MISSISSIPPI-RIDEAU SOURCE PROTECTION REGION
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MINUTES

Mississippi-Rideau
Source Protection Committee January 6, 2011 #1/11

Meeting Location:	Rideau Valley Conservation Authority 3889 Rideau Valley Drive, Manotick, Ontario	
Present:	Scott Berquist	George Braithwaite
	Scott Bryce	Carol Dillon
	Richard Fraser	Paul Knowles
	Drew Lampman	Patricia Larkin
	Randy Malcolm	Peter McLaren
	Beverly Millar	Eleanor Renaud
	Tammy Rose	Janet Stavinga (Chair)
	Alan Arbuckle	(Source Protection Authority Liaison)
	Jean-Guy Albert	(Medical Officer of Health Liaison)
	Mary Wooding	(Ministry of the Environment Liaison)
SPA Members:	Mark Burnham	(Chair, Mississippi Valley SPA)
Staff:	Sommer Casgrain-Robertson	Allison Gibbons
	Michelle Paton	Brian Stratton
Guests:	Terry Davidson (RVCA)	Jennifer Gray (RVCA)
	Dell Hallett (RVCA)	Tyler Hicks (City of Ottawa)
	Michel Kearney (City of Ottawa)	Andrea Klymko (RVCA)
	Shelley Macpherson (RVCA)	Phyllis MacMaster (OMAFRA)
	Derek Matheson (RVCA)	Glen McDonald (RVCA)
	Daniel Nugent-Bowman (Metroland Media)	
	Robin Van de Lande (City of Ottawa)	

1.0 Welcome and Introductions

Chair Stavinga welcomed everyone to the meeting and asked all participants to introduce themselves.

a) Agenda Review

Chair Stavinga reviewed the purpose of the meeting and the Agenda.

b) Notice of Proxies None

c) Adoption of the Agenda

Chair Stavinga proposed an amendment to the Agenda to include, under Item 4.0d., a discussion about moderate and low drinking water threats.

Motion 1-1/11

That the Agenda be approved as amended.

Carried

d) Declarations of Interest **None**

e) Approval of Minutes

With respect to Item 1.0f (Status of Action Items) #5, Jean-Guy Albert clarified that he had contacted the Ontario Ministry of Health and Long Term Care and that the fact sheet was produced by Health Canada.

Patricia Larkin recommended that, under Item 5.0 (Other Business), “health issue” be changed to “health risk”.

Motion 2-1/11

That the minutes of the Mississippi-Rideau Source Protection Committee meeting of December 2, 2010 be approved as amended.

Carried

f) Status of Action Items

Motion 3-1/11

That the Mississippi-Rideau Source Protection Committee receive the Status of Action Items Report for information.

Carried

g) Correspondence

Motion 4-1/11

That the Mississippi-Rideau Source Protection Committee receive the correspondence for information.

Carried

2.0 ***Nutrient Management Act*** **Presentation**

Allison Gibbons introduced Phyllis MacMaster, Environmental Specialist with the Ontario Ministry of Agriculture, Food, and Rural Affairs.

Phyllis MacMaster delivered a technical presentation on the *Nutrient Management Act,* including information on Nutrient Management Strategies and Nutrient Management Plans and on agricultural source materials.

Ms. MacMaster confirmed that the *Nutrient Management Act* was introduced in 2003. Nutrient Management Plans are in effect for a term of five years. There is an enforcement and compliance component to the plans.

Ms. MacMaster reviewed setback and flow path requirements. When asked if a local municipality could require more stringent setbacks from municipal wells, Ms. MacMaster advised that current Nutrient Management Regulations supersede municipal bylaws.

Ms. MacMaster confirmed that grazing and livestock access to surface water are not addressed by nutrient management regulations. Farmers are encouraged to consider best management practices such as fencing or restricting livestock from creeks and streams. Ms. MacMaster advised that complaints regarding unrestricted livestock access to surface water are referred to the Ministry of the Environment's Spills Action Centre.

A member raised a concern about setbacks to private wells pointing out that while municipal wells serve many people the water is tested and treated regularly. Conversely, private wells may only be tested once or twice a year. The larger setbacks required for municipal wells seem to afford greater protection for systems that already have stringent safeguards in place.

