Manitoba

Memorandum

DATE: December 12, 2025

TO: Public Registry

FROM: Jay Mak, P. Eng.
Senior Environmental Engineer
Land-use, Waste Management and Energy Section

SUBJECT: File 6013.10 – RM of Springfield Well Field Expansion – Information for Public Registry

Please find attached the public and TAC correspondence related to RM of Springfield's file (6013.10) for distribution to the public registries. The documents included are:

No	Public Comment	Notes
1	27 Public comments	Starting on page 3

No	Technical Advisory Committee Member	Response Provided
1	**Environment and Climate Change**	
	Environmental Approvals Branch	
	• Air Quality Management	No response
	• Land Use, Waste Management, and Energy	April 10, 2025
	Environmental Compliance and Enforcement Branch	
	• Regional Office	May 9, 2025
	Office of Drinking Water	April 2, 2025
	Drainage and Water Rights Licensing Branch	April 7 and May 21, 2025
	Water Science and Watershed Management Branch	
	• Water Quality Management Section	No response
	• Groundwater Management Section	No response
	Climate and Green Plan Implementation Office	No response
	Parks and Trails	May 12, 2025
	Aquatic Invasive Species	No response
2	**Natural Resources and Indigenous Futures**	
	Wildlife and Fisheries Branch (wildlife)	April 8, 2025
	Wildlife and Fisheries Branch (fisheries)	No response
	Forestry and Peatlands Branch	April 8, 2025
	Lands and Planning	No response
3	**Business, Mining, Trade and Job Creation**	
	Mines	April 8, 2025
	Petroleum	May 9, 2025
4	**Sport, Culture, Heritage and Tourism** - Historic Resources Branch	No response
5	**Municipal and Northern Relations**	

	Community Planning Branch	May 6, 2025
6	**Agriculture**	No response
7	**Transportation and Infrastructure**	
	• Highway Regional Operations – Eastern Region	April 7, 2025
	• Highway Design	May 9, 2025
8	**Health, Seniors and Long-Term Care -** Winnipeg Regional Health Authority	May 21, 2025
9	**Impact Assessment Agency of Canada**	No response

Public Comments

From: [redacted]
Sent: May 9, 2025 11:04 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Objection to Well Field Expansion File 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

I am currently a resident of the RM of Springfield

Please register my objection to Well Field Expansion File: 6013.10 highlighting the following concerns.

I do not support the location of the well field. Two miles further east, Water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure. In my opinion this is a waste of public funds.

The more "technical and economic" area for the Dugald/Oakbank well field was abandoned. (p.10 EAP 6013.00) However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. I see this as a better use of public funds and meets sustainable development.

Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels.

There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge.

As proposed, the project must not be licensed.

Sincerely,
[redacted]
RM of Springfield Resident

From: [redacted]
Sent: May 9, 2025 11:11 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Well field expansion file 6013.10

Dear Sir. I am sure that you have received several emails pertaining to this matter. These most likely will contain specific detailed information expanding upon why this project as proposed should be denied. In short, the exploratory well (farthest east) TH-03 contained the best water which would only require chlorination. Wells contained in TH-02 has poorer quality water which would require reverse osmosis ROWTP. The cost of this plant is prohibitive when compared to the cost of an approximate 3 mile longer pipeline and a chlorination plant. The project as proposed should be denied. Thank you.

Sent from my iPad

From: [redacted]
Sent: May 9, 2025 3:42 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Well Field Expansion File 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

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*In 2007, The MB Clean Environment Commission(CEC) found "insufficient information available in respect of the sustainability of the water resources" and recommended the MB govt prioritize the "development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers". Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.

*In order for environmental assessments "to be done well, they must include an assessment of cumulative effects."(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to

environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

*****In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

The handling of this development once again shows the need to reform MB's assessment & licensing regime under The Environment Act.

As proposed, the project must not be licensed.

Sincerely,

[redacted]

From: [redacted]
Sent: May 9, 2025 7:31 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Well Field Expansion File: 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

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Image: Map of test site locations; Radius of drawdown for 72-hour pumping test from proposed Well 4; Longterm Drawdown using half of proposed 1,600dam3/year groundwater allocation in year 5 shows draw in saline; Flow in Cooks Creek Diversion.

From: [redacted]
Sent: May 10, 2025 6:07 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: 6013.10

Dear Mr. Mak,

Enclosed is my written submission to RMSpringfield well field expansion 6013.10.

Sincerely,

[redacted]

Attention Jay Mak,
Senior Environmental Engineer
Manitoba Environment and Climate Change

Please register my objection to well field expansion file 6013.10.

The current system uses Heatherdale well water to blend with the current Dugald Oakbank(DO) well field to meet drinking water standards. The RM wants to abandon the Heatherdale wells and expand the DO well field. Although deemed GUDI, the Heatherdale wells only require chlorination and UV treatment. Has the Province ordered the RM to abandon the wells or is the RM taking this upon themselves?

Abandoning the wells and choosing to expand the well field 1-mile directly south of the existing wells, is still in an area of the aquifer that produces water that does not meet drinking water standards. Consequently, because of this well field location, a Reverse Osmosis treatment plant is proposed. The RM needs to move the wells further southeast. Here the water would not require construction, operation and maintenance of a RO treatment plant and residents would be relieved of the financial burden.

Page 62 states “The addition of more supply wells would also help to lower the individual pumping rates needed. Withdrawing groundwater from a larger portion of the aquifer (i.e. using more wells) would serve to reduce the long term drawdown impacts surrounding each pumping site.” The proposed allocation is 1,600 dam3/year and flow rate 146L/s. The wells interfere with each other. The pumping rate impacts the saline boundary. To stop these impacts, is the consultant, a drilling company, recommending to drill more wells and reduce the rate water is being pumped from each well?

I request that the proposed wells be drilled further southeast into fresh water now. The expansion will be further away from the current well field and alleviate interference. The well field will be in fresh water that meets drinking water quality and would then eliminate the RO treatment plant and associated issues. This would remove the uncertainty of the project and an ever expanding well field.

I request the Province have the Clean Environment Commission review the well field *and* the interconnected RO treatment plant, hold public hearings and provide participant funding.

This project has been flawed from the start and places a needless economic burden on taxpayers. I do not approve licensing of the well field expansion or the interconnected RO treatment plant.
Sincerely,
[redacted]

From: [redacted]
Sent: May 10, 2025 11:20 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Objection - Well Field Expansion File: 6013.10

Attention:
Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

Good morning Mr. Mak

Please register my objection to Well Field Expansion File: 6013.10 highlighting the following concerns:

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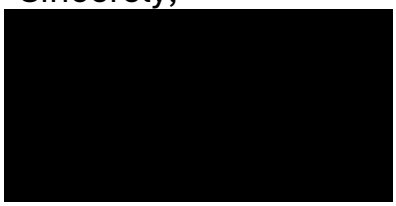

From: [redacted]
Sent: May 10, 2025 11:39 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Objection - Well Field Expansion File: 6013.10

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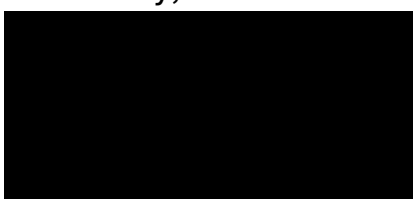

From: [redacted]
Sent: May 10, 2025 7:18 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>; Minister of Environment and Climate Change <minecc@manitoba.ca>
Subject: Well Field Expansion File: 6013.10

Dear Mr. Mak,

Attached are 2 letters wherein I strongly oppose Well Field Expansion File: 6013.10. Please add both to the public registry complete with my name and address.

Yours truly,
[redacted]

[redacted]

May 10, 2025

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Blvd.
Winnipeg, MB, R3Y 0L6

Dear Mr. Mak,

I oppose “Well Field Expansion File: 6013.10”.

The proposal apparently favours treating dirty water forever, instead of pumping from a clean source. Really?

Should the City of Winnipeg consume treated water from the Red River, rather than the clean water from Shoal Lake?

Please invite the CEC to hold public hearings.

Kindly do not redact my name. To do so is a violation of free speech.

Yours truly,

[redacted]

PS I am attaching a letter dated June 24, 2024 wherein I first objected to this file. Please include it in the Public Registry, complete with my name.

[redacted]

June 24, 2024

Jay Mak
Environmental Approvals Branch

Dear Mr. Mak:

Re: File 6219, Rural Municipality of Springfield – Water Treatment Plant Upgrades

I had hoped that the tedious parade of negligent Environment Act Proposals in the RMS was over. That included Parrish and Heimbecker (where the Branch failed to comprehend the Act's rules on grain elevator setbacks), Berger Peat Moss (where the Branch accepted horticulture as a synonym for agriculture) and Sio Silica (where the Branch played catch up to the public).

Now we are faced with an ill-conceived plan to spend millions on supplying potable water for people who don't live here yet. The RMS proposal states that it must respond to the growth that it and various developers are promoting. This growth is primarily in the form of refugees from Winnipeg who seek to purchase building lots on erstwhile agricultural land. Essentially, they want a Winnipeg-style sub-division in the RMS. These out of control sub-divisions in Dugald and Oakbank now have, and will have, a clear view of Winnipeg's skyline. There is no shortage of buildable land in Winnipeg, so why must our farm land be squandered on yet more sub-divisions (as was also the case with Parrish and Heimbecker and Berger Peat Moss)?

The administration of the RMS and the EAB must understand that we cannot grow our way to sustainability. Ask your local oncologist.

The RMS has manufactured an artificial water crisis, and it remains to be seen if the EAB will be co-opted.

I expect the EAB to enforce Clause 12.0.2 of the *Environment Act.* Therein, the director or minister must account for greenhouse gases generated by the proposed development. I agree that the construction of a water treatment plant and the required pipelines will not be a significant producer of greenhouse gases. **But it will encourage exponentially more Winnipeg-style sub-divisions in the RMS leading to significant greenhouse gas production because the houses will largely be inhabited by commuters to the city from which they are escaping.**

Clause 4.9 of the applicant's Environment Act Proposal , and concerning "Climate Change" , states that the proposal will have "no predicted impacts directly related to climate change". How hard is it to connect the dots between more water, more sub-division houses, more commuters and more greenhouse gases?

