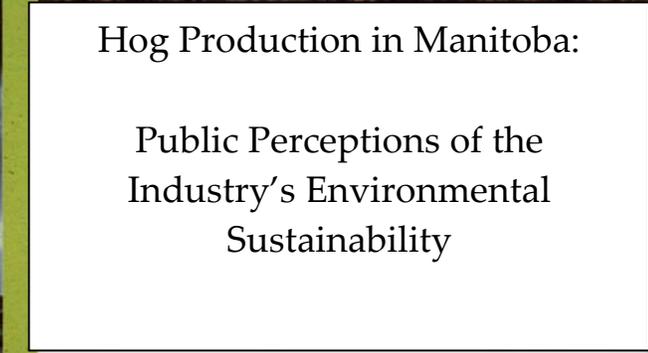




Hog Production in Manitoba:

Public Perceptions of the
Industry's Environmental
Sustainability



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Executive summary	4
Introduction	5
Views on the Future Sustainability of the Hog Industry	11
Key Themes	11
Water	11
Manure Management	17
Odour	24
Public Role in Communicating with Conservation Officers	28
Political Structure	29
Socioeconomic Impacts	31
Minority Themes	35
Technical Review	35
Greenhouse Gases	37
Drainage	38
Antibiotics	39
Soil Sampling	39
Industry Diversification	40
Conclusions	42

Executive summary

Not everyone may be comfortable presenting their views in public, especially surrounding issues of contention. This may be the case for some people regarding the industry-wide review of the environmental sustainability of hog production in Manitoba. In recognition of this fact, the Clean Environment Commission initiated a research project whereby the public was provided an alternative forum for expressing their opinions and concerns.

From April-June 2007, this research was carried out by a graduate student from the Natural Resources Institute, University of Manitoba and was overseen by an advisory committee chaired by Dr. John Sinclair. Interviews were conducted by the student with 35 individuals, the majority of whom were of a rural background, with five coming from the City of Winnipeg. Participants ranged in their association to the hog industry from strong to weak industry ties, with at least 40% of them being directly involved in farming. The interview participants initiated contact with the researcher and the research was funded by the Clean Environment Commission.

The key concerns relayed to the interviewer pertained to the effects of manure management on water quality and recommendations for improving upon the industry's sustainability in Manitoba. In addition, concerns relating to issues of odour, greenhouse gas emissions, socioeconomics and a changing political landscape were discussed.

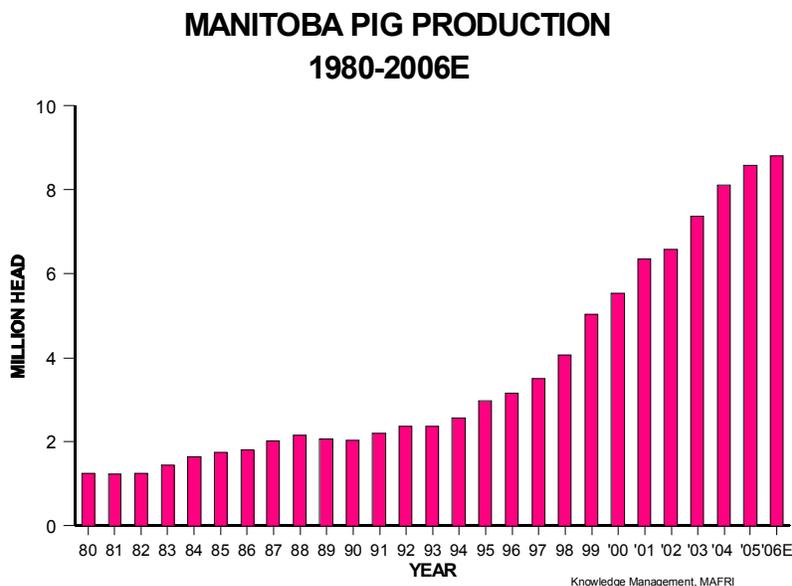
Introduction

In 2006, there were approximately 8.85 million hogs produced in Manitoba and this figure has grown steadily since the mid-90s (**Figure 1**).

Relative to other Canadian provinces, Manitoba ranks third, representing 23.6% of the nation's on-farm sow production, following close behind Ontario (26.5%) and Quebec (25.2%).

Of Manitoba's 8.85 million hogs, approximately 3.8 million are slaughtered in province at the main processing plants in Brandon, Neepawa and Winnipeg. Another 3.7 million are exported to the United States as weanlings, which are defined as those pigs aged 15-19 days. The latter 1.2 million hogs are sent to the United States for slaughter at market weight.

Figure 1: Manitoba Hog Production*



*Graph courtesy of the *Swine Livestock Knowledge Centre, Manitoba Agriculture Food and Rural Initiatives (MAFRI)*

Following the trend of many large industries today, the number of hog producers has greatly decreased while the size of the operation has greatly increased. The industry is comprised of 1400 active producers who are involved in two main industries: the production of slaughter-weight hogs for slaughter plants in Canada and the United States and the production of weanlings for export to the United States. Hog producer demographics may be approximated as 50% large pig production companies, 30% Hutterian and 20% independent producers.

The numerous environmental implications of this quickly expanding industry have resulted in the questioning of its long-term sustainability. According to Manitoba Agriculture Food and Rural Initiatives (2006), the main issues facing the hog industry relate to odour; animal confinement; food safety and health; siting of livestock operations, mortalities management, manure management, phosphorous and nitrates in soil and water; and surface water issues.

In recognition of these concerns, Stan Struthers, Manitoba's Minister of Conservation, announced a moratorium on the expansion of the hog industry in the province on November 8, 2006. With the power granted to him under Section 6(5) of *The Environment Act*, he further requested that the Clean Environment Commission (CEC) conduct public hearings to review the environmental sustainability of the hog industry in Manitoba.

To begin the process, the CEC led a series of scoping hearings to determine the issues that should be considered in the hearings. This was followed by formal public hearings in fourteen communities across Agro-Manitoba throughout March

and April 2007. Participants were aided in the hearings through a Participant Assistance program, which provided small awards to assist groups and individuals with their presentation to the CEC. As well, the CEC also accepted written submissions from members of the public up to the beginning of May.

Finally, in planning its approach to the hearings, the CEC recognized that not everyone may be comfortable presenting their views at a public hearing and so initiated this research project as a means of offering an alternative forum for people to express their views. The purpose of this project is to communicate the findings of the interviews undertaken, so that the views of participants can be incorporated into the CEC report to government.

It is also worth noting that a Master's thesis will be completed in addition to this report and will be available at a future date from the Natural Resources Institute at the University of Manitoba.

Research Methods and Approach

The research undertaken was qualitative since the focus of the study was to learn about the views of farmers and other interested Manitobans' regarding the environmental sustainability of hog production. The main technique used to collect data was interview. The interview was chosen because it allows for more personal face-to-face interaction with participants. As well, this technique allows participants to clarify their answers and provide more in-depth information pertaining to the research questions of interest.