In response to questions raised during her presentation, Ms. MacMaster was asked to report back to the Committee on the definition of municipal wells, specifically if it includes municipal surface water intakes. As well, Ms. MacMaster offered to provide a chart showing the nutrient units of various animals. Ms. MacMaster agreed to work with staff in contacting the Ministry of the Environment to arrange for an Agricultural Environmental Protection Officer to appear before the Committee. Ms. MacMaster offered to research and report back on the number of Nutrient Management Strategies and Plans that have been filed in the Mississippi-Rideau area.

Chair Stavinga thanked Ms. MacMaster for her presentation.

3.0 Source Protection Plan – Decision Making Process

Sommer Casgrain-Robertson advised that Allison Gibbons would be taking a lead role in the development of the Source Protection Plans.

Ms. Casgrain-Robertson advised that the member assignments, dates, times,

and locations for the upcoming municipal group meetings would be sent out electronically within the week.

Allison Gibbons spoke to the planning phase and the effectiveness of proposed policies. She stated that we currently have clean water, that scientifically based vulnerable areas have been delineated, and that an extensive list of proven environmental protection measures and best practices is available to choose from. She added that staff will only bring forward policy options that they feel will adequately address a threat. Ms. Gibbons reminded members that a threat does not necessarily need to be eliminated; many can be managed. A targeted consultation process will help provide additional guidance and answers.

Ms. Gibbons advised members that the four themes comprising the Guiding Principles originated from comments brought forward by members at the December 2010 meeting. She reviewed the Qualitative Evaluation Framework - a series of questions based on the guiding principles, designed to help evaluate different policy options. She then took members through a proposed decision making process that could be used to develop preliminary and draft source protection policies.

When discussing impacts under the Qualitative Evaluation Framework, a member questioned the need to ask both “Does it put water first?” and “Will it adequately protect the source water?” Following a discussion, the Committee agreed to combine the two questions into one reading “Does it put water first by adequately protecting the source water?”

Members discussed the language used in the Qualitative Evaluation Framework and agreed to retain the words “easy” or “easily” under Acceptance and Practicality. Members agreed to add an additional question under Practicality, “Will it be relatively easy to monitor the effectiveness of the policy?”

Members also discussed the benefits of qualitative frameworks versus quantitative ones. Chair Stavinga clarified that the Qualitative Evaluation Framework was drafted as a conceptual process that would allow Committee Members to ask a series of questions when looking at policies. These specific questions would be consistently asked each time a policy was proposed.

Mark Burnham recommended that “More thought needed” be added to the flow chart box containing “More information needed” and “Park until future meeting”.

Mary Wooding confirmed that there is an annual reporting requirement to the Ministry of the Environment on the effectiveness of the policy.

Motion 5-1/11

That the Mississippi-Rideau Source Protection Committee approve the Qualitative Evaluation Framework as amended based on the Guiding Principles generated by SPC members at their December 2, 2010 meeting.

Carried

Motion 6-1/11

That the Mississippi-Rideau Source Protection Committee approve the Policy Decision Making Process as amended.

Carried

4.0 Source Protection Plan – Preliminary Policy Development

Allison Gibbons directed Committee Members to the Drinking Water Source Protection Background Document relating to the application and storage of agricultural source material.

Ms. Gibbons presented three agricultural source material policy options for consideration. She clarified that a Risk Management Plan could be implemented by the municipality or the municipality could delegate the responsibility to another body such as a Health Unit or Conservation Authority. A Nutrient Management Plan would be implemented by the Ontario Ministry of Agriculture, Food and Rural Affairs and enforced by the Ontario Ministry of the Environment.

Motion 7-1/11

That the Mississippi-Rideau Source Protection Committee approve the extension of this meeting beyond the normal allowance of four hours.

Carried

Ms. Gibbons led Committee Members through the Qualitative Evaluation Framework for all three policy options. Committee Members discussed the options and their impact on Intake Protection Zones and Wellhead Protection Areas. They also discussed the possibility of requiring Risk Management Plans that would incorporate appropriate elements from Nutrient Management Plans and scope them depending on the location of the activity within an Intake Protection Zone or Wellhead Protection Area.

Committee Members agreed that every policy should have a strong public education component.

Mary Wooding reminded Committee Members that, when drafting policies, all policy tools must be investigated first and that prohibition should be considered only as a last resort.

Staff confirmed that no targeted consultations would take place before March.

A fourth policy option was created and staff was directed to word this new policy option and bring it back to the Committee for approval.