And let me be clear: I am not opposed to people acquiring acreages for hobby farms, woodlot management, market gardens, equestrian activities and so on. This should be the destiny of a **rural** municipality, not cloning Charleswood or Headingley.

This Environment Act Proposal should be kyboshed. Doing so will save money, reduce draws on a fragile aquifer, reduce water pollution, avoid needless greenhouse gases and protect precious farm land.

Yours truly,

[redacted]

From: [redacted]
Sent: May 10, 2025 11:44 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Objection - Well Field Expansion File: 6013.10

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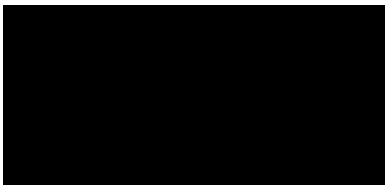


From: [redacted]
Sent: May 11, 2025 8:32 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: opposition to file 6013.10

Mr. Mak, **please register my opposition** to the application, File 6013.10, which the RM of Springfield is making to Manitoba Environment and Climate Change for approval of a Well Field Expansion in support of a new water treatment plant.

I oppose the plan because of the negative impact the reverse osmosis plant will have upon the Lake Winnipeg Watershed. By way of public notification, on page 11 of *The Clipper,* dated 10 April 2025, the project description asserts that "The membrane concentrate and backwash water will be seasonally discharged to Cooks Creek Diversion."

I, for one, have appeared before the RM Council to state upon previous occasions that releasing contaminants into the Cooks Creek Diversion will contribute to the deterioration of the Lake Winnipeg Watershed. I received no indication that my concern, or that of other citizens, was taken into consideration in the plant development design.

Cooks Creek Diversion flows into the Floodway which flows into Lake Winnipeg.

Since towns and villages first were built in Manitoba, our water systems have been the number one convenient solution for effluent, or liquid waste. The fresh water system has been habitually, purposefully chosen as a convenient dumping ground, a sewer. In 2025, however, we know better. We see all around us the effects of ignoring the consequences of abusing the natural world. We are dependent upon clean water, clean air and clean soil. Dumping heavy metals can no longer serve as the default solution to an issue that does not go away when it is simply out of sight.

There is actually a second, bigger question: why was reverse osmosis selected as the water treatment plant process? It is a familiar term: reverse osmosis is touted as a good system for water you can buy in a jug from the convenience store. But look closer. Beyond a familiar ring, what else is there to recommend it? The choice of reverse osmosis (RO) as the water treatment process reflects very poorly on the decision-making ability of the design engineers and the Council: RO is expensive, and it is a threat, in this particular case, to the Lake Winnipeg Watershed. It uses large volumes of clean water and produces contaminants which, while cleaning the proposed well water will contaminate water, air and soil. The design engineers and Council demonstrate no serious interest in protecting the water system beyond the wells.

Summer is closing in, and so are wildfires. Wildfires are but one indication of climate change. Algae in Lake Winnipeg are another signal of what happens when we turn a blind eye. There is growing evidence to warn us that we need to act responsibly to steward the natural world we rely upon. There is no need to choose the reverse osmosis process which will flagrantly poison the Watershed.

Thank you for registering my point of view.

[redacted]
A concerned Manitoba citizen

From: [redacted]
Sent: May 11, 2025 9:49 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: File #6013.10 Well Field Expansion

[redacted]

May11,2025

Dear Sir:

I am writing with concerns about the water quality from the potential location of the well field expansion. Presently our drinking water comes from the Heatherdale well field and is an excellent source of drinking water. There has been a concern of potential contamination from a neighboring gravel pit business. Residents were aware of water quality problems being considered at the new location. At April 10,2018 Council meeting, it was stated "the project must be mindful of cost; further east means an increased cost for pipeline.

The source of water at well field located now being put forward, does not meet drinking water standards requiring costly Reverse Osmosis water treatment. The toxins will be have to stored in a slurry pond and later released into the Cooks Creek Diversion that ultimately runs into Lake Winnipeg that already has environmental problems. The water treatment plant will be using this process for the life of the plant.

If Council were to consider another location with more pristine water for drinking, there would no increased cost due to extra pipeline because the plant wouldn't require such an expensive system, no slurry ponds would be required, and no additional pollution to Lake Winnipeg. Taxpayers will be paying for this and want the best quality of drinking water available. Water is a necessity to live.

My request is that the R.M. of Springfield be instructed to hook up to a pristine water source in which other locations could serve residents well. Other locations have not been sourced for comparison. Thank you.

Your Sincerely,
[redacted]

From: [redacted]
Sent: May 11, 2025 2:22 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Springfield Well Field Expansion File: 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB
R3Y 0L6

Please register my objection to the Well Field Expansion File: 6013.10, highlighting the following concerns:

The Environment Assessment process allowed for separate assessment of the current well field, the well field expansion, and the Reverse Osmosis Water Treatment Plant (ROWTP). “Project splitting” is highly criticized as it prevents full assessment of all environment, economic and social risks and impacts from the project. This is particularly distressing given the need to protect local and regional groundwater sources.

I do not support the location of the well field. Two miles further east, water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis Water Treatment Plant and required infrastructure. The use of the area around TH-03 as a source is also only three miles west of Anola. Water from this area could also be used as a new, regular, source, or a back-up source, for the Anola Water System. The more redundancy built into the system, at minimal cost, the better. A lot of pipe can be run for the cost of the Reverse Osmosis Plant. The existing plan shows pipe being run through Dugald to the Reverse Osmosis Plant, and then back the two miles to supply treated water to Dugald. In my opinion this is a waste of public funds.

The more “technical and economic” area for the Dugald/Oakbank well field was abandoned (p.10 EAP 6013.00). However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. I see this as a better use of public funds and meets sustainable development. Not enough investigation, by another non-invested water handling company, has been done on sourcing water from the moraine that runs east and west north of Oakbank. It is not only one of the current sources of water for the Dugald/Oakbank system, for many years it was the only source. There are also all the private wells in that area that give Springfield residents good, safe, water. This area was discarded as a source without proper testing. None of the test wells, TH-01 to TH-08, were north of PTH 15, never mind north of PR 213, Garven Rd.

Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels. There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge into the Cooks Creek Diversion.

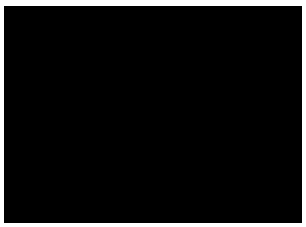
Calculations project water draw to occur in the saline portion of the Sandstone aquifer. Assessment of impacts from saline water draw to the aquifer system, to neighboring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the Proposal stage not after licensing through “a staged approach”.

In 2007, the MB Clean Environment Commission (CEC) found “insufficient information available in respect of the sustainability of the water resources” and recommended the MB govt prioritize the “development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers”. Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project. In order for environmental assessments “to be done well, they must include an assessment of cumulative effects” (CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

The handling of this development once again shows the need to reform MB’s assessment and licensing regime under The Environment Act.

As proposed, the project must not be licensed.



From: [redacted]
Sent: May 11, 2025 9:06 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: water wisdom

Over the past few years I have become increasingly concerned about the stewardship of our water resource in Manitoba. Please register my objection to the Well Field Expansion File: 6013.10.

I note that the Environment Assessment process allowed for separate assessment of the current well field, the well field expansion and the Reverse Osmosis Water Treatment Plant(ROWTP). "Project splitting" is highly criticized as it prevents full assessment of all environment, economic and social risks and impacts from the project. This is particularly distressing given the need to protect local and regional groundwater sources.

I do not support the location of the well field. Two miles further east, Water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure. In my opinion this is a waste of public funds.

Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels.

There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge.

Calculations project water draw to occur in the saline portion of the Sandstone aquifer. Assessment of impacts from saline water draw to the aquifer system, to neighboring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the Proposal stage not after licensing through "a staged approach".

In 2007, The MB Clean Environment Commission(CEC) found "insufficient information available in respect of the sustainability of the water resources" and recommended the MB govt prioritize the "development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers". Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.

In order for environmental assessments "to be done well, they must include an assessment of cumulative effects."(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

Most importantly, a proposed water supply project in 2007 at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

The handling of this development once again shows the need to reform MB's assessment & licensing regime under The Environment Act.

As proposed, the project must not be licensed.

Thank you for your attention.

[redacted]

From: [redacted]
Sent: May 12, 2025 11:14 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>; Minister of Environment and Climate Change <minecc@manitoba.ca>; Mike.Moyes@yourmanitoba.ca
Subject: 6013.10

Please find attached our written submission concerning the Dugald/Oakbank water supply.

Our comments and questions are also to the Honorable Mike Moyes and to the Technical Advisory Committee.

We appreciate this opportunity to participate and trust that clear and reliable answers will be provided.

Sincerely,

[redacted]

Our Line in the Sand [redacted]

The Honourable Mike Moyes
Minister of Environment and Climate Change

Jay Mak
Senior Environmental Engineer
Department Environment and Climate Change

Re: comments on RM Springfield - Well Expansion File: 6013.10

Our Line in the Sand Manitoba(OLS) is a group of concerned citizens advocating Watershed protection in eastern Manitoba. OLS formed when a silica mining operation targeted a freshwater aquifer system that supplies drinking Water for Manitobans. Engaged in that licensing process and others, we recognize the need to reform Manitoba's environmental assessment process to enable evidence based analysis for real and enforceable protections. OLS continues to call for long overdue reform of Manitoba's environmental legislation, complete framework for robust groundwater management plans for the southeast, more opportunities for meaningful public engagement and funding for technical assistance for citizens seeking to protect their homes and livelihoods from proposed development.

Our comments and questions are to the 'proponent', Technical Advisory Committee, and to the Honourable Mike Moyes. OLS appreciates this opportunity to participate and trusts that clear, reliable answers will be provided.

