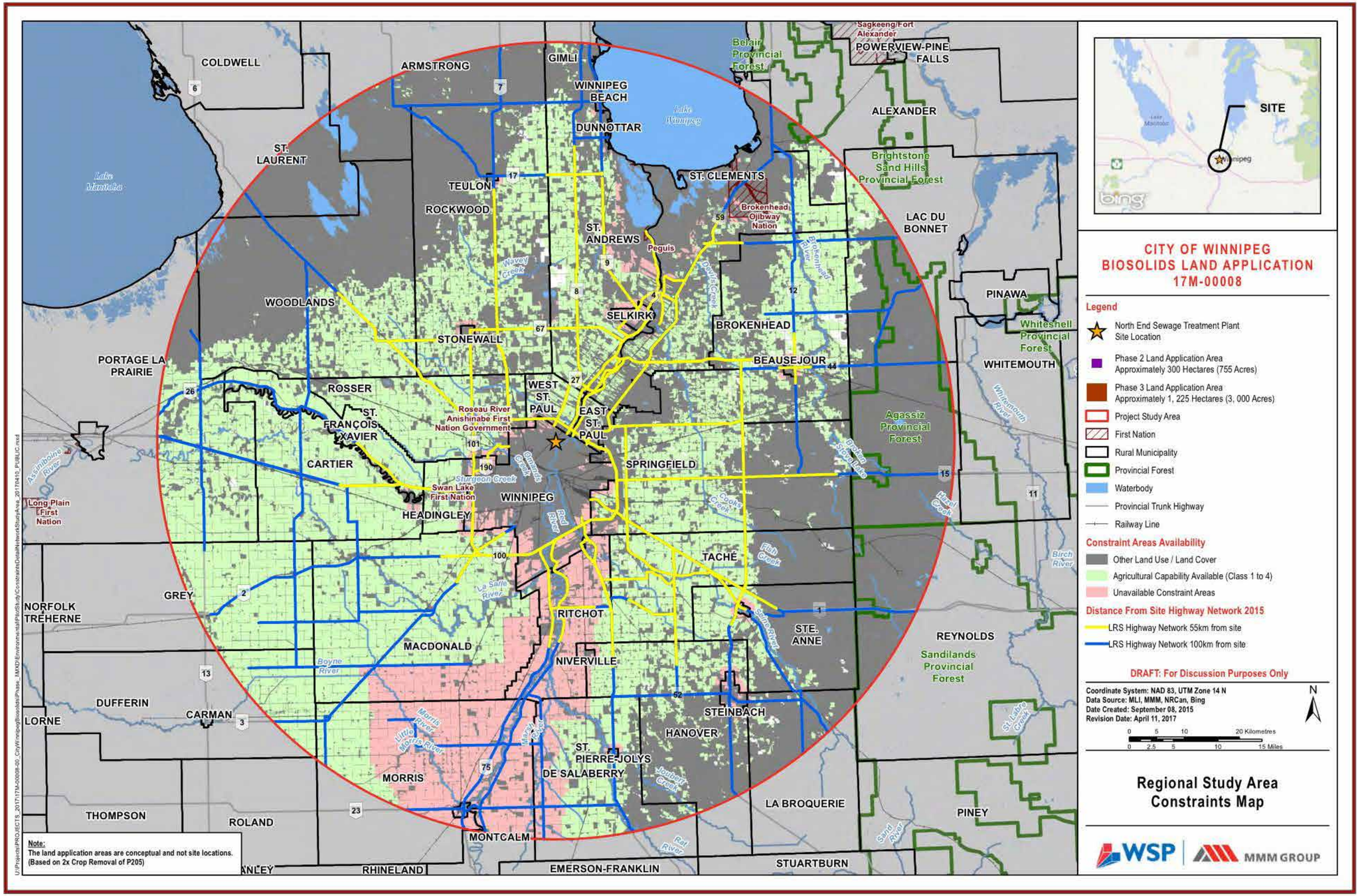
Province issues Environment Act Licence

20,000 WT application annually

Monitoring and reporting

2018, 2019, 2020

PROGRAM STUDY AREA



- Areas in **pink** are lands that are not available for biosolids land application because of known constraints (i.e., flood zone).
- Areas in **grey** are lands that are limited for biosolids land application because of land use and land cover (i.e. forest, non-agricultural land use).
- Areas in **green** are lands that are suitable for biosolids land application as they have been identified as land with the appropriate agricultural capability or nutrient management zone and identified as annually cropped.

BENEFITS OF BIOSOLIDS LAND APPLICATION

- Provides much needed nutrients to local farmland.
- Provides organic matter to farmland that improves soil structure, drainage and erosion protection.
- Reduces greenhouse gases through carbon sequestration.
- Eliminates disposal of biosolids in the landfill.
- Reduces fertilizer costs for farm producers.
- Improves crop yields for farm producers.

PROGRAM REGULATIONS & PRINCIPLES

» The progam will comply with all applicable regulations, including the Manitoba *Water Protection Act*, the Manitoba *Environment Act* and the *Nutrient Management Regulation*.

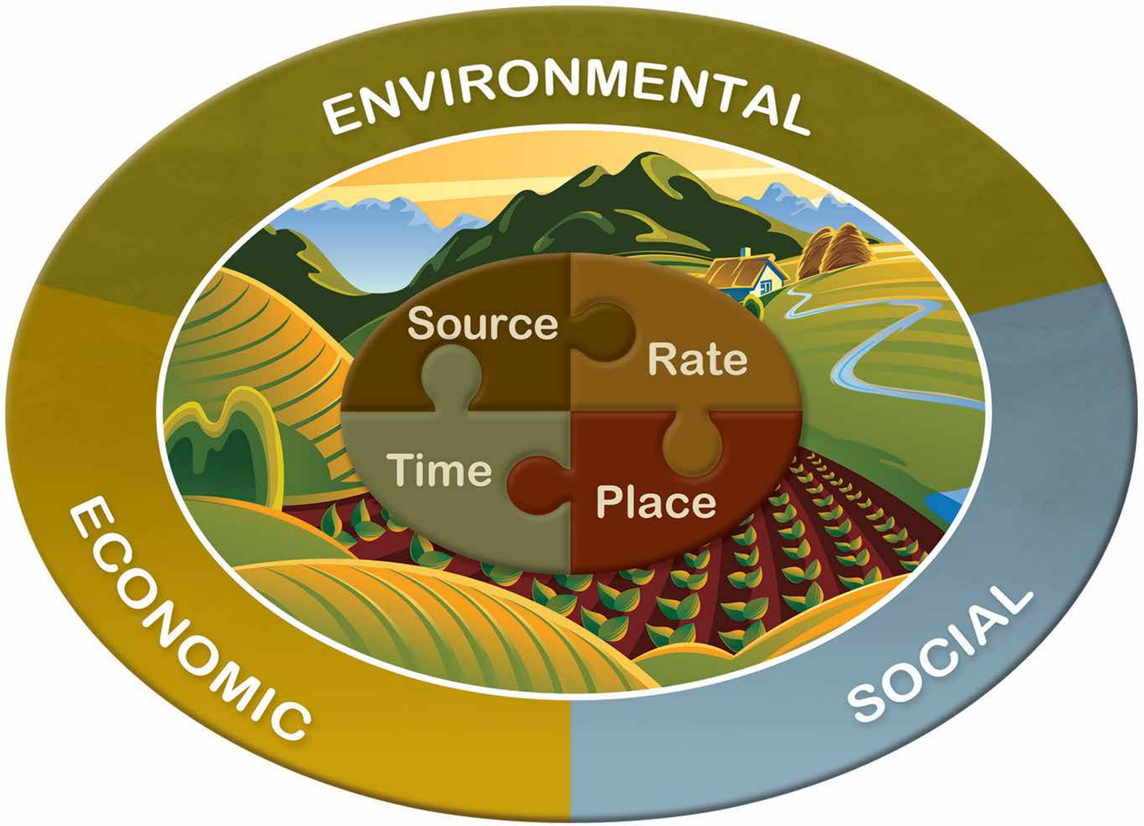
» The program will follow the principles of 4R Nutrient Stewardship

RIGHT SOURCE:

Matches fertilizer type to crop needs.