Motion 8-1/11

That the Mississippi-Rideau Source Protection Committee direct staff to draft Policy Option #4 as the Preliminary Policy Concept for Agricultural Source Material and bring it before the Committee on February 3, 2011.

Carried

Motion 9-1/11

Moved by: George Braithwaite
Seconded by: Eleanor Renaud

That the Mississippi-Rideau Source Protection Committee direct staff to draft a report on the targeted consultation process and bring it before the Committee on February 3, 2011.

Carried

Motion 10-1/11

Moved by: Paul Knowles
Seconded by: Patricia Larkin

That the Mississippi-Rideau Source Protection Committee direct staff to take the new policy option for Agricultural Source Material and apply it to Grazing, Pasturing, Outdoor Confinement Areas and Farm-animal Yards, and bring the redrafted policy option to the Committee at a future meeting for approval.

Carried

Motion 11-1/11

Moved by: Carol Dillon
Seconded by: Scott Berquist

That the Mississippi-Rideau Source Protection Committee direct staff to refine the report on Non-Agricultural Source Material and present it to the Committee at a future meeting.

Carried

Chair Stavinga applauded Allison Gibbons and staff for their efforts in this first endeavour at policy planning.

5.0 Community Outreach

Motion 12-01/11

That the Mississippi-Rideau Source Protection Committee receive the Community Outreach staff report for information

Carried

6.0 Other Business

Chair Stavinga advised that two local municipalities have been approved for funding under the Ontario Drinking Water Stewardship Program's Early Response Program. The Village of Merrickville-Wolford and the Municipality of North Grenville both received substantial funding to deepen their municipal well casings to ensure they are only drawing water from the deeper Nepean aquifer which will dramatically reduce the number of potential significant threats in those two Wellhead Protection Areas.

Chair Stavinga praised Derek Matheson, Rideau Valley Rural Clean Water Program Manager, whose efforts were invaluable in facilitating both applications.

Chair Stavinga recommended deferring amended Agenda item 4.0d to a future meeting.

Motion 13-1/11

Moved by: Beverly Millar
Seconded by: Drew Lampman

That Agenda Item 4.0d, a discussion on moderate to low threats, be deferred to a future meeting.

Carried

In response to a question from Carol Dillon, Sommer Casgrain-Robertson confirmed that she would be forwarding Hugh Simpson's voluntary questionnaire to all Committee Members.

Beverly Millar advised members that a shale gas extraction project in Quebec that used hydraulic fracturing or "fracking" had been stopped.

7.0 Member Inquiries None

8.0 Next Meeting

9.0 Adjournment

The meeting was adjourned at 6:25 pm.

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Janet Stavinga	**Michelle Paton**
Chair	**Recording Secretary**

Nutrient Management Act

Phyllis MacMaster, Environmental Specialist, OMAFRA Kemptville

January 6, 2011

Nutrient Management Act Overview

1. What is a NMS and NMP?
2. Who Needs a NMS or NMP?
3. Storage
4. Runoff Management
5. Land Application of ASM
6. NASM Framework
7. Dead Animal Disposal on Farm

Nutrient Management Strategy (NMS)

- Takes into account:
  - Types and numbers of livestock
  - Type of housing and manure management
  - Manure volumes produced
  - Manure storage requirements
  - Runoff management
  - Land available to utilize the manure
  - Location of wells, wetlands, surface water, tile inlets
  - Location of nearest municipal well

Nutrient Management Plan (NMP)

- Takes into account
  - Land application of nutrients
  - Soil and manure sampling
  - Available land, soil types, slopes
  - Crop rotation
  - Setbacks to wells, surface water, tile inlets
  - Maximum application rate
  - Vegetative buffer zone
  - Winter application