Public comments on 6219

Due to the location of the well field, comments on the very closely interconnected Reverse Osmosis Water Treatment Plant(ROWTP), File: 6219, included questions on the well field and the assessment process. These have not been or have been inadequately addressed and the public have not been provided opportunity to comment on these 'answers'. We note, that rather than the Branch compiling and sending the comments/questions to the 'proponent', the RMSpringfield, Associated Engineering and Friesen Drillers "reviewed the submissions, extracted the comments and concerns and present them below for review by Environment and Climate Change." [1]
*Will the Department make certain that all public comments and questions are reviewed by the Technical Advisory Committee and the 'proponent' and receive clear and reliable answers thereby applying s.2(1) of The Manitoba Environment Act supporting meaningful public

[1] https://www.gov.mb.ca/sd/eal/registries/6219/20241003_add_info.pdf

involvement in the process and opportunity to "exercise influence over the quality of their living environment"?
*Will the Minister and Department respond to comments and questions that have been directed to them?
*Can the Department guarantee that the information provided by the consultant for the EAP is complete and accurate? We expect the TAC to review the accuracy and adequacy of all material submitted.
*Although EAPs 6013.00 & 6013.10 are significantly duplicated in material, we request that EAP file# 6013.00 link also be included for file's 6013.10 & 6219.00. This will ensure that the Public Registry provides continuity and is a proper repository for all material pertaining to a development.

Project splitting

The Environment Assessment process allowed for separate assessment of the well field, well field expansion, and the ROWTP. Project splitting is highly criticized as it *prevents* full assessment of all environment, economic and social risks and impacts from the project. This is particularly distressing given the need to protect local and regional groundwater sources.
*The project must be recombined to achieve a comprehensive assessment.
*We request that sections 13(1) to 13(3) of The Environment Act be repealed.

Well Locations

Location of the Dugald/Oakbank Well Field and expansion, results in Water production that requires RO treatment to meet drinking water parameters.

During the Sept 11, 2024, 'open house', ordered by Director of Environment Approval Branch, co-proponent MB Water Services Board(MWSB) stated Landmark Planning "looked at all the available water sources and then selected this as the best one. It has been significantly examined and this is the raw water source that has been selected." (See foot note 1)

"The RM retained Friesen Drillers in 2016 to undertake an assessment of groundwater resource potential throughout the RM…a public consultation aspect, which would be addressed by Landmark Planning and Design Inc…aim of the 2016 work was to establish locations within the RM with the best available groundwater quality and quantity to support the long-term growth and development of both Oakbank and Dugald…The report identified three target areas with potentially suitable hydrogeological conditions to warrant further investigation. A map of these locations is shown in Figure 2."(p.10, EAP 6013.00)

"**Ultimately, in technical and economic terms, Area C was identified as the area with the best conditions for a water supply within the RM. This represented the most technically and economically feasible option to deal with the long-term issues of RM's water supply.**" (p.10, EAP 6013.00, emphasis added)

Figure 2 - Regions Identified for Potential Groundwater Development.

(Source – Friesen Drillers, 2016)

"Water samples collected from the test wells indicated a range for fluoride **between 1.31 and 1.81 mg/L**."(p. 45, EAP 6013.00, emphasis added)

"Based on the results of the testing, the **best groundwater quality in the sandstone was at location TH-03.** Groundwater gradually increased in TDS towards the west."[2] (EAP 6013.00 Friesen Drillers Sept 10, 2018 letter to RMS, emphasis added)

Of the 8 wells drilled only 2 were in Area C - TH-04, and 05. TH-03, is one mile southeast, contains fresh water in both aquifers and meets drinking water parameters; **fluoride measured the lowest at 1.31mg/L thus no need for RO treatment**. However, TH-03 was not chosen for the well field site. It was abandoned for one two miles northwest. TH-02 was "selected by WSP and the RM as the most feasible option based on treatment and pipeline considerations." [3] (App F, Dugald Oakbank Water System Public Open House).

"Groundwater samples collected previously from the Dugald municipal supply wells reported fluoride values of around 1.8 mg/L (Friesen Drillers, 2019)." (p.32, EAP 6013.10).
TH-03 measured 1.3mg/L.

"Basic groundwater chemistry parameters were tested for both the sandstone and the carbonate aquifers at each test well location. The results of the chemistry analyses were provided to the RM and to WSP for review. The geochemistry at each location was

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2 https://www.gov.mb.ca/sd/eal/registries/6013springfield/EAPspringfield.pdf

3 https://www.gov.mb.ca/sd/eal/registries/6219/20241003_add_info.pdf

Figure 27 – Exploration Area and Test Well Locations

evaluated by the RM and WSP based on the feasibility of treatment and the distance to the WTP. The sandstone aquifer at the TH-02 location was selected by WSP as the preferred location for further testing. The RM proceeded with a RFP (#18135) to construct two larger (10 or 12 inch) diameter production wells completed into the Sandstone Aquifer at the TH-02 location."(p.54, EAP 6013.00, emphasis added)

Yes, municipal water systems require some form of treatment and pipeline system. However, TH-03 "in technical and economic terms" would require at most a chlorine treatment, not a costly Reverse Osmosis treatment facility. Also, the resultant production and discharge to the environment of a deleterious concentrate(ROC) that cannot be safely mitigated via Cooks Creek Diversion would be avoided. In our opinion the need for a ROWTP to serve the constituents of Dugald and Oakbank is extremely suspect and a misuse of public funds.

"Maximum Recommended Concentration (MAC) of 1.5 mg/L as set out by Health Canada (2023) as guidelines for drinking water quality. The fluoride concentrations in samples collected during the 24 hour pumping test ranged from 1.78 to 1.80 mg/L. It should be noted that the **elevated fluoride concentrations were identified prior to the selection of the well locations. It is our understanding that the water treatment process has been designed with this information in mind."** (p.51, EAP 6013.10; p.73 EAP 6013.00, emphasis added)
*Please provide the following referenced material for public review and comment. The public have the right to access this information, be informed, determine how development impacts their life and property, and prevent unnecessary increased tax burden.
1. Landmark Planning and Design Inc., 2018. Oakbank/Dugald Water Supply Project, Consultation Report. Unpublished report
2. WSP, 2018. RM of Springfield Dugald Water Treatment Plant Final Report – Unpublished Report.

“Groundwater geochemistry in the Sandstone Aquifer tends to improve in the east-southeastward directions from Dugald [TH-03]. As a result, it is anticipated that gradual expansion to fresher water in the southeast would have a positive impact on the water treatment process.”(p.11, EAP 6013.10)
*Why was the proposed well field expansion located directly south rather than southeast?
*The wells interfere with each other. Why were the wells drilled in close proximity for the proposed 146L/s flow rate & 1,600dam3/year allocation?
*Can the TH-03 area supply fresh water to “blend” with the existing well field water to attain allowable fluoride levels as currently achieved with Moosenose Aquifer water?
*Provide the cost of installation and maintenance of a pipe from TH-03 to Well 2.
*Provide the cost of installation and maintenance of a pipe from TH-03 to Well 4.
*Provide the cost of building, operating, and maintaining a Reverse Osmosis Water Treatment Plant for the proposed life of the project. Include future proposed well field expansion and infrastructure, and the management, maintenance and monitoring of the ROC in comparison to a pipeline from identified freshwater area.
*Provide cost of saline freshwater boundary monitoring and chemical analysis program for the RM to maintain.

“the rated capacity of **the existing four supply wells could be revised to accommodate the full Stage 2 demand. However, additional supply wells may be needed.”** (p.60, EAP 6013.10)
*Again, we feel the Dugald Oakbank well field project is full of uncertainty and a misuse of public funds.

“Further, additional wells would be necessary to establish redundancy. Operating a well field at the maximum possible capacity comes with some challenges and potential issues for operation and maintenance.”(p.60, EAP 6013.10).
*Why is there not full disclosure?
*Keep Heatherdale wells.
*Provide assessment of these challenges and potential issues for operation and maintenance.

Only 20% of the water from the Dugald/Oakbank well field site is proposed for RO treatment.
*With the proposed extensive pumping, will water quality changes result in more than 20% of water requiring treatment? Less?
*Provide analysis for the potential of 50% and 100% of water requiring RO treatment. Include analysis of resultant concentrate volumes, management, storage requirements and discharge to environment.
*Is the location of a well field further east in the fresh water where water quality would not require costly RO treatment, produce a deleterious waste product, or pose the threat of saline water encroachment, not a more sound technical choice, that meets sustainable development criteria and a prudent allocation of public funds? Please provide evidence to disprove.

Well Water Production

Due to the chosen well field location and resultant water quality, RO treatment is proposed and a concentrate(ROC) is produced. Mitigation of ROC occurs via dilution. Cooks Creek Diversion is the first receiving water body followed by the Floodway, Red River and Lake Winnipeg. Cooks Creek Diversion "is considered an intermittent stream." [4] (p.5)

"Recent discussions with the treatment equipment supplier have suggested system optimization could result in a recovery rate of up to 90%. Mineral loading in the waste stream[ROC] would be the same but in half the liquid *volume.*" (p.2) At 90% the ROC would contain a higher concentration of heavy metals in less volume.

Discharge concentration levels were provided for 80% and 90% rates at "ultimate WTP capacity of 120 L/s and therefore represent maximum volumes and concentrations." (P.6)
*Has WTP capacity been revised from 126 L/s to 120 L/s?(pp. ii, 10, 57, 58, executive summary, EAP 6013.10)
*Although only a 6L difference, it would be significant over the lifetime of the project. What are the representative levels at 126 L/s?

Projected fluoride levels for rates in the concentrate at 120 L/s are between 5.09 - 8.44mg/L. The allowable level for human consumption is 1.5 mg/L. Levels for the protection of aquatic life and agricultural crops are set much lower at 0.12 mg/L. The ROC significantly exceeds these parameters.

The ROC will be stored at the proposed ROWTP pond and with discharge into the environment between April 1 to Nov 15. "During low flow periods in the Diversion, process waste [ROC] will not be discharged and the valve at the pond outlet will be closed."(p.6)

If stored due to low flow conditions, "it would then require late fall discharge, prior to the November 15th cutoff."

Discharge will not occur during low flow. Absurdly though discharge "During no flow periods in the Diversion, process waste can be discharged to the channel[Floodway] and the Red River is considered the receiving water body."

However, there is no pipe proposed to the Floodway nor the Red River nor is there water in the Diversion to safely mitigate the discharge of concentrate. *As proposed, the project is not feasible.*
*How can the discharge of unacceptable levels of fluoride and TDS and possibly other components in excess be allowed? Who is accountable for environment/crops/gardens/livestock impacts, contamination to local wells in the discharge area, health impacts, litigations, etc?