RIGHT TIME:

Makes nutrients available when crops need them.



RIGHT RATE:

Matches amount of fertilizer to crop needs.

RIGHT PLACE:

Keeps nutrients where crops can use them.

ANNUAL PROGRAM FOR BIOSOLIDS LAND APPLICATION

SPRING - SUMMER:

Biosolids are trucked from the North End Sewage Treatment Plant to local storage sites.

FALL - POST HARVEST:

Soil sampling occurs to determine the nitrogen, phosphorus, and metal levels. A Professional Agrologist calculates the biosolids application rate taking into consideration the farm producer's target yield for the following harvest.

FALL - POST HARVEST:

Biosolids are then applied at the prescribed rate and tilled into the soil.

FALL - WINTER:

Report back to the regulator and farm producer providing an update on the program and application rates.

The soil will be monitored for 3 years following application. Biosolids land application is planned to return to the same fields every three to four years.

FIELD STORAGE OF BIOSOLIDS

» The approach to field storage will be determined in the coming months.

» Field storage of biosolids will follow the existing regulations for manure management, and the guidelines outlined by the Canadian Council of Ministers of the Environment and U.S. Environmental Protection Agency for biosolids storage.

» Considerations for field storage include:

- Site selection, including setback distances from water bodies, wells and residential areas
- Odour and vector management
- Storm water management
- Timing of storage
- Site security
- Site restoration
- Good neighbour practices

PROTECTION OF HUMAN HEALTH

Human Health Concerns	Mitigation Measures
PATHOGENS Biosolids contain pathogens such as bacteria	• Reduction through sludge treatment at the sewage treatment plant • Reduction from climate exposure • Reduction by natural soil microorganisms • Reduced exposure from tillage and setback distances • Crop restrictions for three years following application • Separation in time from land application to harvest • Cropping rotation
EMERGING SUBSTANCES OF CONCERN Biosolids may contain trace amounts of pharmaceuticals, personal care products, industrial contaminants, etc.	• Degradation from climate exposure • Degradation from microorganisms • Degradation from sunlight • Setback distances from water bodies and residential areas • Crop restrictions for three years following application • Separation in time from land application to harvest • Monitoring the ongoing scientific research on effects and mitigation measures

PROTECTION OF THE ENVIRONMENT

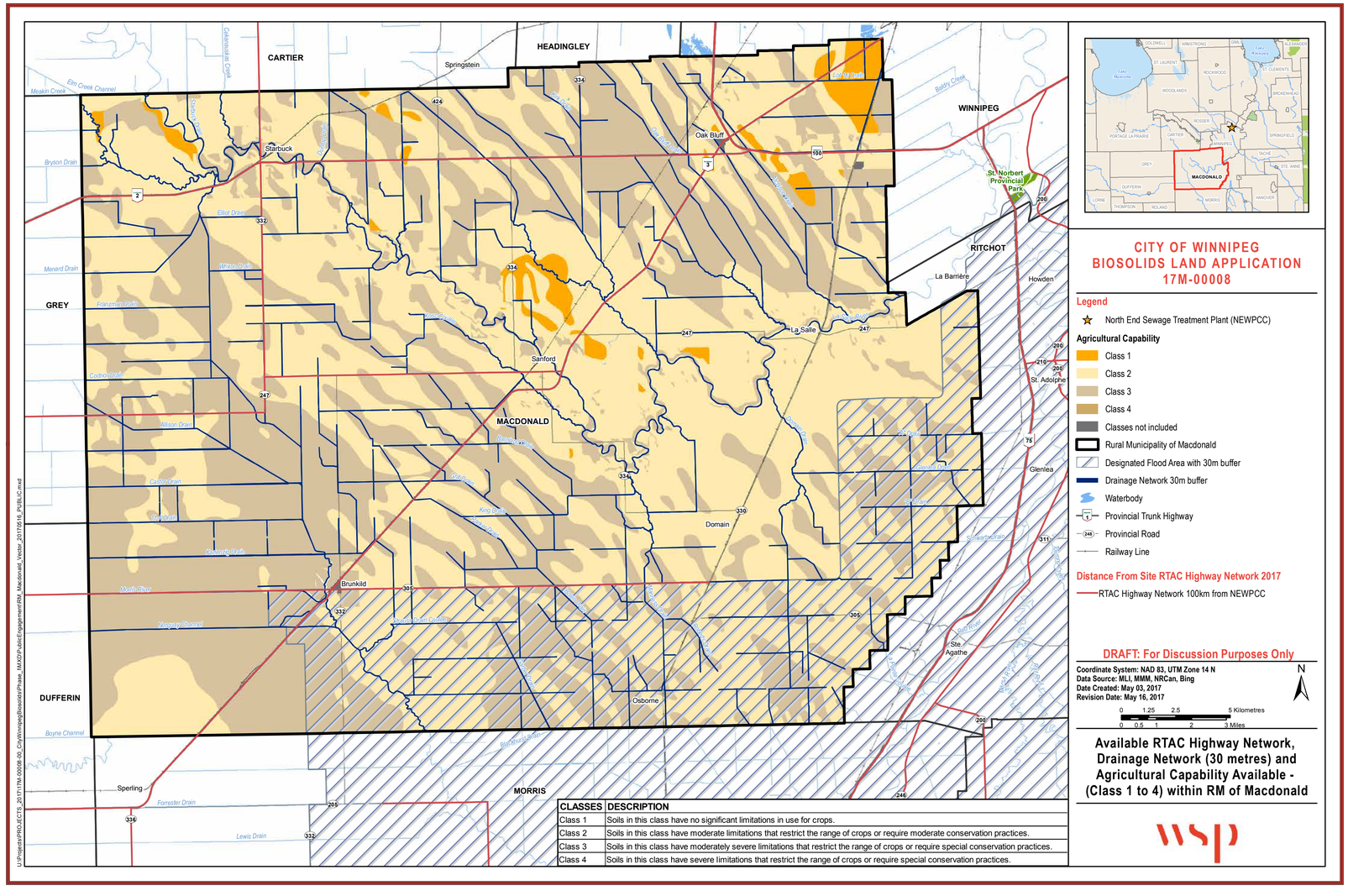
Environmental Concerns	Mitigation Measures
SURFACE AND GROUNDWATER PROTECTION Biosolids can impact water quality if regulations are not followed	• Setback distances from water bodies, wetlands and groundwater features • A minimum of 1.5 metre depth of clay between the surface and water table • No application on lands subject to flooding • Application rates based on the farm producer agronomy • Consideration of the crop system, landscape features and soil conditions • Regulated by the *Manitoba Water Protection Act* and the *Environment Act Licence*
METAL LOADING Biosolids contain metals in small concentrations	• The City's sewer by-law limits metals entering the sewer system • Biosolids monitoring for metal concentrations • Soil monitoring for metal concentrations • Plant uptake and removal • Regulated by the *Environment Act Licence* and the Canadian Council of Ministers of the Environment Guidelines