Nutrient Management Plan: The Basic Equation

Nutrients Available in:
Soil and Crop Residue

+

Nutrients Available in: **Manure or AD Digestate or NASM or Compost**

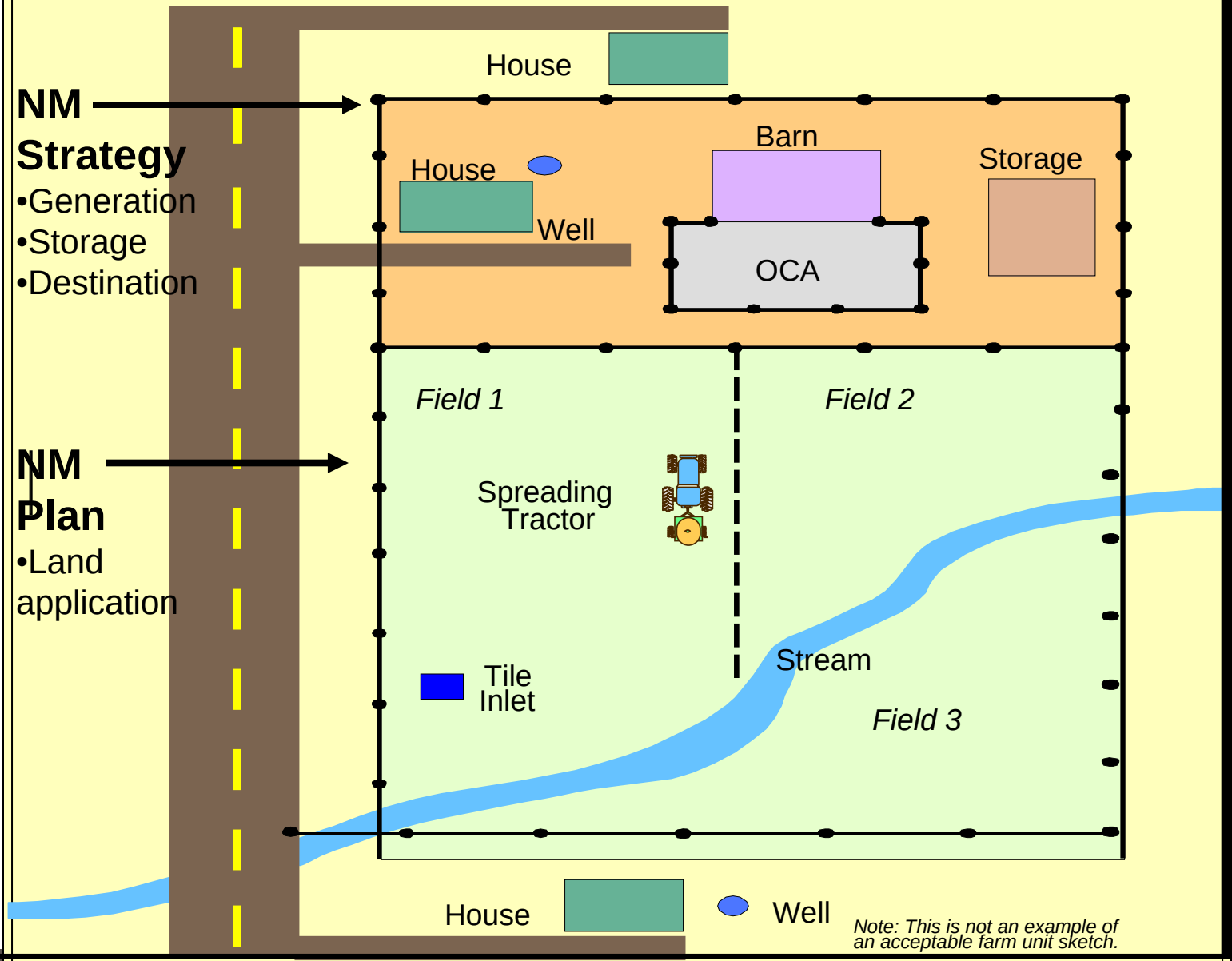
+

Nutrients Available in:
Commercial Fertilizer

=

Nutrients Available for Crop Growth

Nutrient Management -- Strategy vs Plan



Who Needs a Nutrient Management Strategy

Farm Unit is > 5 Nutrient Units **and**

1. Applying for a Building Permit for a new or expanded
   - Livestock housing facility
   - Manure storage
2. Constructing an earthen manure storage
3. Constructing a Mix Anaerobic Digester Facility
4. Farms with or expanding to 300 Nutrient Units or greater

Need

- Nutrient Management Strategy approved by the Province
- Follow Siting and Construction Standards

Who Needs a Nutrient Management Plan

Need to have a NMS first then if

1. Farm Unit is 300 NU or greater
2. If any part of the Farm Unit is within 100 m of a municipal well
3. If applying NASM, 300 NU or greater and have a valid C of A