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[4] https://www.gov.mb.ca/sd/eal/registries/6219/20241003_add_info3.pdf

Associated Engineering(Sask)? Delco Water(Sask)? Friesen Drillers? Taxpayers? The Department of Environment and Climate Change?

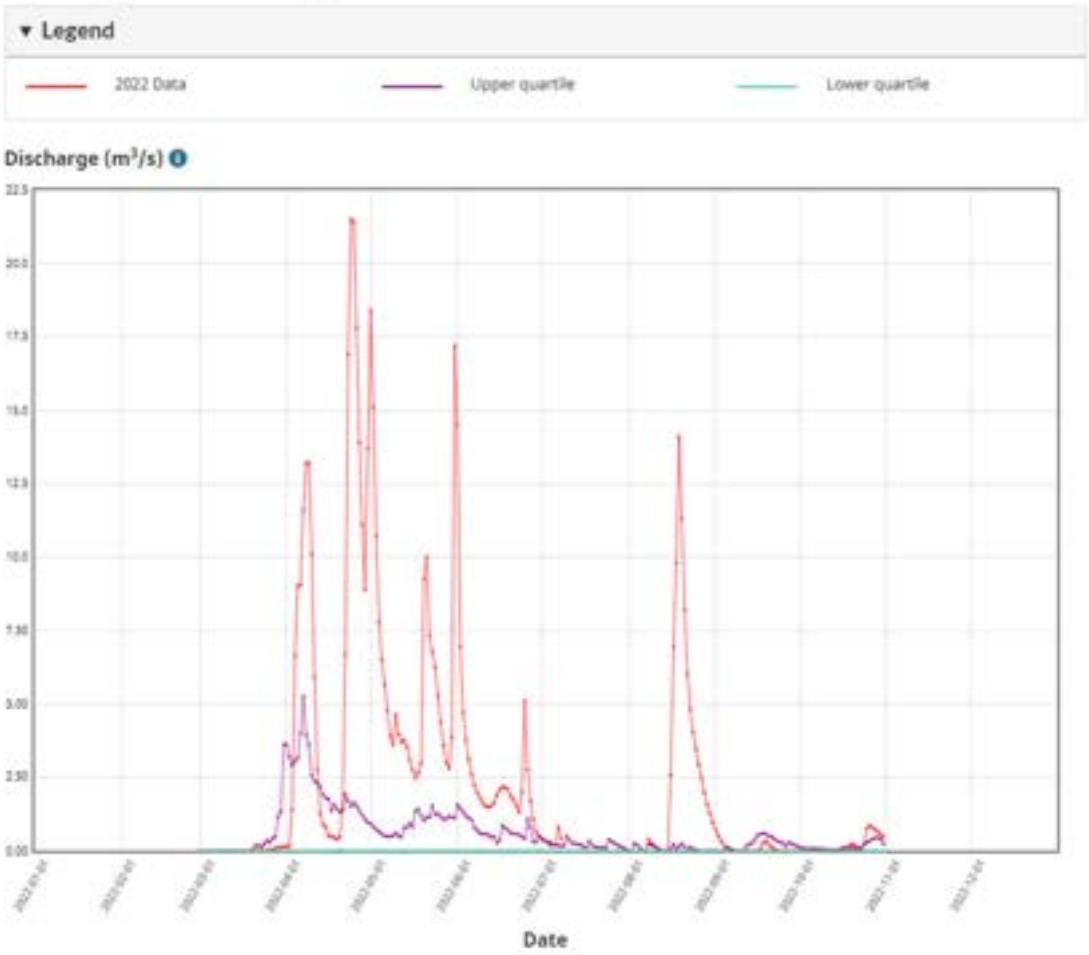
s. 1(1)(e) Manitoba Environment Act "prohibits the unauthorized release of pollutants having a significant adverse effect on the environment."
s. 30.2 No release of pollutants in excess of limits - No person shall release or allow the release of a pollutant in an amount or concentration, or at a level or rate of release, that exceeds the limit that is expressly provided under this Act, another Act of the Legislature, or an Act of Parliament, or in a regulation, licence, permit, order, instruction, directive or other approval or authorization issued or made under one of those Acts.
*Will the Department of Environment and Climate Change enforce The Act and prohibit the release of the concentrate to the Diversion during low and no flow levels? To the Floodway?
*Will the Department direct the RM to relocate the well field to areas with fresh water production since the receiving water body in the RM *cannot mitigate* the concentrate to ensure environmental integrity for this and future generations? The project is not feasible.

"The Water Quality Objectives are met in the Red River after mixing with the waste streams from the proposed Project for both discharge scenarios. As with the previous estimates, TDS remains an outlier. Although at the low end of the guideline range, so to[sic] are the natural waters of the Red River." (p.15)
*Since the discharge meets Objectives *after* reaching and mixing in the Red River, provide assessment of impacts from the undiluted discharge to the Diversion and Floodway. Include potential contamination to groundwater, local wells around the release area and storage pond, wildlife, etc.
*Provide cost of a pipeline from the storage pond to the Red River for concentrate discharge.
*Will fluoride, TDS, sodium, and other chemical parameters increase or remain stable?
*Assess potential of 10%-50% increase of chemical parameters in concentrate.

Fluoride levels which are measured between 5.09 - 8.44mg/L and exceed limits have been ignored? The proposed use of Tier II Objectives is unacceptable as it does not measure for Fluoride.
*Will the Department direct the additional application, at all times regardless of the amount of flow, of *Manitoba Water Quality Standards, Objectives and Guidelines, Tier III Water Quality Objectives* to ensure Fluoride in the concentrate is measured to protect aquatic life and agriculture?

"The purpose of this document is to provide supplementary information on the process waste stream[ROC] that is produced by plant operations and ultimately discharged into the environment. It outlines how the waste stream integrates into the receiving bodies of the Cooks Creek Diversion, the Red River and Lake Winnipeg." (p.1)
*The outline is inadequate, produce a cumulative impact assessment to ensure a comprehensive understanding of project impacts and verify the feasibility of proposed management of the concentrate.

Figure 4-1: Flow in Cooks Creek Diversion at Inlet



The daily flow records and long-term statistics presented on the WSC webpage show that the lower quartile (i.e., the 25th percentile, or 1/4th of measurements) for the Cooks Creek Diversion are zero for the proposed period of discharge (i.e., April 1 to November 15). This implies that the 7Q10 and 30Q10 are zero as well and that the water body is t considered an intermittent stream. Therefore, the mixing calculations were completed for the Cooks Creek Diversion when there is flow and for Red River for periods of no flow in the Cooks Creek Diversion.

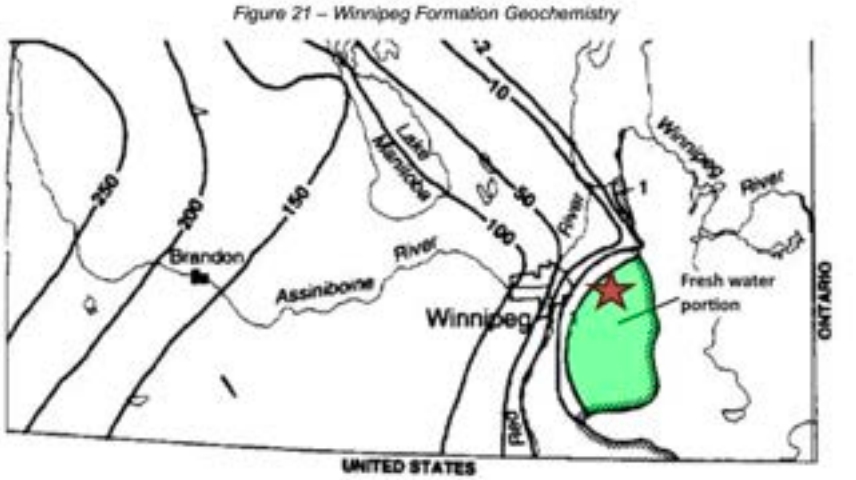
Figure 4.1 appears to show that the proposed well field location that produces water quality requiring RO treatment and the resultant concentrate, *cannot be safely mitigated* in the Cooks Creek Diversion during low and no flow periods. As proposed this **project is not viable.**

"When there is no flow in the Cooks Creek Diversion, dilution calculations are based on the downstream receiving body, the Red River…There is currently *no comprehensive flow data set available for the Red River Floodway*; therefore, receiving water flows and parameter concentrations are based on the Red River."(p.12, emphasis added)
*It is unacceptable to pick and choose data to fabricate mitigation. Until evidence based analysis for real and enforceable protection is ascertained, **this project cannot be licensed**.

Saline

"*The project aim is to create no draw down at the boundary;* the pump test will provide information on this."(p.141, EAP 6013.00, Dec 4, 2018, RMSpringfield Council Meeting on Dugald/Oakbank well field, emphasis added)

The EAP for the Well field Expansion provides a broad map to show where the expansion is located in the freshwater area of the sandstone aquifer.



Note – Green shaded area contains TDS values less than 1 g/L (1,000 mg/L) (< 1 g/L is fresh); Springfield well site indicated by red star. (Modified source – Betcher, et al., 1995)

The EAP provides an April 1, 2022, letter from Friesen Drillers to RMSpringfield Water & Waste Manager, discussing glacial advances and retreats to explain water quality in the RM and that water quality "at the new Dugald wellfield location was noted to be suitable for municipal water supply purposes. It was further noted that groundwater quality in the sandstone was slightly fresher in areas east-southeast of the existing production wells (FDL, 2019a/b)."

To unearth some detail on the freshwater/saline boundary in relation to the well field operations, the May 2019 EAP 6013.00 for the Dugald/Oakbank Well Field Wells 1&2 is required.