REDUCING NUISANCES

Nuisance Concerns	Mitigation Measures
ODOUR Biosolids have an odour	• Site selection for field storage and application sites • Setback distances from residential areas • Immediate tillage and incorporation after land application • Storage cover
DUST AND TRAFFIC IMPACTS Biosolids will be transported from the City's North End Sewage Treatment Plant to the storage site(s)	• Develop a truck traffic management plan • Dust control measures • Road repairs as required

LOCAL PROGRAM OPPORTUNITIES AND CONSTRAINTS

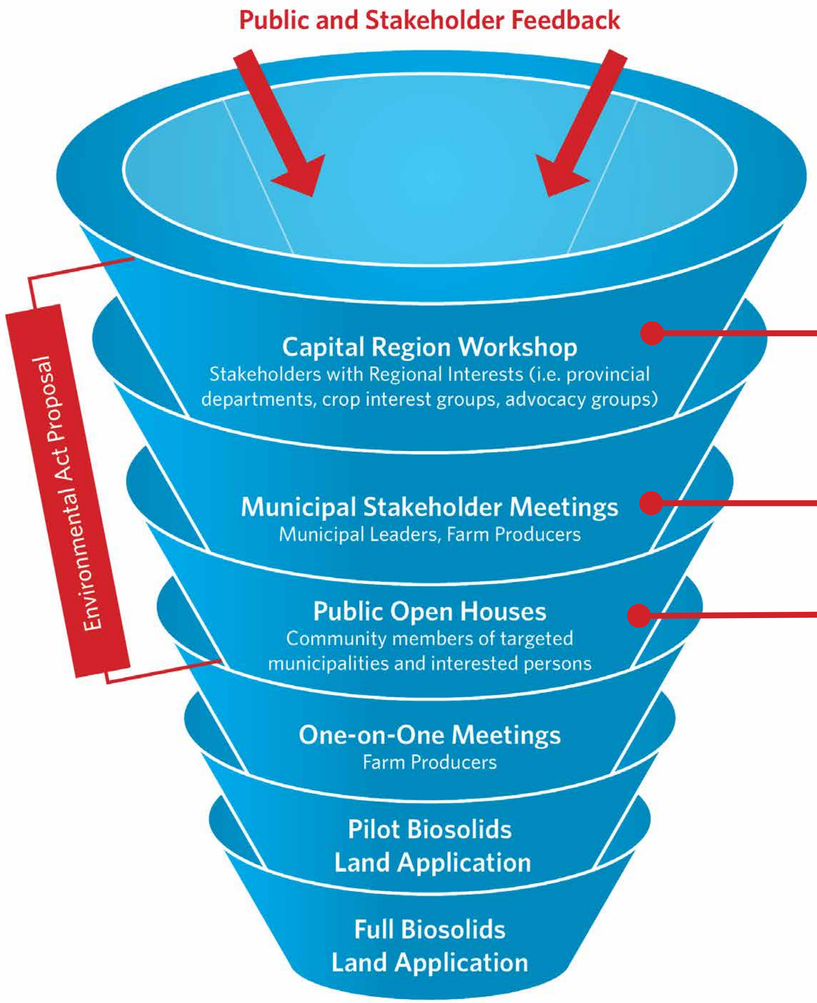
- Land availability, land suitability and agricultural characteristics influence the location that biosolids may be applied.
- Lands suitable for biosolids application are identified as having an Agricultural Capability Class 1 to 4, or a Nutrient Management Zone of N1 and N2 and identified as annually cropped.



Example of suitable land for biosolids land application in the R.M. of Macdonald

PUBLIC ENGAGEMENT PROCESS

» Engaging stakeholders, landowners, community members, and interested persons is an integral part of our process to develop a successful program.



PUBLIC ENGAGEMENT PROCESS

Regional stakeholders shared that protection of the environment, protection of public health, implementing a good neighbour principle, ensuring public awareness and transparency, and developing cooperative relationships are important guiding principles for the program.

Municipal stakeholders shared that a successful biosolids land application program would include a process to keep Council and Administration informed on where biosolids are spread, a transportation management plan, odour management, waterway protection, and community engagement.

We are here today to discuss your perspectives about biosolids land application in your community. The feedback you provide will help determine the location of biosolids land application and the program details.

NEXT STEPS AND THANK YOU

- Work with farm producers to select application sites
- Finalize the approach for field storage of biosolids
- Apply for an Environment Act Licence
- Conduct a pilot project to apply 5,000 wet tonnes (WT) of biosolids to farmland

Thank you for attending today's open house

Please submit your exit survey before you leave

For more information, please visit: **winnipeg.ca/BiosolidsLandsApplication**

Project Contact: Brock Feenstra, Public Engagement Lead

BiosolidsLandApplication@winnipeg.ca, 1-888-882-3391

Exit Survey

Please take a moment to complete this exit survey and leave it at the registration table. We appreciate your participation and value your feedback.

1. Are you (please check all that apply):

- ☐ I am a resident of the RM of: _____
- ☐ I own agricultural land in the RM of: _____
- ☐ I rent agricultural land (tenant) in the RM of: _____
- ☐ I am a farm producer
- ☐ I am a member of an agricultural group, environmental group or other interest group
- ☐ Other (please describe): _____ _____

2. What best describes your interest in the Biosolids Land Application Program (please check all that apply):

- ☐ Agricultural benefits
- ☐ Protection of the environment
- ☐ Protection of human health
- ☐ Economic impacts
- ☐ Nuisance issues such as odour or traffic
- ☐ Other (please describe): _____ _____

3. I found the information provided at this event helpful.

☐ **Strongly Agree** ☐ **Agree** ☐ **Neutral** ☐ **Disagree** ☐ **Strongly Disagree**

4. If you did not find the information helpful what information are you missing?

_____

_____

_____

_____

_____

_____

5. **Please provide comments on the following:**

   a) **Specific interests you may have in the Biosolids Land Application Program:**

   _____

   _____

   _____

   _____

   b) **Concerns you may have in regards to the Biosolids Land Application Program:**

   _____

   _____

   _____

   _____

6. **Are there any additional comments or questions you would like to share?**

_____

_____

_____

_____

7. **Optional: If you would you like to receive project updates or are an interested farm producer, please provide your contact information below:**

   ☐ I would like to receive project updates

   ☐ I am an interested farm producer

   Name_____

   Address_____

   Email _____

Thank you for attending. Your input is important to us, so please remember to hand in your exit survey at the registration table before you leave.