Participants were self-selected, meaning that they initiated contact with the researcher. Notices describing the opportunity to participate in interviews were posted in local businesses, community centers and municipal offices. In addition, posters and contact information were on display at all Clean Environment Commission (CEC) public hearings and notice of the opportunity to interview was available for viewing on their official website (www.cecmanitoba.ca). The same notice was posted on the official website for the Manitoba Pork Council (www.manitobapork.com). The researcher was also present for a selection of public hearings across Manitoba, which provided the opportunity to speak with potential interview participants directly. Finally, advertisements were placed in several community newspapers, namely the Steinbach Carillon, Portage Central Plains Herald Leader, Treherne Times and the Manitoba Co-operator. Interviews were carried out concurrently with the CEC public hearings process.

Overall, the findings of this report are based on interviews conducted with 35 participants. Interview participants were chosen based on the assumption that they had not yet presented their opinions, either in oral or written form to the CEC. The majority of interview participants were of rural background and although spread across various regions of south and south-central Manitoba, clusters of interviews were found in the Rural Municipalities of Lorne and South Norfolk. Upon approaching the community of Swan Lake First Nation, interviews were also carried out with various Band members.

Interviews were conducted either over the phone or in person, alone or with a friend, according to the preference of the interview participant(s). Interviews lasted on average approximately one hour, but ranged from 40 minutes to well over two hours. In almost every interview, participants were recorded and the interviews transcribed for analysis in NVivo software. NVivo was selected because of its unique design for qualitative research which allows the researcher to code, identify themes and attach memos to the interview data.

Participants were not compensated in any way for their participation. The research itself was undertaken as part of a Master's research project, Natural Resources Institute, University of Manitoba. As such, it was guided by a Thesis Advisory Committee. The Clean Environment Commission provided support for the independent project.

The findings are reported in terms of key and minority themes. Key themes related to the issues raised most often by participants, with a majority (at least 75%) of participants raising the issue of their own accord and without prompting. Minority themes related to those concerns that were raised by a minority of participants (less than 25%), but still deemed valuable and worthy of including in this report. Quotes from participants are used to exemplify the views of all respondents for both key and minority themes.

Views on the Future Sustainability of the Hog Industry

Key Themes

The major concerns expressed by the interviewees related to water and manure management, specifically manure nutrient impact on surrounding water resources. Other key concerns related to the industry and inadequate monitoring and enforcement of regulations; ongoing odour issues; difficulties in communicating with conservation officers and political and socioeconomic changes to the rural landscape. Each of these is outlined below.

Water

Most participants expressed concerns regarding the consequences of intensive livestock operations (ILOs) on water. This concern was expressed in many ways relating to the potential contamination of local aquifers or surrounding lakes, rivers, creeks and streams.

Some participants expressed concern over well contamination and recounted their experience with test results showing presence of *Escherichia coli* (*E. coli*) and other coliforms in their drinking water supply. As noted by participants, scientific data and studies specific to industry impact on water are lacking and this may result in uncertainty regarding sources of groundwater contamination.

I have concerns about the water quality in the well. We don't drink the water; I haul it from town for drinking purposes. Where we are specifically, no I don't have hog barn concerns with it—but there are concerns. You mentioned the word density. There is too much density and improper application of waste product and this is a concern in terms of detriment to water.

'So, do you have your water...do you continue to monitor it?'

It was tested a year ago, the nitrates are still up and there were some coliforms...as I said we only brush our teeth with it, I do—my wife doesn't.

Interview Participant #7

'How have the test results come back in the past?'

Every time we've had to shock. There's never been E. coli, but there have always been bacteria. So we shock the well; basically there's two different forms—chlorinate it, don't use it for 24 hours, let it go through the whole system and test it again two weeks later that kind of thing. The first time I'm thinking it took two or three rounds before we actually had it drinkable again.

'And is this testing done approximately annually?'

Should be done yeah, should be--we haven't.

Interview Participant #5

Participants noted that water quality is sensitive to contamination through nutrient runoff from intensive agriculture in the springtime (or other times of year when the water table is high), during extreme weather events, when the soil is saturated or characteristically porous and manure containment and management systems are inadequate.

...because these [pig barns] are close to the Red River, I couldn't help but think as soon as you know, Lake Winnipeg started getting all these algae problems and well, and we started having all these pig barns go up. I couldn't help but think there is a tie here because it made a lot of sense that there was a huge connection there. So that is question that absolutely needs addressing and needs researching.

Interview Participant #10

If they're giving approval to these [hog] operations, we'd like the environmental impact to be minimal, in terms of phosphorous load going into Lake Winnipeg and contamination of aquifers and water supplies. That's 55 years I've been going there [Lake Winnipeg].

Interview Participant #19

...there was an incident where – this lagoon wasn't far from the White Mouth River and it actually broke its banks and spilled about half a million, I don't know if it's gallons or litres, but it spilled into the White Mouth River and it killed everything in the river there down to where it goes into the Winnipeg River.

Interview Participant #22

I know they're only supposed to put so much but nothing's regulated so there are just ponds of it sitting there. If you get the right conditions it all goes in the ground and some of it gets worked up. Like I said, they try hard but if it pours rain two inches the day after, I mean, you know where it's going to go.

Interview Participant #12

A decommissioned waste lagoon contains contaminated residues from the sludge and studies have shown that nitrogen levels are up to thirteen times higher and phosphorous up to forty-five times higherThen these nitrates filtrate into the groundwater where they can-- especially if there's sand and gravel down there as well – so that's a source of aquifer contamination... And of course if there's any kind of flooding issue with respect to these – there's been lots of examples in the States where there's been spring flooding and lagoons have actually been flooded and there's actually been a major influx of contamination into waterways ...and with being on the floodway, basically along the Red River--and a lot of them are. I think that's a major threat.

Interview Participant #24

Participants identified a wide range of measures that should be implemented to protect water quality, especially the water around ILOs. These included measures such the banning of winter spreading regardless of the size of the operation; ensuring operations have access to adequate land base for appropriate spreading of manure; sampling at the field level as part of greater efforts to understand and study the soil and water conditions; biofilters; designation of environmentally sensitive land areas that are strictly off-limits for hog operation development; greater public education on water testing and

treatment and finally, stricter regulations and/or more enforcement of existing regulations.

I'd say for one thing they should not allow winter spreading of manure and that occurs at the one barn northwest from here. They don't have a large lagoon so they have to empty their pit on the snow in the winter and due to the topography here, if it's spread on snow, it's going to melt with the snow and it's going to right away get into channels that drain into streams and rivers in the area. So that's a real bad thing and I don't like that at all. I've been involved with water sampling here at Roseisle Creek. You know I was here in '82 and the creek was actually quite nice then and I would say by the mid-90's there was a lot of algae growth in the stream that hadn't occurred previous to the mid-90's.

Interview Participant #15

I find in the last five years or so, the water...it's so chemical, so chloriney. It goes through my mind—what are they trying to kill here? Are they getting some really bad readings and then they're really over treating? I don't know if they would tell you that. I've asked, but it's all very vague. But I really do feel that they're treating the water differently, so there must be more of something in it. That worries me yeah--because you're totally at their mercy--like we never have public meetings about our water.