Page 82, Influence of the Saline-Freshwater Boundary states "the water quality **over two and a half miles away from the proposed new wells is still only slightly brackish (TDS ~ 1,000mg/L)**. The proposed new production wells for the RM of Springfield are located at least two miles from the saline boundary, as mapped by Betcher (1992)…the 24 hour pumping test on the new production wells[east well @ 555 USGPM]indicated that the **radius of influence after 24 hours was less than one mile from the well site."** (Emphasis added)

Site **TH-07, two and a half miles NW from Wells 1&2, registered 1150 ppm TDS(1,150mg/L).** (EAP 6013.00, p.368, Sept 10, 2018, Friesen Drillers letter to RMSpringfield Director Water & Waste)

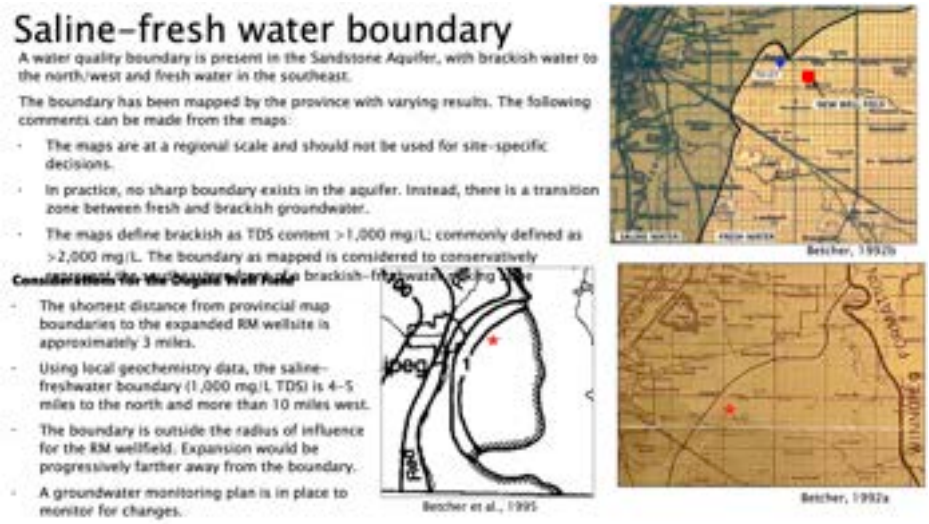
Figure 42 – Saline-Freshwater Boundary in the Sandstone Aquifer.

Approximate locations of test well, TH-07 (Blue), and the proposed municipal well field (red).
(Source – Betcher, 1992)

Proposed expansion Wells 3&4 are drilled 1 mile directly south of Wells 1&2 that are depicted in Figure 42 as a red square. TH07 and saline freshwater boundary is NW of the well field.

An "additional public consultation" was ordered by the EAB Director, Aug 16, 2024, for EAP 6219.00(ROWTP) to "include information on the proposed raw water wells". [5] Friesen Drillers provided a slide show Sept 11, 2024, on their "Hydrogeology Investigation Results". (see footnote 1 for link) Slide 7 is captured below as presented. It states "Using local geochemistry data, the saline-freshwater boundary (1,000 mg/L TDS) is 4-5 miles to the north and more than 10 miles west."

*To our knowledge this statement was not provided in their July 2024 Report for the well field expansion EAP 6013.10. [6] If it is, it most certainly is not clearly provided. Nor is boundary data provided for the NW direction.



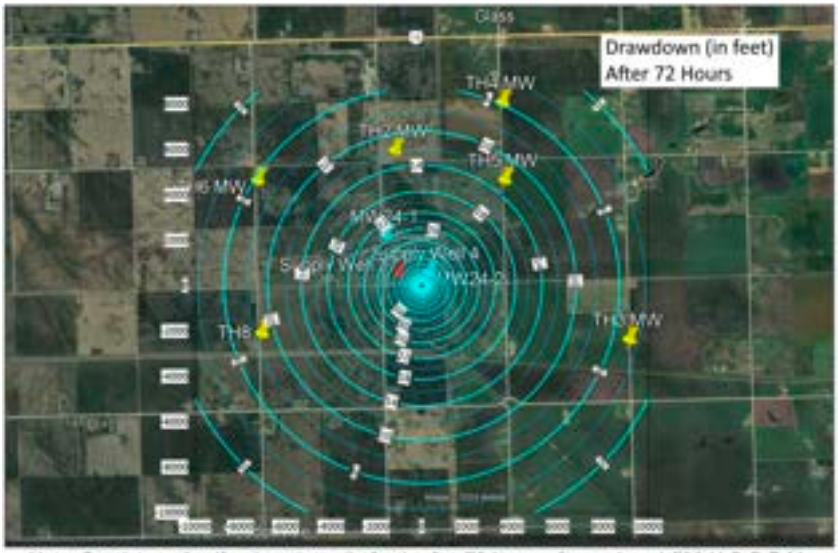
(Screen shot taken as it appears in material from open house)

[5] https://gov.mb.ca/sd/eal/registries/6219/20240816_public_consultation_letter.pdf

[6] https://www.gov.mb.ca/sd/eal/registries/6013.1/index.html

Slide 7 also states “The boundary is outside the radius of influence for the RM wellfield. Expansion would be progressively farther away from the boundary.”
* These wells are an expansion to meet the proposed allotment of 1,600dam3/year and in response to the RM’s plans to abandon the Heatherdale wells. Is the plan to keep sinking wells further southeast away from the boundary with lower pumping rates to counter impacts on the boundary from proposed draw and allotment? The proposed location is not viable.
* What is the radius of influence from both the expansion wells and the current wells for proposed draw & allotment?

Figure 33 - Drawdown in the Sandstone Aquifer – 72 hours



Note: Sandstone Aquifer drawdown (in feet), after 72 hours of pumping at 500 U.S.G.P.M.
(Source – Friesen Drillers, 2024)

Figure 33(p.44, EAP 6013.10) - The 72 hour pumping test at 500 U.S.G.P.M. from Well 4, east of Well 3, and 1 mile directly south of Wells 1&2, shows a radius of drawdown approx. 2 miles.

Figure 26 – Monitoring Network for 72-hour Pumping Test

(Google Earth, 2024)

Figure 26, monitoring network map shows Wells 1&2 and TH-07 that were excluded in Figure 33. TH-07 is recommended to "be maintained to monitor EC for potential changes to the saline-freshwater boundary."(p.85,EAP 6013.00) Typically freshwater has an EC between 0 and 1,500 µS/cm. **TH-07 reported TDS levels of 1150mg/L and "electrical conductivity (EC) of about 1,700µS/cm."**

Table 14 provides an estimated 5 Year drawdown at 800dam3/year; half the proposed project's groundwater allocation of 1,600 dam3/year. (p.58, EAP 6013.10). To our knowledge, a long-term drawdown was not provided for the existing wells - EAP 6013.00.

* Calculate drawdown and radius of influence at full allocation. Include year 5 & 10.
* What is the drawdown and radius of influence for the entire field, all 4 wells using proposed parameters.

Table 14 – Long Term Drawdown – Year 5

Table 14 Projected Drawdown – Year 5 (2030) Estimated Use: 800 dam³/year total (154 dam³/year above current licence) 365 Days Pumping at 77 U.S.G.P.M.						
Radius	**1,000 ft.**	**½ mile**	**1-mile**	**1.5-miles**	**2-miles**	**3-miles**
Drawdown	11.8 ft.	9.4 ft.	7.7 ft.	6.7 ft.	5.9 ft.	4.9 ft.
Calculations follow the assumptions of the Theis (1935) equation.						

At half the project's proposed allocation, the calculation shows that draw occurs at year 5 operations, 1mile NE of TH-07 which is recommended to monitor boundary movement.
*Calculation of zero drawdown impact is not tabled. Please provide for year 5 and 10.

"and up to 33 ft. in Year 10 (2035)."(p59, EAP 6013.10)
* Provide the projected drawdown and radius for year 10.
*We are concerned that critical assessment on threat of saline encroachment and draw in the saline portion of the aquifer have not been thoroughly assessed.
*How are residents ensured that no negative impacts to water quality and quantity occur? Monitoring or through comprehensive field design and location?
***Who will be held accountable? If licensed we request as condition, that Associated Engineering and Friesen Drillers be held accountable, not the taxpayer.**

Slide 7 - "Expansion would be progressively farther away from the boundary."
***Why not locate the well field expansion further southeast now?**
*As the draw expands over time, will fluoride, TDS, chloride, and other chemical parameters increase in levels or remain stable? How will this affect RO treatment, concentrate composition and volume? What are the impacts of this potential on the management of concentrate and discharge?
*Is the Dugald/Oakbank well field feasible for the proposed allocation and draw?

The RM proposes “a staged approach” yet application is for a 146L/s draw and 1,600 dam3/year allotment. We do not agree with the “staged approach” it prevents a comprehensive consideration of the project’s full effects.
*Assessment of impacts must be assessed now at the proposal stage; it is unreasonable and conflicts with best practice standards for environment assessment to do so after licensing.
*If the Department somehow chooses to go with a staged approach, all alterations must be deemed major to allow for the public and TAC to comment and review.

Lake Winnipeg

We are concerned with the simplified concept of dilution of the concentrate in Lake Winnipeg waters. [7] It is known that this water body is under great stress from more than just this proposed development. There is a multi billion dollar lawsuit against the Federal & Provincial governments and the City of Winnipeg filed by First Nations who oppose the continued use of the Lake as a dump. An unprecedented Charter challenge to have Lake Winnipeg declared a living entity was also filed in 2024 by Southern Chiefs’ Organization, “To continue forward without changes to protect Lake Winnipeg poses an existential threat to the survival, well-being, and ecological integrity of the Lake.” Springfield Council and MB Water Services Board must be aware of these legal challenges, the poor health of Lake Winnipeg and potential litigation? More concern and due diligence is required.
*Please provide a proper cumulative impact assessment for the Project.

Manitoba Clean Environment Commission

In order for environmental assessments “to be done well, they must include an assessment of cumulative effects.”(MB Clean Environment Commission(CEC), Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environmental, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government must postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

In their review of the 2007 Pembina Valley Water Cooperative Supplemental Groundwater Supply System, the CEC found “insufficient information available in respect of the sustainability of the water resources” and recommended the MB govt prioritize the “development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers”. Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer

[7] “the dilution ratios of the Process Waste volume into Lake Winnipeg is over 1:1.7 million. The influence of the proposed WTP discharge on Lake Winnipeg is therefore negligible.”(p.16, https://gov.mb.ca/sd/eal/registries/6219/20241003_add_info3.pdf

system, an Environment Act license must not be issued for the well field expansion and the very closely interconnected ROWTP.