For more information, please visit: *winnipeg.ca/BiosolidsLandApplication*

Your personal information is being collected under the authority of 36(1)(b) of The Freedom of Information and Protection of Privacy Act. This information will be used to contact you with project updates if you wish and will not be used or disclosed for any other purposes, except as authorized by law. Your contact information will not be made public. If you have any questions about the collection or use of this information, contact the Corporate FIPPA Coordinator by mail to City Clerk's Department, Administration Building, 510 Main Street, Winnipeg MB, R3B 1B9, or by telephone at 311.

Winnipeg

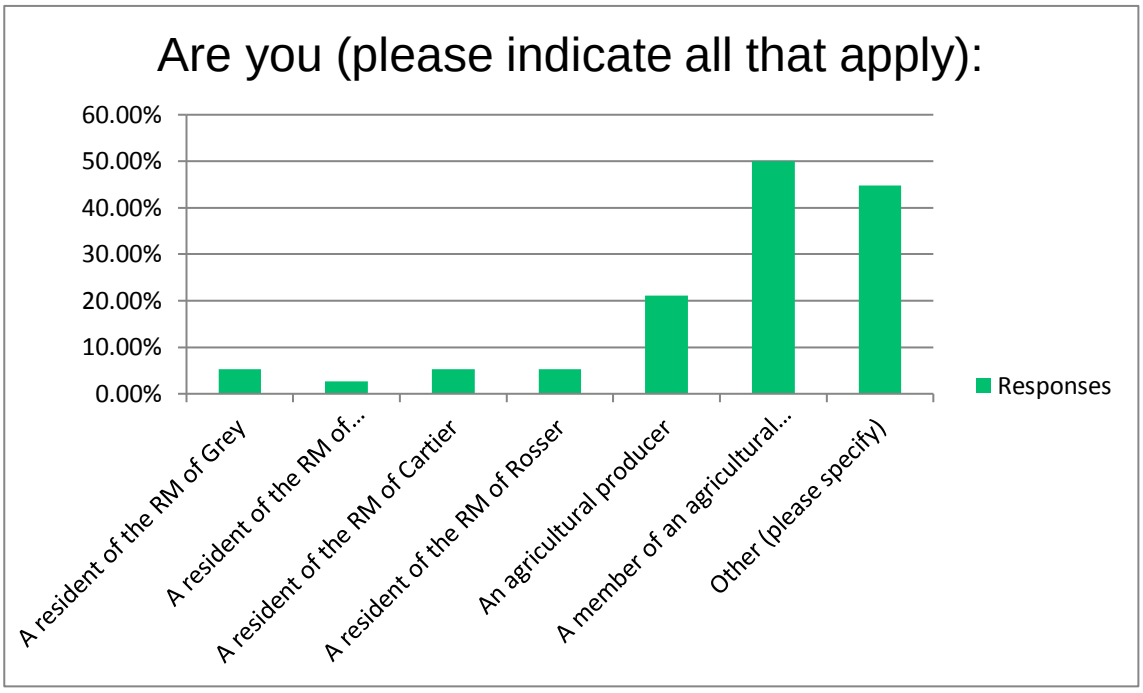
wsp

Appendix E
Survey Data

BIOSOLIDS LAND APPLICATION PROGRAM

Are you (please indicate all that apply):

Answer Choices	Responses	
A resident of the RM of Grey	5.26%	2
A resident of the RM of Macdonald	2.63%	1
A resident of the RM of Cartier	5.26%	2
A resident of the RM of Rosser	5.26%	2
An agricultural producer	21.05%	8
A member of an agricultural group, environmental group or other intere	50.00%	19
Other (please specify)	44.74%	17
	Answered	**38**
	Skipped	**2**

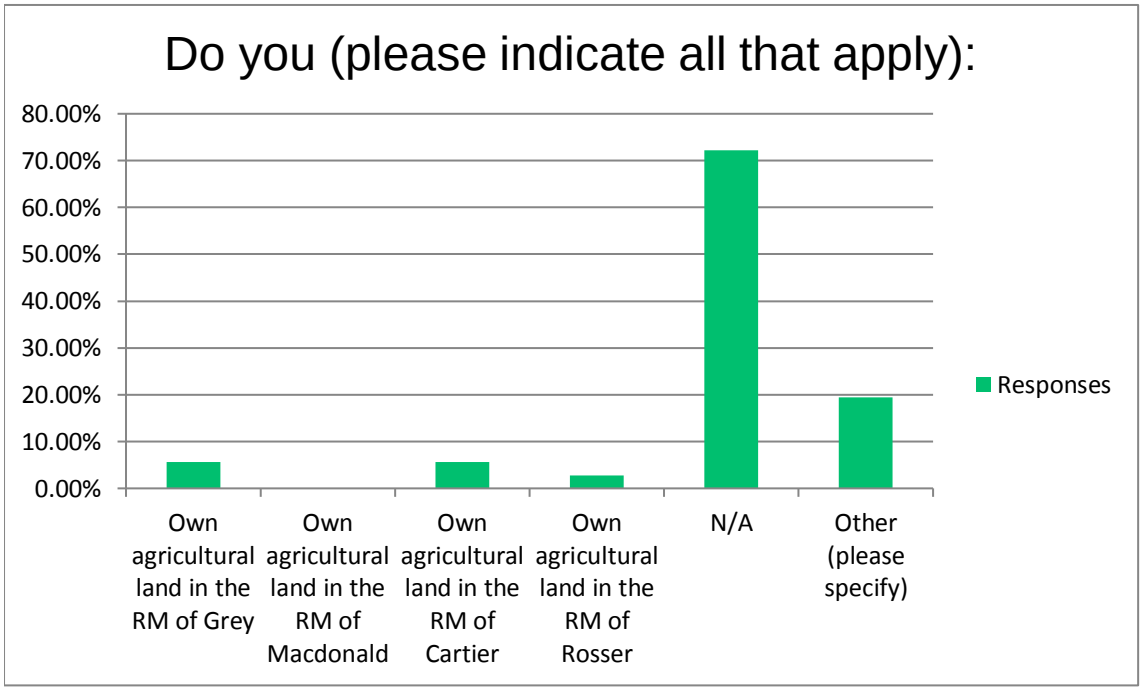


Respondents	Response Date	Other (please specify)	Categories
1	Jul 28 2017 01:38 PM	Resident of Winnipeg	
2	Jul 28 2017 10:51 AM	A concerned citizen	
3	Jul 27 2017 11:49 PM	Winnipeg resident	
4	Jul 27 2017 09:36 PM	resident of Winnipeg	
5	Jul 27 2017 04:52 PM	Winnipeg resident	
6	Jul 19 2017 10:32 AM	Colony member	
7	Jul 13 2017 12:53 PM	resident of the City of Winnipeg	
8	Jul 13 2017 12:08 PM	Resident of Winnipeg	
9	Jul 13 2017 10:06 AM	resident of City of Winnipeg	
10	Jul 09 2017 03:49 PM	Winnipeg citizen, living in Bridgwater Neighbourhood	
11	Jul 06 2017 11:46 PM	Just Joe TAXPAYER	
12	Jul 01 2017 09:13 PM	Friends of the Nicola Valley co founder, protest group against land application of sewer sludge.	
13	Jun 30 2017 02:54 AM	concerned citizen	
14	Jun 30 2017 01:36 AM	small farm operator	
15	Jun 29 2017 09:47 PM	I am against polluting our land with toxic sewage sludge	
16	Jun 29 2017 06:08 PM	Resident of B.C.	
17	Jun 29 2017 04:49 PM	Reside in Merritt BC	