Interview Participant #19

In addition to the concern for water quality, some participants expressed concerns specifically relating to water allocation in the hog industry. The general sentiment was that it is unsustainable to have such a large industry reliant on water to operate.

The health of the planet, we are mining everything, and we're taking everything for granted. Our water, we're polluting it quicker than anything else too. And that's part of the deal, and one of the reasons we have lots of barns in this area. La Broquerie, for one thing there's a lot of cheap land available, but also the water. The amount of water that's available here with the aquifer--it's incredible. And yet we're using it up, we're using 10,000 gallons a day just to wash hog manure. It doesn't make sense.

Interview Participant #13

...hog production and the methods right now are based on water. They're water-based production. What I mean by that is if I look back at the way we produced hogs fifty years ago and even now in sort of the biotech operations, the manure is litter-based. You use straw and so on and so forth and you collect the manure more or less in solid form. The large hog operations that we have now are water-based. You have a concrete floor with slats. The hogs defecate over those slats. You wash everything away and everything falls in the pit and you use a liquid to transport the manure. So because of the fact that we've got a water-based production method there are certain ramifications of that and the water table is going down.

Interview Participant #25

There were a few interviewees who expressed concern regarding changes to their aquifers. They believe that their experiences are related to the high volume of water used by the hog industry and express how this is perceived to be having a detrimental effect on their water supply.

Four years ago my son set up his trailer here on the north side of my yard, which has never run dry in maybe 100 years. It ran dry so we had to dig a new well--\$3,000. So basically why did we have to do this? Because we have a hog operation and other large operations nearby that use a lot of water and the water table has gone down, so we had to remake some new wells. Essentially what we're doing is subsidizing the operations. They are doing something to the environment that causes us to have to invest more money to be able to live reasonably ourselves. In other words, for them to be able to make their profits, we have to pay in certain ways.

Interview Participant #25

Past experiences with hog operations being proposed on seemingly inappropriate land has lead to the sentiment that extra measures need to be taken to protect environmentally sensitive land and aquifers due to the potential for contamination. An example of this was the proposal for an ILO atop the aquifer which supplies drinking water for approximately 2000 people in both the town and First Nation community of Swan Lake.

That's where I think the environmental hearings have to maybe make some stipulation--if it's close to an aquifer or if such and such is not satisfactory within the soils, there's nothing that can go there. Water has become too much of an issue, like within the environmental context, to be endangering any of it...the risk has to be almost zero...and they're saying we can't make it zero and we're saying you're going to have to figure out a way to make it zero, because we can't have a disaster here.

Interview Participant #4

To address the aforementioned water quality and supply concerns, many interview participants recommended greater and more extensive monitoring of the water, both in terms of quality and quantity and for ground and surface water. They furthermore recommended greater enforcement of existing regulations and stricter penalties for offenders.

I don't think governments, hog associations, or whatever are intentionally trying to confuse us or pull the wool over us, there may not be enough information out there yet as to what is sustainable. And so I think before we embark on big programs, development expansion, I think we have to know what our limits are and how do we mitigate and rectify the situation so that there isn't long term damage and runoff. And so until the studies are done I don't think we should expand. So I don't think maybe we even know the extent of the, what the regulations should be because we don't understand yet how to mitigate.

Interview Participant #27

Through Conservation – we tried to deal with them on the water issue up there and it's all complaint-driven and they won't go in unless someone phones them up and says their next door neighbour's sewage is going into the lake. Like there's no inspection going on, no monitoring people ... there needs to be way more intervention somehow. The province has got to pay people to go in and they need to give their Conservation people in the Department way more backup somehow, more people and guts behind them to make people tow the line because people aren't going to do it.

Interview Participant #6

We have to know where the extra nitrogen and phosphorus is going into Lake Winnipeg that's been attributed to agricultural sources is essentially coming from, in order to determine if the hog industry's a

problem in that regard for not. So that means taking nitrogen and phosphorus right back to the field level. We know it's in the major rivers, I mean you can look at the monitoring stations in the Red River and see a very slow increase in nitrogen and phosphorous overtime, but whether that nitrogen source is coming from a hog operation or grain operation or from cattle operations or from the natural environment or from municipal sewage lagoons...I have not seen information that would give you that breakdown. And until you can do that, I think it is very hard to say that the hog industry from an environmental sustainability approach is sustainable. I don't think you can, you can make that determination...That may be true but I haven't seen any numbers to say it is happening or it isn't happening.

Interview Participant #18

There was a barn built about 3 miles west of here right on the bank of the Roseisle Creek and he, I believe, has been fined a couple of times like \$300 or something for discharging waste in the bank adjacent to the stream. I find that pathetic. That was the first offense. He might have been charged \$500 for the second offense but my feeling is that the first fine should be \$10,000 and the second should be \$20,000 or \$30,000 so that they don't do it ever. There seems to be minimal enforcement of the regulations. It's a real concern.

Interview Participant #15

Manure Management

In discussing the environmental sustainability of Manitoba's hog industry, the health of our water and conscientious management of manure are inextricably linked. The primary concern participants had regarding manure management was the potential for nutrient runoff to water bodies. It is worth noting that several interview participants acknowledged the hog industry as only one source of water pollution and emphasized the need for other forms of agriculture, industry, and municipalities to play an active role in ensuring clean water for future generations. That being said, it was maintained that the sustainability of the industry depends on their doing a better job of manure management.

The thing is how much they can put on their land, when they can do it – you know, you're not going to spread manure in the middle of winter when it can't be absorbed into the land and then when it does melt if you were to be able to do that and it does melt, now where does it go? If you're on any kind of low land it goes to our rivers. So it's a concern that way. You can only put so much manure on certain types of land. So what happens if you're a farmer in the southern part of the province and the land is rich enough that it can't sustain manure from effluent from the hog industry?

Interview Participant #3

If there is an escape or a problem in terms of lagoons breaking and manure getting away, yes it's a lot of stuff moving out, hopefully there will be some backup systems in terms of berms or something but the City of Winnipeg does the same thing. When the City of Winnipeg has their act cleaned up then they can point fingers at the farmers, but they themselves are a big polluter.

Interview Participant #14

I've never seen anyone checking it out. I still see farmers with these honey wagons backing up to provincial water and just let 'er rip!

'You still see that?'

I wish the last time I had my camera. I'm going to leave my camera in the truck next time and wait. It wasn't that long ago. Now I wish I would have, I could have caught the guy doing it--caught him red-handed. ...You know how it is--the guy's just trying to make a living. He knows he isn't supposed to do that. He isn't some big corporation or farmer; he's just an average poor guy just trying to make a living.

Interview Participant #12

Some of these have to be somewhat confidential so I won't mention any names, but I know of some of the hog operations that are there that existed before these reviews came on that are not regulated and there are some overflows too – it gets full and you can't empty it and it flows away and ends up in the river.

Interview Participant #20

Many of the interview participants also expressed the concern that there is not enough spread acreage for the amount of liquid manure that these intensive hog operations are producing.

...the phosphorous issue and regulations—it's going to be a real problem here in La Broquerie because they don't have enough spread acres. When that regulation comes in they're going to have to look to alternatives to what they're doing right now. And as much as people might like to think that they're incorporating the manure right into the soil, it doesn't happen. There's nobody that does it; everybody's spraying on top of the soil.