New or Expanded Manure Storages

- 240 days of storage capacity
  - Permanent storage
  - Temporary Field Storage
  - Period of Use (pasture and confinement)
  - Mounding in a Outdoor Confinement Area
  - Land Application
  - Transfers or Broker Agreements

New or Expanded Storages – Siting and Construction

Liquid storages

- must follow the siting and construction standards
  - Site Characterization Analysis
  - Engineer Design
  - Setback from Wells
    - Municpal Well 100m
    - Drilled Well 15m
    - Any Other Well 30m
  - 50 m flowpath to surface water and tile inlets

New or Expanded Storages – Siting and Construction

Solid Storages 600 sq meters or less

Exempt from Part VIII except for siting & runoff management

- Setback from Wells
  - Municipal Well 100m
  - Drilled Well 15m
  - Any Other Well 30m
- 50 m flowpath to surface water and tile inlets

Solid Storages greater than 600 sq metres

Subject to regulations

- Engineer design
- Siting as abpve
- Runoff Management

Outdoor Confinement Areas

OCA

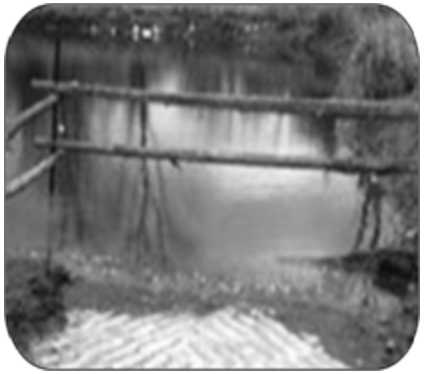
- Feeding operations where animals fed or watered at the enclosure
- 200 days or 4800 hours use per year
- Maximum size 2000 sq. metres
- 50% of dry matter comes from stored feed
- Can mound and manage manure at site
- Runoff Management

Livestock Yards

- Exercise areas for livestock
- No feed or water at site
- Dry Matter of Manure 30%
- Runoff Management

Grazing and Access to Surface Water

- Best Management Practices Recommended
  - Fencing or restrict livestock from creeks and streams
    - Reduce erosion
    - Improve water quality
    - Improve public image



Temporary Field Storage Sites

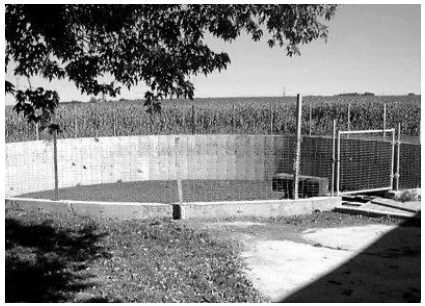
- Be at least:
  - 0.3m above bedrock under site & within 3m from edge of pile
  - 0.9m above water table under site & within 3m from edge of pile
  - 45m from a drilled well, 90m from other well, and 100m from municipal well
  - 125m from single residence and 250m from residential area
- Have a:
  - slope of 3% or less
  - flowpath at least 50m from surface water
- Not be:
  - in 1 in 100 year flood plain
  - on soil group AA (sandy soil over bedrock)
- If on tile need to have a contingency plan to monitor tile outlets

Temporary Field Storage

- Sites have to be managed
- Only for solid manure
  - Calculate days of storage
    - Site characteristics – soil, drainage
    - Type of material, dry matter content,
    - Nutrient content
    - Size of pile
    - Covering and turning the material
    - How often site is used

Runoff Management for Storages, OCA, Yards

1. Eliminate – roof
2. Store in liquid storage or tank
3. Vegetative filter strip system
4. Permanently vegetative area

Permanently Vegetative Area

- At least .5 m of soil
- Not located within
  - 3 m of field tile
  - 100 m from municipal well
  - 15 m of drilled well
  - 30 m any other well
- Has to be permanently vegetative

Permanently Vegetative Area (pva)

OCA's

- Number of animals < 150 NU

<500 sq m. in size

- 100 m pva

500 to 2000 sq m

- 150 m pva

Manure Storages and Yards

- Manure Storage Size 300 sq. m or <
- Dry Matter 50% or > needs 50 m pva
- Dry Matter 30to 50% needs 150 m pva

Land Application of Agricultural Source Materials

- Applies to farms with a NMP
- Wells
- Vegetative Buffer Zones
- Surface Water
- Tile Inlets