BIOSOLIDS LAND APPLICATION PROGRAM

Do you (please indicate all that apply):

Answer Choices	Responses	
Own agricultural land in the RM of Grey	5.56%	2
Own agricultural land in the RM of Macdonald	0.00%	0
Own agricultural land in the RM of Cartier	5.56%	2
Own agricultural land in the RM of Rosser	2.78%	1
N/A	72.22%	26
Other (please specify)	19.44%	7
	Answered	**36**
	Skipped	**4**

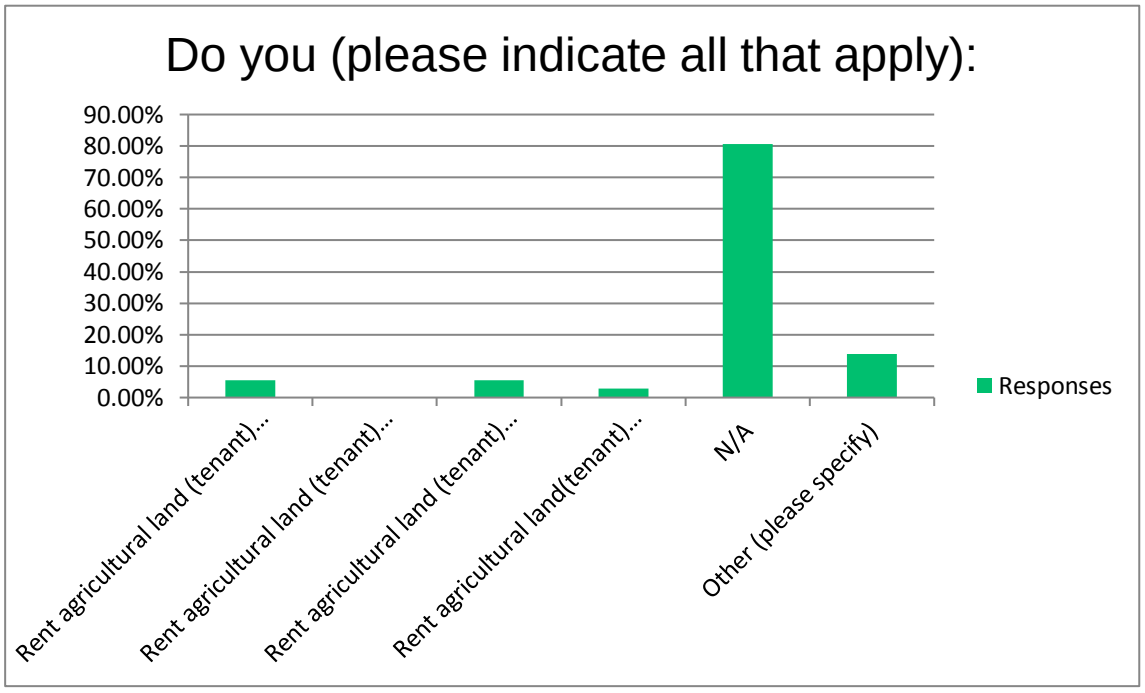


Respondents	Response Date	Other (please specify)	Categories
1	Jul 11 2017 08:32 PM	Rm of Woodlands	
2	Jul 04 2017 10:43 PM	Own agricultural land in Ontario.	
3	Jul 01 2017 09:13 PM	Own Ag land in Merritt BC	
4	Jun 30 2017 02:54 AM	own non agricultural land in area subject to bi8o9solidsd spreading	
5	Jun 30 2017 01:36 AM	private land owner	
6	Jun 29 2017 09:47 PM	I am a Canadian	
7	Jun 29 2017 06:08 PM	Resident of BC in a area where biosolids are used	

BIOSOLIDS LAND APPLICATION PROGRAM

Do you (please indicate all that apply):

Answer Choices	Responses	
Rent agricultural land (tenant) in the RM of Grey	5.56%	2
Rent agricultural land (tenant) in the RM of Macdonald	0.00%	0
Rent agricultural land (tenant) in the RM of Cartier	5.56%	2
Rent agricultural land(tenant) in the RM of Rosser	2.78%	1
N/A	80.56%	29
Other (please specify)	13.89%	5
	Answered	**36**
	Skipped	**4**

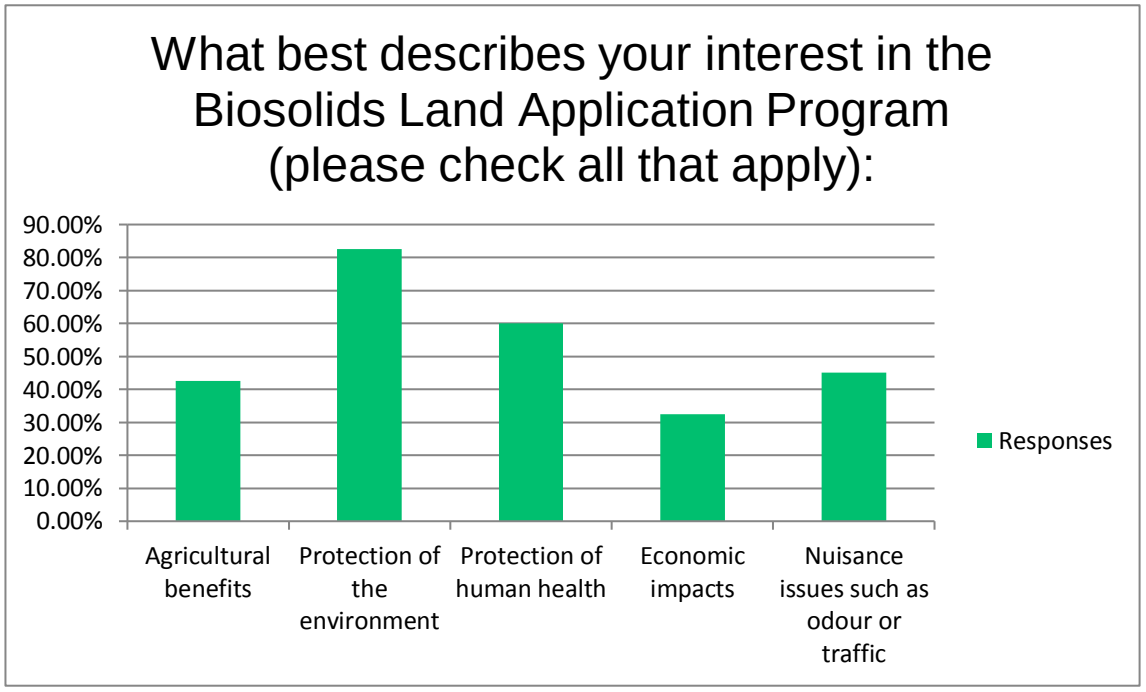


Respondents	Response Date	Other (please specify)	Categories
1	Jul 19 2017 10:27 AM	RM of Grey Reeve	
2	Jul 01 2017 09:13 PM	Own Ag land in BC	
3	Jun 30 2017 02:54 AM	see above	
4	Jun 29 2017 06:08 PM	House owner in BC Have dealt with this	
5	Jun 29 2017 04:49 PM	issue in our Valley	