Interview Participant #13

In fact you run into issues of not having enough area to put the manure on, that's concentration I guess. If they're [the CEC] going to deal with something as part of the analysis it should be to understand the concentration and make sure that if a barn is built, it has adequate close proximity land available to spread manure on.

Interview Participant #8

Some of the recommendations that were made for improving the management of manure in the hog industry included the use of biodigesters and other dry/liquid manure separation technology used in modern ILOs, more straw-based biotech operations, integration of bio-filtration systems, elimination of winter spreading of manure, better engineering of manure containment systems and incentives for those operations implementing environmentally sustainable practices.

The large manure operations, in both dairy and hogs, have enough cash flow that they can afford the type of equipment... in terms of dairy with the separators to separate out manure and dry it out, etc.--they can afford this. It makes for a very nice contained system, where none of the manure escapes the farm and I like that about the system. We, as smaller farmers have difficulty with that, because a lot of the farms are set up in locations that are not ideal and manure escapes a lot of the small farms because that's the way it was always set up. In the spring, ground water runs away from the farm. But in these newer planned and engineered operations you can keep the manure on the farm and inject it. So I think that works very well and in that regard I like them.

Interview Participant #14

I think there has to be more work done to ensure the structures are engineered to specs that will hold...because a number of them have failed over the years. So I think they're getting better and better on

that, but...like the engineering has to be better and that would include whether they're earth-bound, like some of them have the banks of earth behind just to protect or add to it. But there does need to be more protection there, better engineering.

Interview Participant #4

It requires storage but also the wetland option too to process some of the liquid manure is another good alternative as well...increased use of bio-filtration systems and just providing incentives to the province to look at more environmentally sustainable operations.

Interview Participant #24

As a solution to their concerns relating to the management of liquid manure, participants expressed a clear preference for handling through injection directly into the soil.

I think there should be more increased use of the bio digesters, I believe they're called, for composting and yeah, I think there should be increased use of dry manure and if liquid manure has to be applied then an injection system would be much better than a broadcast system. And also I don't really agree with spraying it on in the wintertime when it's cold and not taken in by the ground and then it just gets all washed into the waterways with the spring runoff.

Interview Participant #24

Another recommendation included the stabilization of phosphorous in soil through the addition of calcium.

...phosphorous you can't get rid of it. But I think what you can do is you can stabilize it and compost will do that--stabilize it so that it doesn't run off and end up in Lake Winnipeg. Because the farmers here and the ag reps as well, are worried that its going to bring up their soil pH which is already fairly high-- but not critically high. They are scared so nobody uses calcium and yet it's one of the most important soil elements, because it opens up the soil. It does the same basic work that composting organic matter would do...so my suggestion is that somebody looks into this matter and to start using calcium again. I know that organic farmers are using calcium and most of the time are using calcium sulfite (which is gypsum), which is something that we have here in Manitoba quite a bit. And that also being a cat-ion, it would add a little more holding capacity to the phosphorous so that it doesn't run off. And it's being used up the way it should be, absorbed by plants the way it should.

Interview Participant #13

Furthermore, the usage of dry/wet separation technology was expressed as an important component to the sustainable management of manure because of its efficiency in reducing the odour and sheer volume of spreadable waste.

...more people than last year, preferred to spread the compost rather than the manure. For many reasons, the most obvious one is that it reduces your volume by 60%. Anyone that can add or subtract can understand that's a bonus for their farm and that's not even counting how much of a better product it is and how much you're adding to your soil in the process...If you're trying to compost stuff from the lagoon, then you would have to find some way of taking the water out, or the liquid out. I mean, I know it's being done in the States. I talked to two farmers that do that and well, according to this farmer anyways, he used to need 800 acres to spread his liquid manure onto the land and now that he uses--I don't know what kind of system he uses to take the liquid out, but he uses the liquid for irrigation, I imagine they have drier weather than we have today, and then he composts the rest. And he used to use 800 acres to spread the manure, now it takes only 238 acres—so it makes a big difference.

Interview Participant #13

Many interview participants found biotechs to be a preferable option to the conventional large hog barns. Biotechs were identified as being straw-based housing systems whereby the manure was windrowed and made into compost.

It's been raining now for the last week, lets say on and off and they say it's supposed to carry on raining. If you're spreading liquid manure on to fields—and I've seen it when we had weather like this and actually spreading manure right onto the surface, where do you think that goes? It's fine that they go and test the soil every so often and say well we're not going to pollute with nitrates and phosphates, but there is an incredible amount of runoff that happens and there's nobody monitoring that... So it's obvious to me, I would really prefer--seeing the operation needs to be fairly big--they could go with biotechs and use straw, at least you can compost the manure. It stabilizes the nutrients and reduces runoff. And then it's a cleaner way to spread the, to fertilize your soil, and a healthier way as well.

Interview Participant #13

A very smart man runs the biotech operation and he seems to be able to make a dollar at it. I like that concept; I like it better than the factory farms. I don't know which is more economically feasible. I know the type of barn my wife and I thought it would be good for the community, therefore we and some other local investors threw some money in [a conventional ILO] as limited shareholders and we lost the money because the barn went broke.

Interview Participant #7

Besides the perceived environmental benefits of biotech operations, many interview participants also indicated a preference for them on the basis of animal ethics and welfare.

I think it's [biotechs] healthier for the animals and healthier for the environment. And meat is meat, but the quality of meat is also important and if the animal is healthy, than the quality of the meat will be better. So the consumption of that particular pork would be improved. But mainly waste management and the care of the animal are improved dramatically. From a clean air aspect, its better too. I mean I've been around the biotechs and the smell is...not there, it's a pretty different situation.

Interview Participant #7

I like them [biotechs] better; I think the pigs are happier in them. My main problem with the large liquid barn is actually a welfare concern. We toured a couple and I just don't like to see the sows in a gestation stall, I mean they spend their whole lives in a crate. It's a very unnatural situation. I think they would be happier in a free ranging hoop structure and I think it would sell better from an animal welfare standpoint. I'm not sure it's much different environmentally from a water quality standpoint or a nutrient management standpoint, but certainly the animal welfare side would be better.

Interview Participant #18

Despite the general favouring of biotech operations which utilize more dry manure handling techniques over conventional liquid-manure barns, concern for proper manure management persists, albeit in a more limited sense.

The only thing with the biotechs is sometimes you wonder with the management of the manure, is it as good? Because I know with the bigger ones you have to...everything's in one big tank. Where as a lot of times with the biotechs, you're just piling it into a pile and you move it when you feel like it--when it's composted. But what is happening with the pile? There's no protection there. A lot of cases they're just piling it up and if they're leaving it to compost, when it's raining is it not increasing the nitrate flow...?

Interview Participant #4

Countering this concern was the recommendation from a participant to take better advantage of the funding offered to farmers through the Environmental Farm Plan. In this case it would be a source of funding to ensure a well built on-farm composting site.