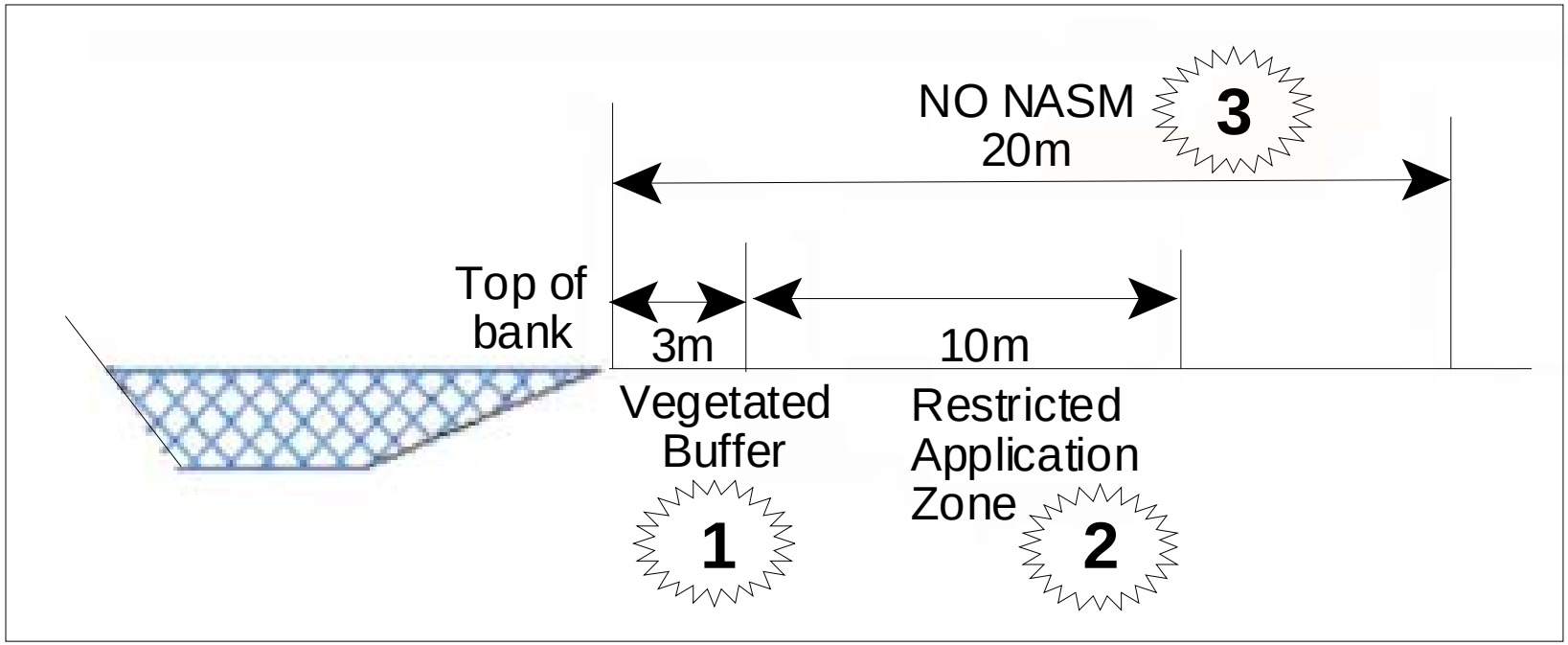
- Cannot apply liquid ASM to land with slope 25% or greater

Setbacks to Wells

Well Type	Setbacks for:		
	Ag. Source Materials	Non-Ag. Source Materials	Commercial Fertilizer/ Compost
Municipal	100 m	100 m	100 m
“Drilled”	15 m	15 m	3 m
Other	30 m	90 m	3 m

Drilled Well” refers to a well with a minimum depth of 15 metres, and a continuous water-tight casing with a minimum depth of 6 metres. Wells that meet these criteria are normally, but not necessarily, drilled.