BIOSOLIDS LAND APPLICATION PROGRAM

What best describes your interest in the Biosolids Land Application Program (please check all that apply):

Answer Choices	Responses	
Agricultural benefits	42.50%	17
Protection of the environment	82.50%	33
Protection of human health	60.00%	24
Economic impacts	32.50%	13
Nuisance issues such as odour or traffic	45.00%	18
Other (please describe):		11
Answered		**40**
Skipped		**0**



Respondents	Response Date	Other (please describe):	Categories
1	Jul 19 2017 10:39 AM	Job opportunities	
2	Jul 19 2017 10:27 AM	Impact on municipal roads	
3	Jul 13 2017 01:28 PM	climate change	

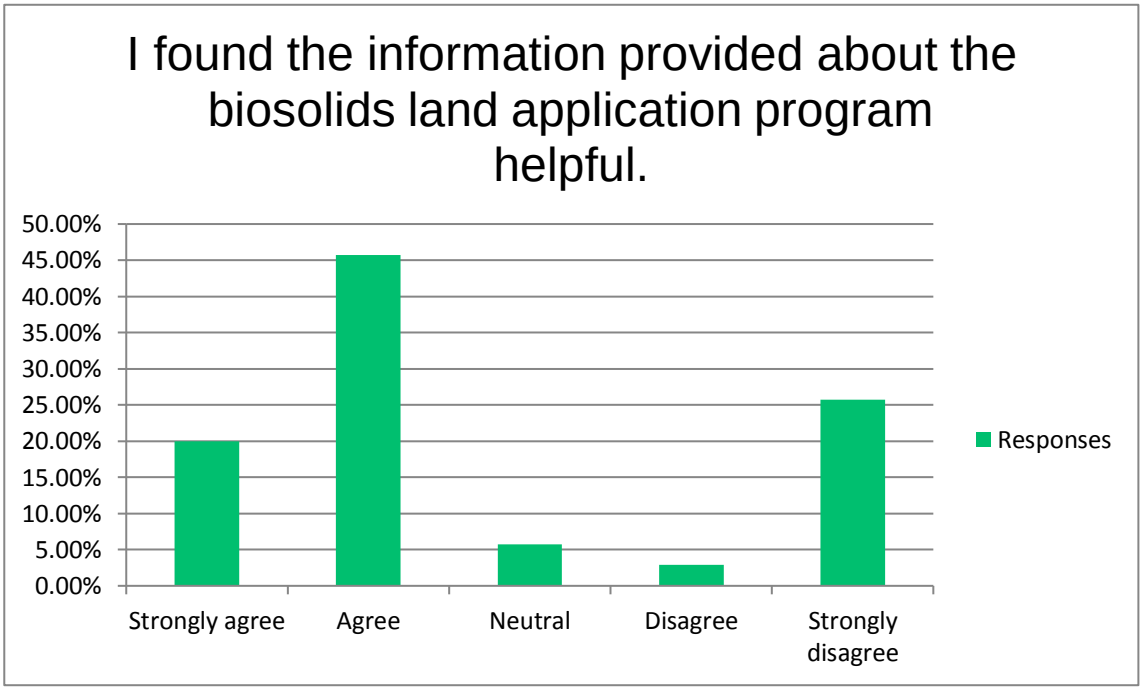
4	Jul 09 2017 03:49 PM	Do not want the biosolid odour to carry into residential neighbourhoods in the southwest area of Winnipeg. This could be problematic especially when the winds are from the south and the west. We pay very high property taxes in this area and should not have to put up with the foul smells from biosolids. Any biosolid activity must be done very far away from the city boundary and its perimeter.
5	Jul 06 2017 01:41 PM	Biosolids put copper and other environmental toxins into land and water tables. These toxins never leave. For more info, see the documentary called Crapshoot https://www.nfb.ca/film/crapshoot_the_gamble_with_our_wastes/. Note that your choice "Agricultural benefits" shows a bias to persuade survey takers to support toxic land.
6	Jul 04 2017 10:43 PM	Effect of methane and nitrous oxide released by storage and spreading of sewage biosolids on Global Warming.
7	Jul 01 2017 09:13 PM	This is toxic waste, it is NOT fertilizer, it is NOT a soil enhancer, it is TOXIC and has almost every chemical in it known to mankind. Do the research! The INDEPENDENT SCIENCE, will scare you.

8	Jun 30 2017 01:36 AM	The land application of toxic bio-solids is not a safe or sustainable farming method, knowing that there are high concentrations of prions, bacteria, heavy metals and many other toxic materials that go unreported or untested.
9	Jun 29 2017 09:47 PM	Biosolids are toxic sewage sludge. And gov't are trying to sell them or give them because they need to get rid of it.
10	Jun 29 2017 06:08 PM	Protection of wildlife, Protection of agricultural land, protection of crops and animals used in the food industry
11	Jun 29 2017 04:49 PM	There are no real regulations that protect the water, land or human factor. Prions left in the bio solids and spread on land and re-enter our food chain. Altzeimers is. Result of this practice. There are better options for energy.

BIOSOLIDS LAND APPLICATION PROGRAM

I found the information provided about the biosolids land application program helpful.

Answer Choices	Responses	
Strongly agree	20.00%	7
Agree	45.71%	16
Neutral	5.71%	2
Disagree	2.86%	1
Strongly disagree	25.71%	9
	Answered	**35**
	Skipped	**5**



BIOSOLIDS LAND APPLICATION PROGRAM

If you did not find the information helpful what information are you missing?

Answered **15**

Skipped **25**

Respondents	Response Date	Responses
1	Jul 28 2017 01:50 PM	How do biosolids differ from manure that is spread and what is to prevent double dosing of both biosolids and manure on farmland? Will biosolids migrate to other areas and waterways because of the rapid-runoff design modern farmlands? Are biosolids partially treated compared to manure which is just saved up and spread on fields?
2	Jul 27 2017 11:56 PM	Where do you find the research the City did for this? Curious and want to know more.
3	Jul 27 2017 04:56 PM	To what extent the proposed mitigation measures are expected to address the concerns raised.
4	Jul 13 2017 06:14 PM	In the soil monitoring and testing, for what substances will you be testing?
5	Jul 13 2017 12:21 PM	As this is a pilot project, I am interested in finding out whether the application of biosolids will be in partnership with farmers and an option for them to pursue, or whether it will be regulated and enforced by the municipality and larger political branches. Regarding surface and groundwater protection, I would also like to have the ways in which the measures and regulations within the Environmental Act License and the Manitoba Water Protection Act will affect, regulate, and monitor, and mitigate the potential and unknown negative effects of applying biosolids to specific nutrient zones.
6	Jul 06 2017 01:42 PM	it is misleading, biased and not based in fact
7	Jul 04 2017 11:15 PM	The scientific and rational case that opposes sewage spreading on farmland and in forests.
8	Jul 01 2017 09:34 PM	Unless you srarch for the independent science you are being lied to . Sludge industry pays gov't huge money to keep this toxic gravy train going, go to sludgefacts.org .... Cornell University Study...2008... independent science... just for starters.
9	Jun 30 2017 03:05 AM	the information about the prevalence, toxicity, and non-degradable and bioaccumulative dangers of the thousands of identified and unidentified ESOC's in processed sewage sludge ("biosolids.")
10	Jun 30 2017 01:56 AM	The information regarding sample testing for all toxins,cancer causing agents, industrial solvents, heavy metals, prions, female hormones ? Lack of test results and on-going test monitoring made public and frequency of tests ? Why isnt this info available ?
11	Jun 29 2017 09:54 PM	The truth is biosolids are toxic sewage sludge.