He told me that he's been composting for 40 years and he says there's been a lot of work done in the States in regards to seeing if there's any leaching into the ground and they've never had any problems with it...are you familiar with the Environmental Farm Plan? Well in there there's money available for farmers to build exactly a site for compost. And that would require an engineer to hire and find out according to soil conditions, how to construct an impermeable layer where you would use it as a permanent composting site.

Interview Participant #13

To address the above mentioned concerns with manure management in the hog industry, tighter monitoring and enforcement that included financial penalty outweighing the cost of regulatory compliance were again recommended by many of the participants.

Enforcement is a big concern with the Conservation people...the majority of them didn't go into conservation to check up on hog barns, they were put there for wildlife, not for tame livestock. I think a lot of the people that do the checks, some of them aren't trained well enough. They're just hired and, "This is what you've got to look for", and that kind of thing but if you've never been on a farm or you don't know what you're looking for, how are you going to find it? With more people going into the cities and things like that, they're getting away from the farming end of it so you're not in touch with the

farming community anymore in a sense...talk to the people around these barns and see what they think.

Interview Participant #1

I've never heard of anybody getting in heck, have you? Well these farmers two or whatever years ago when that metal tank split open and I forget how many litres [of manure] went in the ground there . . .

'Did you know the outcome of that?'

No, I read in the paper that it happened but then never heard any more of it.

Interview Participant #12

I contacted our provincial government as far as manure spreading a couple of years back and basically I got an answering machine saying I'm out on my fall inspection, leave a message. I did leave a message, she did call me back and I said 'how are you monitoring this?' And apparently they had two inspectors and they go out spring and fall--so it's not monitored. And I said okay, so we have a situation where our neighbour spreads manure only on Saturdays and Sundays, well her response was they are allowed to spread on Saturdays and Sundays but then like who's monitoring how much goes on? And when you see the outfit he uses to spread his manure, it can't be monitored. It's a big tank and you open the trunk at the back and you drive down the field. You know, it's not measured.

Interview Participant #23

Another problem that I've got is the fines are so low. For example a few of the [ILO's] have just been spreading it at will. And I can't remember what their fine was, \$5000 or \$10 000 or something like that, but if you look at what it would cost them to do it properly it was...That's the cheaper way to go. So they were just throwing it all over the place, meanwhile there are neighbours there that live very close and their kids were sickly their entire lives...

Interview Participant #5

Odour

In general people believed that today's odour issues were less than in their past experiences with hog barns, likely a result of today's more widely used manure

injection methods. However, a number of participants still maintain odour is a significant concern.

Last summer, for some reason, it was quite a bit better. We did manage to get a few meals on the deck, but two years ago it was just impossible. So like we've been thinking we'd like a sun room, we'd like to add on and we're now saying no, we'll be spending that money buying a two-bedroom condo instead. It doesn't mean that we won't go out there, but it's not going to be for retirement. It affected us to the point that it's definitely not going to be for retirement.

Interview Participant #23

It can wake me up from a sound sleep at night if the wind changes direction and I have my window open. In the summer, many times we can't keep the windows open and lots of times I can't sit outside in my yard, depending on the direction of the wind. So if that closest big barn is a mile and a quarter and I can't walk out my door without gasping when the odour hits me, it's a problem--because I'm not the closest resident to that barn...We decided to retire here before that barn was built and it just doesn't seem right that somebody could impact our life that way. What do we get out of it? Just the smell.

Interview participant #11

You can't open your windows. The neighbours of ours there that lived in a trailer--it would be good and they'd go to bed and during the night all of a sudden they'd wake up and they were damn near choked to death with the smell. They closed their windows and turned their fans on and everything and they [Conservation] come back in the middle of the next day and sure, it was all gone. But that's what I say; you've got to live there. The CEC comes out and checks up on these guys one day of the year--maybe. Live there and then you understand what the problems are.

Interview participant #1

There's a couple near town and she told them cover it up or I'm leaving you with the four kids because she couldn't stand never having the windows open. So they covered it up, they had no choice but to cover it up. ...because he was one of the major investors she said, 'You're going to have to do something because we can't stand it. We can never have our windows open' because it stank so bad and that was ¼ away so I mean it was fortunate that they were an investor and it had to be done, but if it was you or me. . .

Interview participant #1

Several participants linked the odour issue to farm ownership, particularly in relation to ILOs. The belief was that if investors had more of a connection with the local community and their operation had more at stake than finances, perhaps some of the issues, in particular odour might be avoided. Therefore, a recommendation made by several interviewees was that barn owners live within close proximity to their hog operation. This would also help hog barn owners gain credibility and trust in the local community.

...you're still going to make a smell but we can – I think the majority of the neighbours can live with that week of smell that you get when they apply it because that's all part and parcel to farming. But like I say, put these major investors – the guys that are there to make money – put their houses right beside their barns and . . .

On the same quarter section . . .

No, right beside, the same way we are--within three to five hundred yards of the barn.

Interview Participant #1

He lives at the yard – the small one close to us. The owner lives in that yard and does make some reasonable attempts to recognize the impact of some of the activities of that barn with the people who live in the area. He'll try not to spread manure or do any transfer when the wind is from the south because he knows there's that house, that house, and us that it's going to impact. He tries to be a decent neighbour whereas the guy that owns the really big operation who lives another 2 ½ miles that way and it has no impact on his daily life other than the money he takes in from it – he's not smelling it and he's not even there to run it. He does not even smell it during the day. He hires people to run it. I'd like to see some kind of rule that if a person builds a barn, that if they're going to continue building them, that the owner has to live there. I think things would be a little different then.

Interview Participant #11

Yeah, I understand you need to do this as a livelihood but it's not one specific farmer-person, my neighbour. It's individuals who are stinking up my backyard and don't even live here--that's what I have a problem with.

Interview Participant #5

So that was another reason to be away on another quarter section for if some day I wanted to sell the unit, I could sell it off and still keep farming. That wasn't accepted very well [by the public] either, just the fact that it wasn't on my yard.

Interview Participant #9

Interview participants also expressed the need for greater monitoring and enforcement of regulations to better manage the odour issues from the hog industry.

He promised the municipality twice – it's in the minutes of the municipality meetings –when he was asking for permission to build the barns--that he would cover his lagoon. And here we are and it's still not covered.

*I believe he's been ordered to cover too.
Yeah, he's been ordered to cover, but it's not been covered. There's no enforcement at all.*

Now this is picking on one particular barn, but that's basically because it's the one that impacts our life.

Interview Participant #11

...and come out early morning and late night and then you can really smell it--like come out at 7:00 in the morning or 10:00 at night. Don't come out at 3:00 in the afternoon--by then there's a wind...And don't call them before you come out.

Interview Participant #1

Another interview participant recommended that farmers be required to notify the appropriate authorities when they begin manure spreading, as a method for improving industry compliance and monitoring.

You can't burn a fire here without phoning--if you do you get fined. If this is something important that's polluting and making those algae blooms then it's something that would be very simple. They might check them, they might not.

'So a program similar to the burning program?'

Yeah, if you're going to inject manure that day you phone and tell them what you're doing. If they're doing it properly they have nothing to worry about, right?