The Pembina Valley Water Cooperative Supplemental Groundwater Supply System proposed a 50L/s draw and "Depending on future needs, approvals to expand the system would be applied for if and when they are needed." That project was sent to the CEC.

The RMSpringfield and MB Water Services Board propose a 126 L/s draw and a 2 1/2 increase in water allocation to 1,600 dam3/year. This "represents a significant development within an important regional aquifer system".(Friesen 2022)
***We request the Minister of Environment and Climate Change convene the Manitoba Clean Environment Commission to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.**

Conclusion

OLS has many concerns with the process and the Environment Act Proposal. The proposal is a best case scenario. In our opinion, material is provided in a way to dismiss impacts and/or bury information detrimental to licensing. This has been compounded by the Department in allowing for separate assessment and a potential staged approach. It is unreasonable and conflicts with best practice standards for environmental assessment. This proposal again shows the need to reform Manitoba's assessment and licensing regime under The Environment Act.

The project is clearly not feasible. The well field location is too close to the saline boundary and must be moved further east southeast as identified in 2018. The current proposed location produces water quality requiring costly RO treatment and the resultant concentrate cannot be safely mitigated via Cooks Creek Diversion and the Floodway. Locating the well field further southeast, water is fresh in both aquifers and would at most require chlorine treatment, not a $26+ million ROWTP. We feel this is a misuse of public funds. This project cannot credibly receive licensing.

As a grass roots organization we have limited funds and thus lack of access to experts. Manitobans rely on our elected officials to act in our best interest and the Department of Environment and Climate Change to ensure their decision making is based on accurate and timely information. However, when a project is split up for assessment and the proposal lacks worst case scenarios, assessments, clear and complete information, and the knowledge base of the aquifer system in southeast Manitoba remains perilously deficient and recommended reform of Manitoba's environment legislation is ignored for decades, it is difficult to have trust in the process and be assured that our environment and thus our health is truly taken into account.

Under The Environment Act, the Department of Environment and Climate Change is tasked with protecting "the quality of the environment and environmental health of present and future generations of Manitobans and to provide the opportunity for all citizens to exercise influence over the quality of their living environment." We trust the department will adhere to these principles and ensure that an evidence-based decision about the proposed development will be made.

We cannot have healthy communities and a strong economy unless we are committed to evidence based decision making, an accountable public service, and transparent public processes.

The Manitoba government must postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

As proposed, the project must not be licensed.

Sincerely,

[redacted]
Our Line in the Sand Manitoba

From: [redacted]
Sent: May 12, 2025 3:24 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Concern re well extension for the reverse osmosis water treatment plant in Dugald

I have been drinking well water from the Sandilands Aquifer for over 40 years. It has enough iron in it to stain my toilet and bathtub but otherwise is great quality. However, the residential development proposed for Dugald would require the towns of Oakbank and Dugald, that did received their water from the Moose Nose Aquifer, to now be added to the wells and use the water from Sandilands that requires treatment. Further the discharge containing impurities, bacteria, whatever from this process will pollute our nearest river and ultimately Lake Winnipeg and its watershed.

There is a limit to everything and the Sandilands Aquifer supplies the entire southeastern quadrant of Manitoba with drinking water. The whole idea is a disaster.

Please do not allow this reserve osmosis water treatment plant project in Dugald to go ahead for the sake of all the residents of southeastern Manitoba and for the flora and fauna that rely on their drinking water from the Sandilands Aquifer.

From: [redacted]
Sent: May 12, 2025 1:32 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Dumping effluent into Lake Winnipeg drainage system

In order to restore the health of one of the world's largest freshwater lakes stop the dumping of poisons from reverse osmosis systems. The system uses much additional water and the resulting effluent is dumped into water ways that eventually flow into our lakes. Firstly most well water does not require this treatment to be safe for consumption. Secondly, these systems are available for residential installation so the water treated is used for drinking. To treat all water going to every residence is over kill and adds a tremendous cost to the treatment of well water.
[redacted]

From: [redacted]
Sent: May 12, 2025 2:54 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Fwd: objection to RM of Springfield Well Field Expansion File: 6013.10

Resent to other email address

From: [redacted]
To: jay <jay.mak@gov.mb.caSenior>
Date: Sunday, 11 May 2025 11:22 PM CDT
Subject: Re: objection to RM of Springfield Well Field Expansion File: 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

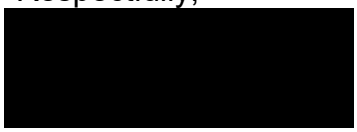
Please register my objection to the RM of Springfield EAP for Well Field Expansion File: 6013.10. The following are my concerns:

*I do not support the location of the well field that produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. It is also a very expensive process to operate and utilizes an excess of water.
*I do not support the location of the well field when two miles further east, water in the Sandstone and Carbonate Aquifers can be obtain that is both fresh and meets drinking water parameters. At most, this water quality would only require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure. In my opinion this is a waste of public funds.
*I do not support this application because calculations project water draw to occur in the saline portion of the Sandstone aquifer and the assessment of impacts from saline water draw to the aquifer system, to neighboring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the Proposal stage not after licensing through “a staged approach”
*The more “technical and economic” area for the Dugald/Oakbank well field was abandoned. (p.10 EAP 6013.00) However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. I see this as a better use of public funds and meets sustainable development.
*The Environment Assessment process allowed for separate assessment of the current well field, the well field expansion and the Reverse Osmosis Water Treatment Plant(ROWTP). “Project splitting” is highly criticized as it prevents full assessment of all environment, economic and social risks and impacts from the project. This is of particular concern given the need to protect local and regional groundwater sources.
*There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge. .
*In 2007, The MB Clean Environment Commission(CEC) found “insufficient information available in respect of the sustainability of the water resources” and recommended the MB govt prioritize the “development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers”. Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.
*In order for environmental assessments “to be done well, they must include an assessment of cumulative effects.”(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential

future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration. The handling of this development once again shows the need to reform MB's assessment & licensing regime under The Environment Act.
*Most importantly I do not support this project at this time because in 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, it should be incumbent on the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility and include public hearings and participant funding and conduct a complete review of the ground water capacity for Springfield and the surrounding region.

As proposed, the project must not be licensed by the Department of Environment and Climate Change.

Respectfully,



From: [redacted]
Sent: May 12, 2025 2:54 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>; Mak, Jay <Jay.Mak@gov.mb.ca>; Minister of Environment and Climate Change <minecc@manitoba.ca>; Minister of Municipal and Northern Relations <minmnr@manitoba.ca>
Cc: Premier of Manitoba <premier@manitoba.ca>; premier@leg.gov.mb.ca
Subject: Fwd: Opposing Public Registry 6219.00 Water Treatment Plant 9 of 9

May 12, 2025

[redacted]

Agnes Wittman, Director
Environmental Approvals Board
Environment and Climate Change
14 Fultz Boulevard
Winnipeg, MB R3X 0L6

Jay Mak jaymak@gov.mb.ca
Senior Environmental Engineer

Department of Environment and Climate Change

To whom it may concern,

Re: Rural Municipality of Springfield

Well Field Expansion

File: 6013.10

Please register my opposition to the application, File 6013.10, which the RM of Springfield is making to Manitoba Environment and Climate Change for approval of a Well Field Expansion in support of a new water treatment plant.

I am opposed to the plan due to the negative impact the reverse osmosis plant will have on the Lake Winnipeg Watershed!

I am opposed to the plan when it should be considered that simply going an additional 5 miles east there is high quality water which is presently bottled for sale. Drilling 5 miles east would save the burden that will be put on the RM's property owners and STOP the building of an oversized environmentally unfriendly reverse osmosis plant!

Simply put, this project in a nutshell, to avoid a time delay (as stated by administration) is going to **purposefully** drill for poor quality water to **justify** the building of a costly oversized (by a factor of 4)

environmentally unfriendly reverse osmosis plant, while using RM of Springfield administration's creative accounting population growth numbers, and using some pre-covid quotes on costs.

I believe these projects are not intelligently thought out or practical. **As proposed, the project must not be licensed**.

The RM of Springfield's administration overall dealings with projects, 6219 and 6013.10, has been less than forthcoming with information, less than accurate, even giving misleading information, which deceives its stakeholders. I believe these actions are fraudulent! And by allowing the licensing of these projects your department will be facilitating the RM of Springfield's administration actions!

The questions that should be answered are:

1. Why in a municipality blessed with high quality fresh water are we going after poor quality water to build a costly environmentally
   unfriendly highly expensive reverse osmosis plant?
2. Who is benefiting from these actions, who is lining their pockets from this
   project?
   Certainly not the RM's stakeholders as our pockets will be picked to pay debt and
   taxes!
3. Is the whole concept of this plan the leftovers of the former Conservative government after all they pushed wrongfully to have the RM of
   Springfield have the polluting Silo Silica drill in the RM's aquifers, they pushed WMR and Johnny Q daycares among other projects. These
   Projects are now rightfully being investigated and this costly environmentally unfriendly highly expensive reverse osmosis plant and the
   drilling for poor quality water to support the plant should be added to the list of investigations?

I request the licensing to be denied and keep in mind that 1200+ Springfield residents oppose the building of the costly environmentally unfriendly highly expensive reverse osmosis plant or at the very least this project should be referred to the CEC.

*****In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

The handling of this development once again shows the need to reform MB's assessment & licensing regime under The Environment Act.

I will be including in this email my letter of June 22, 2024 regarding opposition to file 6202 (let me know if you would like me to resend all the original attachments) and my letter of September 19, 2024 for your convenience to review.

Strongly opposed,

[redacted]

--------- Forwarded message ---------
From: [redacted]
Date: F
Subject: EAB application File No. 6219.00 RM Springfield Water Treatment Plant
To: <eabdirector@gov.mb.ca>
Cc: <minecc@manitoba.ca>, Mak, Jay <jay.mak@gov.mb.ca>, [redacted]

September 19, 2024

Attn: Agnes Wittmann
Director
Environmental Approvals Branch (EAB)
EABDirector@gov,mb.ca

Re: Dugald Oakbank Water System (DOWS) open house & public consultation required by the EAB application File No. 6219.00 on September 11, 2024

From the open house we learned:

Instead of using fact-based projection figures for Springfield's growth rate based on the actual historical rates of development or building permit figures to project actual Springfield growth, Springfield administration chose to ignore past practise of using sound figures and went with periodic census data for this project. The figures that Springfield administration used are less accurate and misleading, meant to deceive the public and inflate future needs. I believe this should be considered fraudulent.