12	Jun 29 2017 08:14 PM	A thorough analysis of the myriad of toxins etc present in sewage sludge and the risks posed to humans and animals. If this was too toxic to continue releasing effluent into our oceans and waterways in the 70's how are these contaminants now rendered benign. Where are the unbiased peer reviewed studies showing how these contaminants are made harmless. Especially concerned about PRIONS which I understand are nearly indestructible. I unknowingly purchased sewage sludge "biosolids" a number of years ago from a civic, rural producer which would have far fewer contaminants than an urban setting and NOTHING grows in this "topsoil", not even weeds. Ask yourselves if you are prepared to carry the responsibility for selling this to your community when there is plenty of clear data available showing how unsound the practice of using this where it will contaminate people, plants and wildlife.
13	Jun 29 2017 06:34 PM	No negative information provided with respect to the use of biosolids and there are credible sites - such as Health Canada, for recent information on Prions.
14	Jun 29 2017 04:52 PM	Real unbiased science is missing
15	Jun 29 2017 04:39 PM	The negative impacts were not brought out sufficiently.

BIOSOLIDS LAND APPLICATION PROGRAM

Please provide comments on any specific interests you may have in the Biosolids Land Application Program:

Answered	**20**
Skipped	**20**

Respondents	Response Date	Responses
1	Jul 28 2017 01:50 PM	See #6
2	Jul 27 2017 11:56 PM	A year ago, I went to a discussion on biosolids and found the scientists knowledgeable and broke it down for me.
3	Jul 27 2017 11:14 PM	Which specific bacterial species are present before and after application of biosolids to the land? How do the numbers change after one year on the land?
4	Jul 27 2017 04:56 PM	The reuse of a resource rather than landfilling is important to me.
5	Jul 27 2017 04:56 PM	I think the Program is brilliant, at least in theory, and I look forward to seeing it implemented.
6	Jul 19 2017 10:40 AM	Interested in job opportunities (currently enrolled in Environmental Engineering program in University)
7	Jul 19 2017 10:28 AM	Nutrient value of soil. Quantity available and application roles Application and incorporation
8	Jul 13 2017 01:29 PM	keenly interested in reducing greenhouse gas emissions and using the biosolids to enrich soils without synthetic fertilizers
9	Jul 13 2017 12:21 PM	I study at the University of Winnipeg and am interested in the relationship between Winnipeg's physical borders and the rural communities surrounding Winnipeg. As this pilot project creates a direct relationship between Winnipeg and surrounding areas, with environmental impact, I am interested in learning more about how this project will be regulated and monitored.
10	Jul 06 2017 11:50 PM	If the biosolids are going to be trucked, then the appropriate routing must be considered, and those streets in GOOD REPAIR >
11	Jul 06 2017 01:42 PM	ditch the program to protect all of us
12	Jul 04 2017 11:15 PM	I am concerned about the failure to evaluate the existing sewage spreading programs in Canada and the USA by conducting health studies of people living near sewage spreading sites and comparing their health problems to those living further away.

13	Jul 01 2017 09:34 PM	This is a long time propaganda machine of misinformation spread by special interest groups who ate making HUGE money off the trucking and gov't contracts to take sewer sludge from cities and bullshit farmers into thinking it is good for the land... Google 'Georgia Farmers Biosolids case' Augusta Georgia nightmare... all true!
14	Jun 30 2017 03:05 AM	I am a citizen who has been negatively impacted by biosoolids land application programs.
15	Jun 30 2017 01:56 AM	This program is a failure, adding toxins to farmland and selling it as fertilizer is wrong. I would never add this toxic mixture into my own garden let and eat from it.
16	Jun 29 2017 09:54 PM	Don't believe the propaganda that is saying it is good fertilizer. Read the research by unbiased scientists.
17	Jun 29 2017 08:14 PM	A deeply concerned citizen who wishes all communities contemplating using sewage sludge to look far deeper than the "biosolids" industry wants you to. Don't poison your people, please.
18	Jun 29 2017 06:34 PM	The total lack of information about the negative impacts of the land use of biosolids and the fact there are no viable alternatives to this practice proposed. The information reads like that which is provided by the sludge (biosolid) handlers which is, by design, slanted in favor of land application.
19	Jun 29 2017 04:52 PM	This practice needs to stop to protect human life. The medical costs will put way the benefits.
20	Jun 29 2017 04:39 PM	This is toxic waste, not compost, and should be gasified for its energy value.

BIOSOLIDS LAND APPLICATION PROGRAM

Please provide comments on any concerns you may have in regards to the Biosolids Land Application Program:

Answered **25**
Skipped **15**

Respondents	Response Date	Responses
1	Jul 28 2017 01:50 PM	See #6
2	Jul 28 2017 10:53 AM	A southwest wind will bring any odor into Winnipeg
3	Jul 27 2017 11:56 PM	Are there toxins in the sewer system? Will these be filtered out? Will there be laws and restrictions of what your pour down the sink?
4	Jul 27 2017 11:14 PM	Plans to follow up with repeat testing after one and two years?
5	Jul 27 2017 09:37 PM	concern that a valuable resource is currently going to waste
6	Jul 27 2017 04:56 PM	Land application is important. I would hope that the City spends time researching and communicating on all aspects of this to reduce the opportunity for naysayers (they will rise) to claim environmental and health harm based on antidotal evidence.
7	Jul 19 2017 10:38 AM	Contamination from pharmaceuticals
8	Jul 19 2017 10:32 AM	Human health Environmental concerns
9	Jul 19 2017 10:28 AM	Road impact. Storage sites. Wet fall, spreader should be on tracks to reduce compaction wet fall or not.
10	Jul 13 2017 06:14 PM	I would like assurances that adequate resources be allocated to enforcement of your mitigation measures
11	Jul 13 2017 01:29 PM	keep ecosystems healthy