Interview Participant #12

Public Role in Communicating with Conservation Officers

With regards to making enquiries or raising concerns regarding the hog industry, several interview participants expressed difficulty in knowing who to contact and spending inordinate amounts of time on the phone being shuffled from one authority to another. They recommended greater effort be made to educate the public about how to access information about the rules and regulations surrounding the hog industry and believe that a 1-800 TIP line would be desirable, in particular relating to reporting odour problems.

Who do you even phone? It's a rat chase, and this person directs you to that person, this person to that person—really there's nobody that—it's frustrating in and of itself--that you have an issue but you can't even find the person to complain to and you know it was a while before she finally found [someone] and then lucky that she shared that information with us and saved us the rat race.

Interview Participant #5

That's something that I would recommend. That there be some kind of formal follow-up, 1 -800 number so if you had a complaint you could have it looked into...And that would be an anonymous way of doing things too, you know, in the case of any intimidation factor.

Interview Participant #19

More than one participant noted that the current system for reporting industry offenders is set-up in such a way that it undermines its very purpose and serves as a deterrent to the public.

Yeah, imagine! You have to pay like \$50 or \$100 and you have to have other people sign if you're going to put in an official complaint!

To me, why would you have to pay to report a crime – basically, what is a crime? It's a broken rule. If I see you assault someone and I report you to the police, why should they charge me \$50 for reporting something? That's something that I have difficulty with...I don't think it's a deterrent for everybody but for some people it would be a deterrent. If I smell manure or see manure being spread in winter it's going to cost me \$50 to report it and get it investigated, I'm not even going to bother.

Interview Participant #25

Political Structure

Participants expressed concerns about the ability of a local RM to approve and manage their ILOs. Of particular concern were the motives underlying decision making at the Rural Municipality level.

'So you've found the RM to be an effective decision making body out here?'

From what I've seen their hands are pretty much tied regarding the rules and regulations they have to begin with. That's pretty much the gist of what we got, that their hands were tied. There's really nothing there that they could revoke or reject.

'They were saying that they didn't have the power to make that decision?'

Right, basically. I mean they [the proponent] met every, they filled out the paper work, signed it and dated it and that's pretty much all they had to do. There wasn't a whole lot that could be said or done to rebuke it. Mr. X said that if they would've rejected them they would've been facing a law suit. Money was doing the talking.

Interview Participant #5

They [election candidates] approach the colonies by saying, you know if you vote for these guys they're anti-hog operations so therefore they [the Hutterites] started going out...So tell me if there isn't a conflict of interest? Definitely changed the political process because they now control the elections and we've seen this for three elections in a row now where the Hutterites have gone out to vote-- they say it's against their principles to get involved, but the council is predominantly pushing the hog industry. Councilors and the reeve have approached them to say, 'You know the other guys are

opposed to hog production'. The other guys are not opposed to the hog production; they just want some control and some limits.

Interview Participant #23

I think our municipality itself...is not upbeat to all this. They're afraid to have bad feelings so they just let everything come in. Let them come in, let them come in, let them come in! I think those are the individuals that are in there right now, and they have to be on top of this and never mind being friendly and letting all their buddies come in. Years ago we had – the reeve was one of the major investors in the hog barn and that just doesn't go over...You've just got to put your foot down and say, 'Yeah, you can build, but these are the conditions' and you either do it or you go somewhere else.

Interview Participant #1

I found that really councils didn't know a lot about the issue and they weren't too supportive. I think there was some relationship between the reeve at the time and the colony...I think they did some work for the reeve, so I don't know; maybe that was part of the problem. We found that the council wasn't too supportive and also I think a lot of the members on the council didn't really understand the issues and really were advised by the Department of Agriculture. They would often come out to these meetings or – there was somebody from Planning who would come out too and really were sort of on the hog side, we felt anyway.

Interview Participant #22

We have a neighbour here in town that digs a hole, but he's the one that dumped like 75 pigs in the creek over the winter months so ...he put them in the field in the winter time. And when we saw them we contacted the municipal councilor.

When we saw them? He crossed our land to dump them in the creek!

We saw all these dead pigs floating...

'Did you report this to anyone?'

To the councilor yeah, and he told him to cover them.

Interview Participant #23

For these and other reasons, some participants expressed the desire to see the province taking a more active role in decision-making and regulation of the hog industry.

There has to be, in my opinion, a larger body making these decisions for the betterment of all. And I look to the provincial government for that, rather than small municipalities, where maybe a couple of the councilors are involved in the hog business, or under pressure from neighbours. You know...with politicians the closer you are to people that elect you, the more difficult the job is because you're dealing on a day-to-day basis with things that a provincial and certainly a federal politician wouldn't even conceive of.

Interview Participant #7

I've got to talk about the political structure. You see right now most of the people who are in the governance of the municipality are either hog producers or councilors – hog producers themselves, or they've got very close friends who are hog producers...The Hutterite colony here obviously has a massive vote, so there's a problem there with being able to elect people who represent your point of view--you can't...we're outnumbered 100/1. You need governance or an enforcement structure which transcends municipal governance and it has to be provincial. Even at the provincial level there can be some political interference.

Interview Participant #25

Socioeconomic Impacts

One of the goals of the hog industry in Manitoba is rural revitalization, by providing a source of employment and income from spin-off business and industry. Many participants made comments that underscored the economic benefits of the hog industry.

We will live here permanently, unless some health issue comes up. But unless we have industry like hogs, we won't be able to keep those hospitals open here-- we do have to have them.

Interview Participant #7

So there are all kinds of employment and spin-offs in commercial activities. It helps the grain industry. It gives you a good market for grain. In fact, the manure issue – the effluent issue – is in fact a great natural fertilizer, not that we've ever used it directly, but from what I see, any manure from any operation is a great natural organic fertilizer of some considerable value given where the price of chemical fertilizers have gone. And if spread out and applied

properly there's no reason why it needs to be an environmental issue any more than any other kind of farming issue.

Interview Participant #8

My concerns are that we're affecting many, many people in the hog industry by putting this pause on, and it's not the 15,000 that "What's-his-name" spoke about, but it certainly is a great number who will in some way be impacted by the fact that this pause has been put in place. That's a concern, but my bigger concern is that we are not looking at the number one offender.

Interview Participant #29

Others, however, expressed concern and provided contrary opinion about the economic benefits espoused by industry and some farmers.

It does create jobs and all that but what, \$12/hour jobs? Big deal. What does that do? You can't raise a family on it or not very well. It drives people out of rural Manitoba. People get fed up with the smell and leave, which is what people in the pig industry want because if there's no one left to complain then they have it all to themselves.

Interview Participant #11

It's unsustainable in the long run, although it's important because it's providing a source of food. I don't think we should eradicate the hog industry here. It's a major employer in the economy, which is really important as well. It's ill informed. I think they've expanded the hog industry too rapidly with too little information

Interview Participant #24

I think when they were trying to come in there they were saying 10-15 jobs and all that, and I heard from those other barns that that isn't happening...they end up going through so many people and there's not a lot of local people employed in the barns and they don't go to the local CO-OP and they get all their feed in on big trucks. They even have vets hired to do all their own barns, this type of thing. So probably local stuff, they're not buying. My own personal opinion is that there's not much benefit to having them [the industry] around

Interview Participant #6

Basically our municipalities are not looking at the whole picture. They're only looking at revenue; they're not looking at what it's going to cost the residents. The residents of the rural area, our taxation rate is ridiculous. And it's our taxes that support the infrastructure. And the other thing too, is these big hog operations have a lot of exemptions.