Setbacks to Surface Water



1. Vegetative Buffer Zone

- Minimum 3 m permanently vegetative buffer strip along all surface water
- Cannot apply fertilizer or nutrients unless establishing area or recommended by a soil analysis
- Can be harvested and managed

2. Setbacks to Surface Water Restricted Area

<u>Restricted Area</u>

Area from 3m vbz and 13 m

Can apply Nitrogen and Phosphorus if:

1. Inject
2. Incorporate
3. Apply to a living crop
4. 30% or greater residue

Tile Inlets, Hickenbottoms, Catchbasins

- Regulation is silent on this feature
- Direct conduits to surface water

- Recommendation
  - Treat as surface water

Minimum Depth to Groundwater

- No requirement in regulation
- For NASM application
  - it is 30 cm of unsaturated soil

- Not recommended to apply ASM on saturated soils
  - compaction

Soil Sampling

- If have requirement for NMP
  - Required to do a soil analysis
  - Minimum 1 soil sample per field or area every 5 years
  - For first NMP can use default values of
    - Phosphorus 101 ppm
    - Potassium 251 ppm
- Recommend 1 soil Sample per 25 acres

Manure Analysis

- Operations with a NMP
  - can do a manure analysis
  - use the default values from OMAFRA

- Recommend manure analysis every year and build up data base for the farm

Mixed Anaerobic Digestate Land Application

Applies to all farms and is treated as ASM

- Generator of the material
- Any farms accepting the material by a transfer and do not have a NMP

➢ Follow the land application standards including vbz, application rate, setbacks to sensitive features

➢ Applies to digestate that is at least 50% on farm materials

Winter Spreading of ASM

Consider

- Required to have a NMP
- Period December 1 to March 31
- Ground frozen or snow covered or not
  - Snow covered = ave. depth 2 inches
  - Frozen = frozen mositure in the soil with a layer of at least 2 inches in the top 6 inches of the soil
- Material liquid or solid
- No spreading on land that collects water during thawing or is subject to flooding

Winter Application of Liquid Manure

Not snow covered or frozen

- Setback of 20 m to surface water
- 100 m setback if slope is > 3%
- Inject or incorporate same day
- Surface apply if living crop or crop residue 30% >

Winter Application of Liquid Manure

Snow covered or frozen

- 20 m setback to surface water
- 100 m setback if slope is > 3%
- Inject or
- Incorporate within 6 hours

Winter Application of Solid Manure

<u>Not snow covered or frozen</u>

- 100 m setback to surface water if slope greater than 6%
- Incorporated within same day
- Surface applied to a living crop
- 30% crop residue

Winter Spreading of Solid Manure

<u>Snow covered and frozen</u>

- 100 m setback if slope is 6% or >
- Incorporate within 6 hours of application

Or

- Surface apply
- 100 m setback from surface water
- Maximum depth of snow 6 inches
- Maximum slope 3%

Other Applications Considerations

- No high trajectory guns for manure application unless the material is 99% water
- Direct Flow application systems must have fail safe response
- Two operators or radio contact to shut down system in 1 minute

Maximum Application Rate

- Determined by NMP
- Crop
- Yield
- Crop production requirements
- Tillage
- Field characteristics
- Nutrients applied
- Land available for nutrients

Certification Requirements

- NMS/P must be prepared by a certified person
  - Consultant
  - Farm Operator or Employee
- Farms with NMP
  - Use certified brokers, custom land application businesses and applicators

NASM Framework

- Effective January 1, 2011
- Covers material that is beneficial to growing crops
- Moving from Certificate of Approvals to NASM Plans for the application of NASM material
- Transition period to January 1, 2016
  - Certificate of Approvals currently approved for 5 years ok until expire
  - NASM Plans

NASM Pre Requirements

- **Demonstrate beneficial value**
  - Organic Matter
  - Fertilizer value
  - pH value
  - Irrigation water
  - Must meet quality standards
  - (regulated metals, pathogens, odours)

New NASM Framework

3 NASM Categories

- Determine the requirements
  - NASM Plan
  - Sampling and Analysis

Land Application Standards

- Based on quality
  - Pathogens
  - Regulated Metals
  - Odour

NASM Categories

Category	Examples
1	• Unprocessed leaf and yard waste, • Culled fruit and vegetables (other than cole crops and onions) that have not been processed with chemicals (other than food grade)
2	• Bakery washwater • Organic waste matter that contains no meat or fish from food processing
3	• Pulp and paper biosolids • Sewage biosolids and NASM mixed with human body waste • NASM not on the lists for Category 1, 2 or 3

Odour Categories

Odour Category	Examples
OC1	• Liquid anaerobically digested sewage biosolids (Cat 3) • Washwaters from bakery (Cat 2) • Culled fruit and vegetable other than cole crops (Cat 1)
OC2	• Liquid aerobically digested sewage biosolids (Cat 3) • Sewage biosolids dewatered by means other than a centrifuge operated at ≥ 2000 rpm (Cat 3) • Cole crops and washwaters from meat processing plants (Cat 2)
OC3	• Grease trap waste (Cat 3) • Sewage biosolids dewatered by a centrifuge operated at ≥ 2000 rpm (Cat 3) • Sewage biosolids dewatered and stored for 30 days (Cat 3)