12	Jul 13 2017 12:21 PM	I am concerned that three years of monitoring following the application of biosolids is not enough given the increasing fragility of Manitoba's natural ecosystems, wetlands, and bodies of water that are directly impacted by nutrient activity downstream. I am also concerned about the metal loading into the soil. There have been an increasing number of incidents where protections to water and food sources have not been drastic enough. I would be interested a comparison between how lime-stabilized biosolids affect metal loading in certain soils. I refer to a study by Y. Mamindy-Pajany, "Impact of lime-stabilized biosolid application on Cu, Ni, Pb and Zn mobility in an acidic soil," which looks at the impact of lime-stabilized biosolids.
13	Jul 13 2017 10:56 AM	Ensuring runoff is reduced to minimize impact on Lake Winnipeg.
14	Jul 13 2017 10:09 AM	I noted that although the land around the Red River was not considered for application due to flood concerns no such restriction was marked for the Assiniboine River or other small rivers that may also experience flooding. I think the distance from such rivers should be increased because of such concerns.
15	Jul 06 2017 11:50 PM	good idea
16	Jul 06 2017 01:42 PM	it is unhealthy
17	Jul 04 2017 11:15 PM	Spreading sewage sludge as fertilizer on farmland is illegal under the Fertilizer Act because it is so highly contaminated with pathogens and chemicals. Governments are pretending the Act does not apply if the biosolids are given away for free, but this is not what the Act says and the practice will therefore be stopped and spreaders held liable for damages arising when this matter reaches the Supreme Court. See http://www.oag-bvg.gc.ca/internet/English/pet_306_e_35204.html
18	Jul 01 2017 09:34 PM	Testing is not even close to adequate, emerging contaminants are not tested... this is tobacco all over again, likely worse.
19	Jun 30 2017 03:05 AM	Odour, illness, and long-term and likely irreversible contamination of forest, farm and ranchland by metals, ESOC's, pathogens and very possibly prions.

20	Jun 30 2017 01:56 AM	This program needs to be changed completely...toxic bio-solids on farmland is a ticking time bomb. break down bio-solids with gasification/pyrolysis and separate all the toxins from the nitrogen and phosphorous components before land application.
21	Jun 29 2017 09:54 PM	Land application is pollution that ends up back in the water. Gov'ts need to deal with this toxin in a responsible manner.
22	Jun 29 2017 08:14 PM	This industry has done a first class PR job in selling a highly contaminated as a beneficial fertilizer. Buyer beware.
23	Jun 29 2017 06:34 PM	You comment that the issue of metal in your biosolids is negligible due to your regulations around what can go into your sewer system. It does not give any information on the industrial, hospital, animal, plant/food waste that goes into the sewer system. It minimizes the information on pharmaceuticals and industrial pollutants that are in biosolids and the fact that much of the content has, like nuclear medicine (or a nuclear accident), several "lives" and that these issues will not disappear out of the biosolids for several generations. You do not address the fact that our wildlife cannot read, nor do the cows or the steers -- they are not going to pay any attention to the notices that there is no grazing on this land as it has had a biosolids application within the last ? period of time. No one has addressed the air pollution and the spores that are released into the atmosphere when the biosolids are being "processed" Yes there are setback regulations proposed -- I have yet to see a windstorm that has any regard whatsoever for setbacks.
24	Jun 29 2017 04:52 PM	Please look up the science from Dr. Carolyn Sneider and Dr. David Lewis.
25	Jun 29 2017 04:39 PM	Spreading a city's toxic burden on farmland under the guise of fertilize is reckless and disingenuous.

BIOSOLIDS LAND APPLICATION PROGRAM

Are there any additional comments or questions you would like to share?

Answered	**17**
Skipped	**23**

Respondents	Response Date	Responses
1	Jul 28 2017 01:50 PM	Overall, it seems like a practical solution if managed properly. How much biosolids can be used this way compared to how much the city produces? It shouldn't become a dumping ground, which I think some manure spreading is. How can farmers opt out or opt in? Do you expect push back from fertilizer companies?
2	Jul 28 2017 10:53 AM	That area always seems to be extremely wet in the spring and taking the longest to drain. Where will this drain to? Could it be a mosquito breeding ground? Will it stink like the pig farms we drive past?
3	Jul 27 2017 11:56 PM	Where do we find data of how effective this is? What other cities are doing it? What was the result of food produced with biosolids applied to fertalizer?
4	Jul 27 2017 11:14 PM	No
5	Jul 27 2017 04:56 PM	Put a lot of the information on the website so when citizens or the press or Councillors ask, they have a reviewed source of information.
6	Jul 19 2017 10:38 AM	Well prepared and knowledgeable staff
7	Jul 13 2017 12:54 PM	This sounds like a great idea and a good way to move into the 21st century.
8	Jul 13 2017 12:21 PM	Thank you for making such a clear and open ended survey that allows for open-ended answers, concerns, and questions. Much appreciated.
9	Jul 13 2017 10:09 AM	If properly applied I think the biosolids application to farm land could be beneficial but there would have to be assurances that no matter could escape into the waterways or ground water.
10	Jul 11 2017 08:37 PM	We had biosolids applied previously and were very satisfied
11	Jul 06 2017 11:50 PM	get it done with as little cost to taxpayers.

12	Jul 04 2017 11:15 PM	A proper public evaluation requires that people hear both sides of the controversy around the health and environmental effects of spreading sewage sludge as fertilizer on farmland. All I see here is pro sludge spreading propaganda typical of the government/industry collusion in hiding the problems arising from the public. See http://unpublishedottawa.com/letter/41217/submission-ccme-sewage-biosolids-discussion-phase-2-ottawa-citizens-against-pollution
13	Jul 01 2017 09:34 PM	Alternative processing such as Pryrolysis and Gasification are two waste to energy options, Zurich Switzerland doing it successfully!
14	Jun 30 2017 03:05 AM	Until such time as the host of heavy metals, pathogens, prions and dangerous organic chemicals can be removed at source, use some form of thermal decomposition (like gasification) to break down the chemicals and destroy the prions and pathogens. Sequester the char in cement or asphalt, and remove the phosphorus and other valuable elements for re-use. As the technology and practice now stand, spreading sewage sludge on land is too fraught with real and potential dangers to qualify as a safe or responsible"re-use" or "recycling" of anything. it's too dangerous. Invoke the precautionary principle
15	Jun 29 2017 09:54 PM	Often what seems to be cheapest will cost more in the end. This is what land application of toxins will accomplish, and we will pay for it big time.

16 Jun 29 2017 06:34 PM

Prions that are infected kill. You cannot kill them. You can immobilize them so they cannot move around (mix in concrete). You need to inform the citizens of Manitoba that they need to be aware that "Mad Cow" also known as Prion diseases, collectively called transmissible spongiform encephalopathy's (TSEs), ARE UNTREATABLE AND FATAL., The only known infectious agents that do not contain DNA or RNA but do cause progressive neurodegenerative conditions in animals and humans such as Creutzfeldt-Jakob disease (CJD) seen in humans. Our Ministry of Health has just released a little seen warning to citizens about deer and other wild meat that have contained infected Prions, that this has caused "wasting disease" in these animals and that it is now believed that Pion disease is transmittable to humans.

17 Jun 29 2017 04:39 PM

Dr. Richard Honour - ""Few in any governments appreciate that nearly all chronic diseases are caused by long-term exposure to low levels of environmental contaminants and pollutants. We should be trying to minimize this exposure, not amplifying it. It is time to end land disposal of Toxic Sewer sludge, and look at cleaner, greener alternatives - gasification / pyrolysis." Let's get on the right side of history, and use this waste resource to make energy. It is time to stop covering Mother Earth with our cities' toxic sewage.

BIOSOLIDS LAND APPLICATION PROGRAM

Are you a farm producer interested in participating in the program?

Answer Choices	Responses	
Yes	6.67%	2
No	93.33%	28
	Answered	**30**
	Skipped	**10**