Interview Participant #23

Despite the real or perceived economic benefits of the hog industry, there was significant concern expressed by participants regarding the manner in which the hog industry has divided communities.

You've got the pro-hog people and the not so pro-hog people and it even gets in the families. We know married people where one spouse is very much against and it creates conflict. We've seen it. You get people working in town who don't speak out because they're afraid of losing their job because their employer has told them, 'don't get involved. Don't speak out against it, these people are customers or clients or whatever'. There's some of that going on. It divides communities.

Interview Participant #11

I remember two years ago, three years ago, I'm not sure, but this municipality (that I live in) had to come up with something. And they did, and it was good and I don't even know what it is. But there are some restrictions on development. But it was after the fact that a friend of mine, who's a teacher, had one [ILO] built right next to his house. And since then he's moved, and of course the value of that home went down dramatically after that—that's not fair. There's lots of land that they could've built that place upon, but they chose that because, whether they owned that land before, or convenience or what ever—there's really no physical reason that they had to be there, except for the fact that they made that choice based upon economics and I don't think that that's the way it should necessarily be done.

Interview Participant #7

And I know here it has set the community apart in many ways. When we first started the opposing, I lost money on it because the guy that I was building for never paid me for my work. Now we don't—I don't—stand up and say 'I don't think you're doing the right thing'. Because we spend so much energy and time doing that, I don't want to hide it anymore. I just want to try and correct it. These things that have gone wrong, especially for us here--it's the river that has been damaged so terribly much--we're trying to fix the problem using the Conservation District Authority and money to do something.

Interview Participant #13

We had a neighbour move they were so upset by a barn being built near them. He was a Chief of the Fire Department in our local town and he left and he got so mad at the municipality....He moved to a totally different place. They tried selling their place and the pig people came in...they were just devastated by it—the fact that they were

moving in. And no one was listening; it felt like no one was hearing what they were saying.

Interview Participant #10

Minority Themes

A few interviewees had additional recommendations for improving other aspects of the hog industry in order to encourage its environmental sustainability. These included efforts to improve the technical review process; reduce greenhouse gas emissions; improve drainage; reduce the use of non-essential antibiotics; increase soil sampling and accuracy and diversify the industry.

Technical Review

One of the stages in which the province is involved in hog operation approvals is during the technical review of a proposed ILO. During this stage, experts in such areas as water stewardship, soil conservation, agriculture and engineering are involved in the review of the local environment. However, as described below, participants identified issues with achieving a proper technical review of ILOs.

I cannot think of a single hog barn application permit that has been stopped because of a technical review. I've had large hog producers talk to me about technical reviews and they say it's just a formality. It's just a thing where you fill out your form, you get your technical review, and the municipality gets the technical review and says, 'Oh, it's passed the technical review-rubber stamp'.

Interview participant #25

There were things in the technical review that were done on the hog barn here to try and get this hog barn approved; rather than being objective about it and saying 'no, you can't do it because of this'. It almost seemed like the province had an agenda of putting more hog barns in the area and that was prior to this freeze...the work that needs to be done has to be done by people that look at it fairly and make an objective comment on it. Because in one of the technical reviews, and this was done on this hog barn, the soils person--who's trying to sell it—he's saying it's a class 5 or 6, he was saying that because of certain conditions he was recommending it get moved up to a 2 or 3 therefore there wasn't a problem with them going ahead

with the barn. And then you look at the agrologist report saying that the topsoil was very thin and then it got into a shale-gravelly substructure, which would put the aquifer at extreme risk. Those two just don't match. And they both work for the province. And they both should be working for the people and the farmer. There's going to be times when they're going to have to say, 'it just doesn't make sense here' to be fair to the people.

Interview Participant #4

...it's not only that, as we mentioned earlier, the waterway that's on the reserve was not taken into account [in the technical review] because it was not on a provincial map and these are things that are totally ignored...All of this is very strange to us.

Interview Participant #4

When they did the technical review and the recommendations they made, by that I mean all the numbers, when they got their numbers for residences within a mile and two miles, they ended at the reserve line. They did not include the housing units within the reserve...We know the reserve does not exist when it comes to these technical reviews and we were told that straight out. Numbers, they did not care how many houses were within a mile or two miles, even though they cared outside. The reserve does not exist when it comes to the technical review...They are not required to include reserves.

Interview Participant #4

They did make a lot of mistakes in my technical review...they made huge mistakes on where the water was flowing from the site I had picked to build the barn, to which direction the water was flowing to which watershed [it was located in]--They didn't even get that right! I can see how the public has no confidence in the regulation process when there are mistakes like that going on.

Interview Participant #9

They [Technical Review Committee] say 'the soils are risky for putting on manure and you should hire an agronomist'--you SHOULD HIRE. Well there was nothing saying, you HAVE TO hire an agronomist. Well that doesn't mean the farmer's going to do it. He's worried about keeping his costs down so he's not going to hire somebody.

Interview participant #15

You have to be at arm's length and they're not. The technical review...is really closely tied to the industry itself so they don't do anything to jeopardize the production within their industry. We've had some fairly bad examples out here in technical review reports that were really poorly done – absolutely poorly done, allowing barns

to be built where, according to the technical review regulations, shouldn't have been built but they were anyway.

Interview participant #15

Greenhouse Gases

Participants expressed the concern for the industry's emission of greenhouse gases and recommended methane capture systems as a sustainable solution to this problem.

..The more I find out about it, the more I think biogas composting is the way to go because you can extract two good things out of--even four good things--out of that process and come up with even better quality compost after the fact, because the two things are quite compatible...if you do the extraction as the methane and then put it into a composting process, it takes away the difficulty of trying to compost something that doesn't want to compost because you've extracted it already in the form of methane. And then in the composting process, it happens much more readily. And according to the studies, you get a better product at the end.

Interview Participant #13

I think every type of industry, including the hog industry, needs to take action on climate change. So as a large industry that, well, I mean, you've got obviously different levels like smaller operations and larger operations and some of them are family-owned and some of them are owned by larger companies...They're here, they're using our resources and adding threat to our natural resources, and increasing the threat. So there should be some onus on them to perhaps provide a report to government, perhaps along with other reporting mechanisms on a greenhouse gas action plan. We're all contributors in some way, shape or form so they should have to take action as well.

Interview Participant #24

I think it would be really good if any of these Intensive Livestock Operations where there's heat generated, or methane produced, that it could be sort of recycled into the heat required to heat the building or the other buildings on the farm. But I don't think we've got systems worked out yet, where all of the emissions could be actually utilized as a source of heat.