I believe this creative accounting growth rate, using the maximum density rate possible, was for Springfield administration to try to justify not only lot development projects, but also aid in oversizing the Water Treatment Plant. The Water Treatment Plant will most likely deliver a much higher capacity than the RM will use in year 20. Again, I believe this is deceiving the Springfield residents.

After review of the 120 litres per second throughput capacity, I believe the Water Treatment Plant could be over engineered to a factor of four! If household building permits increase from the 10-year average of 75 to 200 per year, that confirms 70% of the Water Treatment Plant capacity WILL NOT be used at year 20. I urge your department to review whatever option necessary to significantly reduce the complete and final costs of the Water Treatment Plant.

No Absorption Study has been done. Due diligence is vital when dealing with millions of dollars of taxpayers' money. Without an independent Absorption Study conducted on actual historical growth rate data, I believe it to be negligent to move forward. This application made by the RM of Springfield does not follow their fiduciary responsibilities by being accountable and protecting the RM of Springfield taxpayers which will cause them undue harm with unnecessary high taxes. An Absorption Study would help to determine a more accurate future water requirement using the actual historical growth rate of Springfield which will mitigate the undue hardship this application will cause to the residents.

Also of concern, the ground water expert from Edmonton working for Associated Engineering, seemed to be unaware of the Cooks Creek Diversion and the function and condition of it. The Cooks Creek Diversion is the proposed reverse osmosis discharge course. How and when the release of discharged water would be

released into the Diversion and any potential concerns for downstream contamination from the wastewater from the environmentally unfriendly reverse osmosis was not made clear. At the meeting it appeared that she did not comprehend or know of the route that the Cooks Creek Diversion would empty into, i.e. the Red River floodway. This should be further investigated.

Mr. Jeff Bell of Friesen Drilling could not answer all the questions as he did not have the supporting documentation with him. However, he did invite [redacted] to meet with him in his office. I found that Mr. Bell's offer of only wanting to talk one on one with her at his office to be most inappropriate and insulting to [redacted] not to mention that his answers would not be known to the rest of the public.

I did notice that there were five new poster boards added to the RM of Springfield's story board presentation. The information on these new story boards was taken directly from my submission to the EAB on File no. 6219.00. The new story boards frivolously dismissed all options with no supporting fact-based materials offered for viewing or public discussion. The rejections seemed baseless and show that the RM of Springfield is not open to less costly, more environmentally friendly concepts. They have chosen to have tunnel vision, staying the course on this unneeded, costly, and environmentally unfriendly, reverse osmosis water treatment plant.

The Raw water pipe from PR 302 + PTH 15 Area on the new poster board states it is *"technically feasible, but there would be a time delay*''. There was no detail about why or how long the delay would be. There was no estimate of costs provided. This time delay would not be objected to, but welcomed by Springfield residents, as additional water is not presently needed. Your department should already have information regarding PR 302 + PTH 15 (RM Poster '*New Raw Water Sourcing Scope of Work')* as this would have been submitted to the Environmental Approvals Branch by Friesen Drillers for the application of Sky-Blue Water Bottling Plant. I believe the five new story boards deserve to be fact checked by the licensing branch and that an independent assessment be required.

In my opinion, the RM of Springfield Public Works Department and the RM of Springfield administration have demonstrated a lack of objectivity by choosing to have a negative approach to the merits of the lower cost, more environmentally friendly solutions. I believe the Environmental Approvals Branch should conduct a thorough review of these viable options.

Additionally, we cannot have a Water Treatment Plant without a Wastewater Treatment Expansion! Just as you cannot have a Water Treatment Plant without Wells. I commend you, Ms. Whittmann for having the Wells' data included in the application and further request that the effects and ramifications of the Wastewater Treatment Expansion be included in the application. Wells, the Water Treatment Plant and the Wastewater Treatment Plant expansion are the total scope of this project. They should be treated as One Project and fall under One Application. Many Springfield residents feel that they are being deceived because the RM is trying to divide up the total project's application.

At the Open House, the estimated costs of 52 million dollars for the Wastewater Treatment Plant expansion was finally disclosed. We also were advised that an engineering study has been completed but kept confidential. Mr. Phil Pawluk, Manager of Water and Waste, stated that he has given the engineering report and costing estimates to the CAO Colleen Draper and Mayor Patrick Therrien. Yet this 52-million-dollar cost and essential information has been withheld from Springfield residents. Again, deceiving the residents of Springfield!

Another growing concern with residents is how reminiscent this application seems to be with the application for the Sio Silica project. The Sio Silica Environmental Applications were divided to achieve success. It was a scenario of "putting the cart before the horse" to facilitate making the application process successful. The

former government's directive was to approve the processing plant, and with that approval in place, it was hoped that it would result in the approval of the mining process.

In the case of File no. 6219.00, the division of the project results in smaller price tags on all the stages of this project. The illusion of a smaller price tag will make it easier for resident taxpayers to swallow borrowing 12.5 million dollars for a 29.4 million water treatment plant.

Once the Water Treatment Plant is built, the pressure will be on the RM of Springfield's taxpayers to build a 52-million-dollar Wastewater Treatment Plant expansion, a 2.9 million dollar lift station and a 2.7-million-dollar twinning of the force main because you can not have one without the other!

All these projects' costs will have to be paid back by raising our property taxes which could amount to additional $2,000.00 a year on each taxpayer for 20 years, for something that is not currently needed. Currently, Springfield has a 5+ year supply of not yet developed residential and commercial development areas, with all the needed water and sewer connections!

Presently there are: 55 customers on piped water in Anola, 293 customers on piped water in Dugald and 998 in Oakbank. The total of customers is **1346 customers on the pipe water supply.** The remaining 5,100+ households on acreages have paid for their own well water & septic fields and receive no benefit from a water treatment and wastewater treatment plant, lift station and twinning of the force main.

Below are cost range estimates for the infrastructure required to advance the total project:

Infrastructure	Low End	High End
Water Treatment Plant	$29,000,000	$35,000,000
Twinning of Force Main (Dugald)	$2,000,000	$2,500,000
Lift Station	$2,000,000	$3,000,000
Wastewater Expansion (Lagoon)	$30,000,000	$55,000,000
Contingency (10%)	$6,300,000	$9,500,000
Estimated Total Cost	**$69,000,000**	**$105,000,000**

Note:

- Estimates do not include interest on borrowed funds and repayment over 20 years.
- The Mayor and CAO have refused to release the wastewater high level cost, necessitating the high-low cost estimates.

Councillors Andy Kuczynski and Mark Miller also estimate that the scheduled borrowing of funds in the Springfield's 3-year budget could have taxpayers pay up to $1,250.00 a year for 20 years. I believe the costs will be considerably higher than what was projected in the 3-year budget as the Water Treatment Plant estimate is outdated. Also, you cannot have an operational water treatment plant without expansion of the lagoon, lift station and twinning of the force main. Only when **all** the costs are made public will it stop the perception that the residents of Springfield are being misled, and or, deceived on the true costs of this divided project and informed of the true increase to our annual taxes. Until then, the Water Treatment Plant's application should be denied as it is premature and too costly for the residents to bear even with a 10-million-dollar grant.

https://springfieldtaxpayersrightscorp.ca/open-letter-to-springfield-residents/ Please open this link, scroll to the bottom of the page, and click on video of Councillors Andy Kuczynski and Mark Miller.

The proposed Water Treatment Plant, and overpriced costs, needed for the total project contravenes the following by-laws of the RM of Springfield Development Plan By-law 18-09:

3.8 Utilities and Municipal Services Policies

3.8.1 To ensure development can be efficiently serviced without placing an undue economic burden on the municipality.

3.8.6 Development shall not be approved if it will create demand for water distribution and or wastewater collection where it is not efficient or economical for services to be extended.

The EAB should require the RM of Springfield to abide by its by-laws.

I therefore request the EAB to deny the application or at the very least require the RM of Springfield to:

1. Amend the Application to include all phases that would complete this project: Wells, Water Treatment Plant, Wastewater Treatment Expansion, Twinning of Force Mains, Lift Station, and piping.

2. Have all the objections posted on the EAB website along with the responses from the RM of Springfield, for the five alternative options that Springfield showed on posterboards at the Open House.

3. Supply the Public complete information including all Engineering reports and costing for the:

    a. Wastewater Treatment Plant Expansion
    b. Twinning of the Force Main
    c. Lift Station
    d. Any additional costs, findings and reports relating to all phases of the total project.
    e. Post the above information (3a-3d) both on the RM of Springfield website and the Environmental Approvals Branch website.

4. Require the RM of Springfield to conduct an independent Absorption Study using the actual data from building permit history and determine an accurate rate of growth for Springfield.

5. Have the EAB independently review the more cost-efficient and environmentally friendly options.

6. Review the 120 litres per second throughput capacity for scaling back of the project.

I believe that the application for File no 6219.00 contains misinformation which could be deemed fraudulent and therefore, as it stands, should be denied.

Should the EAB still move forward with this application, considering all of the new and missing information noted from the RM of Springfield's September 11, 2024, Open House and Public Consultation, please advise the time frame that the public will have to resubmit countering submissions once all the new and missing information is posted on the EAB file no. 6219.00 website.

Awaiting your reply.