Approval of NASM Plans

Category	NASM Plan
1	NASM Plan is not required
2	NASM Plan must be prepared by a certified planner but does not require Approval if metals meet CM1. Registration of the agricultural operation is required . Approved NASM Plan if metals exceed CM1 but meet CM2 Approved NASM Plan if stored on farm
3	Approved NASM Plan required

New NASM Plans

- Same principle as a Nutrient Management Plan
- Based on agronomic rates
- Only covers the area where NASM will be land applied and stored (if in a NASM storage)
- Prepared by a certified NASM Plan Developer
- Valid for a period of 1 to 5 years

Land Application Standards

- Maximum application rates set by NASM Plan
- Setbacks to:
  - Surface water
  - Wells
  - Neighbours (dwelling, residential, commercial, etc)
- Depth to saturated soil, bedrock (based on category, liquid or solid and risk of material
- Waiting periods

Setbacks for NASM Application

Type	CM1 and CP1	CM2 and/or CP2
Wells	Municipal – 100m	Municipal – 100m
	Drilled (watertight casing) – 15m	Drilled (watertight casing) - 15m
	Other – 30m	Other - 90m
Surface water	Can apply up to the 3m buffer if: - Done by injection/placement in a band below soil surface - Incorporated within 24 hrs - Surface application on a living crop or field with at least 30% crop residue -If there is no Vegetated Buffer – 20m setback	20m
Odour OC – Odour category	<u>A Single Dwelling</u> OC1 – greater than 25m – no restriction OC2 – no application less than 25m; between 25-90 – injection or spreading & incorporation within 6 hours, greater than 90m – no restriction OC3 – no application within 100m, between 100m-450m – injection or if injection not possible, spreading & incorporation within 6 hours, greater than 450m injection or spreading & incorporation within 24 hrs.	
	<u>Residential areas, commercial community or institutional</u> OC1 – no restriction if greater than 50m OC2 – no application less than 50m; between 50-450 – injection or spreading & incorporation within 6 hours, greater than 450m – no restriction OC3 –no application less than 200m, between 200m-900m – injection or spreading or if injection not possible, incorporation within 6 hours, greater than 900m – injection or spreading & incorporation within 24 hrs.	
	OC3 –no application less than 200m, between 200m-900m – injection or spreading or if injection not possible, incorporation within 6 hours, greater than 900m – injection or spreading & incorporation within 24 hrs.	

Dead Animal Disposal On Farm

- Regulation covers 17 species
- Six Methods of On Farm Disposal
  - Burial
  - Incineration
  - Disposal Vessels
  - Composting
  - Anaerobic Digesters
  - Licensed Collector
- Transporting Dead Animals
- Emergency Disposal

Siting Burial Pits

Setbacks

- Lot line 15 m
- Flowpath 100m
- Field tile 6 m
- Municipal well 200 m
- Drilled well 50 m
- All other wells 100 m
- Farm Bldgs 100 m
- Another pit 60 m
- House 100 m
- Maximum volume in a pit 2500 kg

On Farm Composting

Setbacks

Highway	30m
Lot Line	15 m
Flowpath	50 m
Field Tile	6 m
Municipal Well	100 m
Drilled well	15 m
Other wells	30 m
Farm Bldgs	100 m
Other compost sites	100 m
Residence	100 m

Land Application of Compost

- If have a NMP apply according to NMP recommendations
- Follow the Land Application Standards

- If no NMP
- Best Management Practice to follow land application standards and

Contacts

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What is a Nutrient Unit?

- **A Nutrient Unit is the number of animals it takes annually to produce 43 kg Nitrogen or 55 kg P_2O_5 equivalent fertilizer value**

Beef Cow (including unweaned offspring)

= 1 Nutrient Unit

What is a Nutrient Unit?

Livestock Type	Animals Per NU	Greater Than 5 NU
Large Framed Dairy Cow (Holstein Cow)	0.7	4
Feeder Hogs	6	31
Medium Framed Horse	1	6
Alpaca (Including unweaned offspring)	8	41