Interview Participant #27

Whatever comes off the lagoons, it's still methane and it's still greenhouse gas. To give you an example, I know the stats from the States, they've got 16 000 water treatment plants and from these 16 000 treatment plants, they lose 465 000 tonnes of methane a year. So if you were looking at the amount of lagoons we have here, like one of the Hytek barns where they've got 8 000 sows in it, that's not even counting the weanlings and stuff like that...I mean the amount of manure that comes off of these barns is phenomenal. So I think there's a lot of wasted energy because it's too much work, or it's too costly. It's not going to be costly once the system is established, because they're going to realize this is not bad at all. We can make a profit from this as well.

Interview Participant #13

Do we need better ways to put on the manure? Most definitely. We need a university that is working on not the distribution of manure, but the utilization of it. We now have a product that we are making and it's not useless product. We need to know how to make biogas in a northern climate; we need to know how to separate the solids out so that we can reduce the amount of water that we use if we're using a flush barn system. There are all kinds of research that we can do to improve what we're doing but not cutting the industry off.

Interview Participant #26

Drainage

One recommendation made by an interviewee was the better use of drainage tiling policy to reduce the potential for runoff from spread fields and maximize soil holding phosphate capacity.

I want a good drainage policy for Manitoba that includes tile drainage...because the land is better drained, so plant roots can reach deeper. We have a utilization of about 30% more; we're getting about 30% more crop off a tile-grained crop than an untilled. Now this land, when it's tilled, it's in better condition for machinery to go across it, better able to absorb the manure and better able to utilize the manure. It also has less runoff going into the lake and reduces flooding by about 15%. I want to see a Municipal Drainage Act.

Interview Participant #26

Antibiotics

A few of the interview participants brought up the prevailing concern of non-therapeutic use of antibiotics in the hog industry, especially when used as growth promotants.

Anyone who is putting antibiotics in the food constantly, just for the sake of putting it in, is ...I mean that's absurd and definitely should be regulations about that if they're aren't already. But that is a real concern right? You're like what is the food I'm eating and is the antibiotics I'm eating now going to go into me? Are the antibiotics getting immune—you know we talk about these super bugs that come from the cattle and the pigs. So that needs to be regulated based on pigs getting sick...You know it would be great if we could perfect methods to give individual pigs medicine once in a while. And if there can be ways of giving medicine individually, that's something that needs to be researched more. Perhaps that's been something that's already been researched by the companies themselves. And perhaps giving the medicine to every pig is a solution that works quickest, but maybe it's not the best. So those are things that definitely need to be researched when you're dealing with massive, massive hogs.

Interview Participant #10

There are public health issues with respect to the high use of antibiotics and growth hormones in the meat and an indirect effect on humans from consuming that kind of meat. Also research has shown that in those Intensive Livestock Operations, the animals produce higher levels of stress hormones in their bodies and that affects the meat as well. While not detectable by humans, the meat is altered in terms of hormones and that kind of thing, so that can have indirect effects on health.

Interview Participant #24

Soil Sampling

Another participant discussed the need for more intensive soil sampling and greater accuracy in the soil samples taken from hog manure spread fields. An

example of a way to improve soil sample accuracy was to use those labs which were accredited and widely respected amongst the scientific community.

In terms of the variation that exists in soil, the potential for variation is great. The more samples you take the better. Of course the cost also goes up, but therefore the accuracy also goes up and hopefully the chances for inaccuracy go down. I don't think you can ever take enough soil samples, the more you take the better it is.

Interview Participant #21

Industry Diversification

A few interview participants contributed their ideas about how the industry might be altered to be made sustainable. The message in these interviews was that a more diverse industry would be also more environmentally sustainable and suggested that in some instances, it may be necessary to scale back.

...it kind of goes against where everything is going, but kind of scaling back and farmers being more mixed farming instead of going specialized. But whether that's—I know it's not really economically feasible. But the change has to be made if there's going to be a balance between what you're making and what you're taking away--environmentally.

Interview Participant #17

In fact I'd say that adding a hog operation to a very large scale grain operation is probably a good thing rather than a bad thing. It allows you, rather than shipping all the grain out of the country and all that nutrient with it and then bringing it in from natural gas or phosphate rock or somewhere else, at least with the hog operation you're allowed to recycle some of that on the farm. Close up some of those nutrient cycles. So from a nutrient perspective I think it makes sustainable sense to add a hog operation to a big grain operation.

Interview Participant #18

...try to study too and see if there are innovative approaches to integrating good management with productivity while also good management, so that its not only sustainable but that you are able to

utilize—I keep coming back to this thing—you are able to turn over and utilize all of those nutrients on the land base than you have. Or if you make some deal with the neighbour or something like that. But that you have no more nutrient buildup than you or your consortium or your group can safely reintegrate into the soil the water, the air in the amount of area that you can control. So that you're not spilling off stuff and damaging someone else's either livelihood, or their future, or their grandchildren's future.

Interview Participant #27

On the other hand, it was expressed by those interviewees with ties to the industry that there is a push to grow bigger in order to competitive in the market.

The costs per animal unit to build and to follow all the regulations are just too much to start messing around with 100 or 200 animal units. It just won't work unless there's something really drastic that changes, or possibly organic pigs or something strange like that, but then that's such a high risk again because you'll be venturing into something where there are no benchmarks. Any time you do something out of the ordinary there's probably a 50% chance it's going to fail. You certainly don't want to put too much money into something that's different. Most kids that I see – I've got a sixteen and fourteen year old; they've already decided that they're not going to stay on the farm.

Interview Participant #9

There are probably more problems with small operations than big operations at this point and yet anybody who opposes the hog industry will say they don't oppose the small family farms. But I think that's who is going to suffer the most on the regulations that are coming down the pipe because of all that's happened in the last year or two, or whatever. I think Hogwatch is destroying the small family hog farm and it's not because – that's not who they're trying to pick on but that's who is suffering from it.

Interview Participant #9

Conclusions

Over the course of the interviews, participants expressed deep appreciation for the opportunity to have their views heard in an unthreatening forum. Moreover, many participants articulated a wish to see the Clean Environment Commission do this again in other forums. Participants were exceedingly forthcoming with their views as evidenced both in the number of people that participated and the amount of time they spent talking to the researcher.

The views expressed mirror many of those raised in other forums about intensive hog operations. Issues of manure management, nutrient runoff into waterways and the vulnerability of drinking water are not unique to this report. However, many identified the need to improve upon issues at the political level, particularly through a more effective approval and enforcement process. Furthermore, greenhouse gas emissions generated by the livestock industry is an example of an issue that has not been widely discussed, despite considerable concern about the issue.

Views offered by participants on issues surrounding the future sustainability of hog production in Manitoba speak for themselves. One issue that does not come through as clearly from the results relates to the how we define and measure sustainability and whether the hog industry should be a leader or a follower in its pursuit. Some participants seemed to be suggesting that the hog industry should only take action on environmental sustainability after other sectors clean-up their act. In other words the industry should not be expected to be a leader in fulfilling

sustainability goals. Perhaps if terms such as 'sustainability' were more clearly defined and data were available to differentiate between livestock and hog sector data, we could be better equipped to articulate tangible solutions and motivate key players in taking Manitoba forward towards the vision of a sustainable future.