Sincerely,

[redacted]

cc: Jay Mak, Environmental
cc: Tracy Schmidt, Minister of Environment and Climate Change **minecc@manitoba.ca**

---------- Forwarded message ---------
From: [redacted]
Date: Sun, Jun 23, 2024 at 11:13 PM
Subject: Opposing Public Registry 6219.00 Water Treatment Plant 9 of 9
To: <jay.mak@gov.mb.ca>
Cc: <premier@leg.gov.mb.ca>, <minecc@manitoba.ca>, <minmnr@manitoba.ca>, [redacted]

This submission due to file size and 15 attachments will be submitted in 9 email: 9 of 9

June 22, 2024

[redacted]

Agnes Wittman, Director
Environmental Approvals Board
Environment and Climate Change
14 Fultz Boulevard
Winnipeg, MB R3X 0L6

Jay Mak jaymak@gov.mb.ca
Senior Environmental Engineer
Department of Environment and Climate Change

To whom it may concern,

I am a resident of Springfield and a member of the Springfield Taxpayers Rights Corp., a large group of over a 1000 concerned Springfield residents which was instrumental in the stopping of the Sio Silica Project. The Springfield Taxpayers Rights Corp. consist of many professionals including but not limited to engineers, retired Chief Administrative Officer, Professors of University of Manitoba & Winnipeg, former Councillors, politicians, doctors, teachers, business owners, farmers, and a whole host of lay peoples. The following submission has been constructed from the gathering of the wealth of knowledge that this group has to offered.

RE: Public Registry 6219.00
Rural Municipality of Springfield - Water Treatment Plant Upgrades

Please find attached:

A.) Petition with close to 1200 signatures opposing the water treatment plant. (consists of six zip files A. Batch_1, 2, 3, 4, 5, 6 Petition OPPOSING PR6219.00Water Treatment Plant

B.) The audio for the June 18, 2024, Council meeting. There are many people that speak to this environmentally unfriendly reverse osmosis water treatment plant and offer other solutions which most of the Council and the CAO have failed to consider.

C.) Photo of Maple Leaf Aggregates discharging dirty gravel wash water into the recharge of the aquifer which creates the GUDI.

D.) Map of Heatherdale Wells & Potential New Locations Area for Wells
E.) Lorette – Dugald water estimate – Dugald force main.
F.) Untreated Water from Aqueduct
G.) Greater Wpg. Water Treatment Plant to Dugald
H.) 1. CU24-05-SkyBlueWater-Public Engineering Report
2. RM of Springfield, January 25, 2024, Planning Meeting Minutes – Resolution for Sky Blue
Water extraction for the sale of bottled water.
I.) Cost drawing from Pr. Hwy 302 – Dugald Pr. Hwy 206
J.) Two full page informational Clipper Newspaper ads informing all to other options and avenues.

We ask that the Environmental Approvals Board deny this application or, at the very least, defer its decision and require the RM of Springfield to do its due diligence on the seven viable, less costly, and more environmentally friendly options that have been put forward. Deferring (4 to 6 months) the license of a project not yet scheduled to commence for 2 years, will allow, and consider the following:

1. Comprehensive independent water source review, capital cost comparisons and dependability of the reservoir, delivery method and a review of the operating costs. ***This is important as this environmentally unfriendly reverse osmosis water treatment plant was birthed by the former Conservative government, perhaps to accommodate the questionable Sio Silica project for when it would have polluted the aquifer. As we know, the former Conservative government, regarding the Sio Silica project, is under review by the Ethics Commission. Therefore, I am requesting that you inform the Minister of Environment and Climate Change the Honourable Tracy Schmidt that broadening the scope of the ethics review should include this file.***

2. Protecting the Carbonate/Moosenose Aquifer by not decommissioning the Heatherdale wells for 4,700+ residents. This represents 77.4% of the RM of Springfield residents on private domestic wells (including the towns of Oakbank, Dugald and the businesses). Please let us not forget East St. Paul which also draws its water from the same aquifer. This adds **many more people to <u>consider</u> which are outside the RM of Springfield**! Council and the application do not properly address the decommissioning of the Heatherdale wells. Council, as of June 18, was not aware of the importance of protecting these Heatherdale wells. This is made evident when listing to the audio of the June 18, 2024, Council meeting (listen to **B**. the attached audio of the June 18,2024 Planning meeting) when Janet Nylen (2:14) and Sue Zemsky (1:30) speak. Sue Zemsky, on the attached audio Council meeting (time starting at 1:30) speaks to the issue of decommissioning the Heatherdale wells and the extreme risk of doing so. She further states that the aggregate mining industry want to have unfathered access to the sand and gravel around these Heatherdale wells. ***The RM of Springfield's MLA, Conservative Ron Schuler's, major campaign contributors are from the aggregate industry who have openly lobbied for less protection rules and more access. By allowing a license for this costly environmentally unfriendly Water Treatment Plant and decommissioning the Heatherdale wells, Ron Schuler's major campaign contributors will have a great windfall at the expense of 4700+ private wells! I am requesting that you inform the Minister of Environment and Climate Change the Honourable Tracy Schmidt, to consider that this issue should also be added to the scope of the ethics commission investigation.*** Janet Nylen also spoke as an emergency delegation to the dangers of decommissioning the Heatherdale wells. Her comments can be heard on the attached audio Council meeting (time starting at 2:14). After Janet Nylen speaks, one councillor asks if the decommissioning of the Heatherdale wells will affect his well and she confirms that it will. This speaks to the lack of awareness within Council. Most strikingly, Councillor Melinda Warren (time starting at 41:39) stated that she wants to investigate other options other than a reverse osmosis plant but went on to vote for the by-law.

3. Licensing the more environmentally unfriendly & most costly water treatment plant puts great fear & undue burden & hardship on a lot of families that are now barely making ends meet. Residents in the RM of

Springfield have received their property assessments with an average of 15% increase to our homes, 45% to our land, additional water levies for those on piped water, and an expected 17% school tax increase. All these excessive increases add up and equate to a large property tax increase for years to come, especially if the annual 200 REU are not sold. We now only average less than 75 residential building permits a year (1 REU = 1 Resident)! Also, no developer expense contributions for offsite infrastructure have been identified in the debt repayment schedules produced by the RM of Springfield.
This increased capacity of water will be used to support four new developments /developers considered to be staunch supporters of the provincial Conservative Party.

The CAO Colleen Draper's responsibility is to direct the management team to review and search out options that would be the most viable, less costly, and most environmentally friendly. Colleen Draper has greatly failed this responsibility and instead has directed Council into accepting this albatross of a costly environmental unfriendly water treatment plant.

Options to choose from that will be more environmentally friendly and less costly:

1. A Reservoir/holding tank could easily be installed prior to entering the Oakbank treatment facility which allows the fines in the water supplied from Heatherdale wells to settle. Less than a 72 hour hold time prior to treatment is all that would be required to remove the fines.

2. Expropriate surrounding quarry operators causing the pollution to the municipal water supply. These quarries are almost depleted and in a brief period of time will no longer be able to cost-effectively mine sand and gravel in these quarries. Enforce existing by-laws and prohibit washing of aggregate materials in commercial quarries. (See attached **C**. Photo of Maple Leaf Aggregates discharging dirty gravel wash water into the recharge of the aquifer which creates the GUDI.)
The RM of Springfield's Aggregate Task Force was disbanded by former Conservative Mayor Tiffany Fell and good friend of Ron Schuler, as the Task Force was asking too many sensitive questions exposing potential threats to the aggregate industry including environmental hazards.

3. If required, move, and redrill the Heatherdale wells slightly south or east, one or two kilometres but remain in the pristine water supply within the Moosenose aquifer. (See attached **D**. Map of Heatherdale Wells & Potential New Locations Area for Wells

POLITICAL INTERFERENCE

The Moosenose is a large aquifer with its southern boundary intersecting the town of Oakbank and extending north into the Birds Hill Provincial Park. The eastern boundary crosses provincial highway 206 and the western boundary ends at the Red River Floodway.

This pristine water supply is currently providing all Oakbank and Dugald residents with serviced water. The site was originally chosen by qualified engineers as the best location in Springfield to supply freshwater infrastructure to Oakbank and Dugald's current and future needs.

We believe the reason Mayor Therrien wants to decommission the Heatherdale wells and construct a more costly water supply and treatment plant is primarily Political.

We believe significant political pressure from the gravel quarry operators, including Chris Lorenc from the Manitoba Heavy Construction Industry and our Springfield MLA Ron Schuler have influenced the decision of enough council members to agree to decommission the Heatherdale wells and commission an environmentally unfriendly, inferior, and more costly water supply from the Dugald Area at a significant additional cost to residents.
The RM of Springfield Chamber of Commerce executive are from the aggregate industry and the president was also a paid employee of Sio Silica .

These forces showed their power to influence decisions even at the Provincial level as seen by another significant Gravel excavation operator applicant to Environment and Climate known as Sio Silica.

Additional evidence

Under previous agreements the RM of East St. Paul has two primary wells in the RM of Springfield's Moosenose aquifer situated an approximately 2.5 miles west of the Heatherdale wells nudging on the eastern edge of the Red River Floodway This water supply supports residents drinking water needs in East St. Paul and is of the highest quality with no requirement to aggressively treat its Moosenose water supply. **NOTE** the RM East St. Paul is in the process of commissioning a third well in the Moosenose to meet its increased demand for residential drinking water. This is the most glaring and current example of political influence. It seemingly illustrates concerns the public should have regarding corruption involving the past conservative provincial government and conservative leaning municipal elected councillors.
Also supporting our argument of political influence is that the RM of Springfield's one Provincial grant does not seem to have had an application to the Province for financial assistance for a new RO water treatment plant, yet $5,650,000.00 was received in advance and prior to work done or approval. This Provincial grant application was not applied for and processed through normal channels at the province. It appears to have been driven by MLA and past minister Ron Schuler through cabinet for approval.
In summary, we strongly believe the power of the aggregate industry has been successful in lobbying the past Provincial Conservative Government to provide two substantial grants of over 10 million dollars and convince a majority of municipal council members to implement a general borrowing bylaw to tax all residents for a new serviced water supply that they will receive no benefit for the balance.

4. Reach a cost sharing agreement with the RM of Tache to pipe treated water from the water treatment facility in Lorette to the Dugald treatment centre. Estimated cost of pumps and water line is $5.7 million. (see attached **E**. Lorette – Dugald water estimate – Dugald force main).

5. Draw untreated water from the Shoal Lake Aqueduct prior to entering the water treatment facility on Provincial Highway #207. Check with Provincial Archives and confirm what the previous agreements are with the City of Winnipeg as RM of Springfield gave up land and right-of-ways allowing the water rail line and aqueduct through RM of Springfield (See attached **F**. Untreated Water from Aqueduct)
Or
Draw water directly from the Greater Winnipeg Water Treatment Plant on Provincial Highway #207 and pipe approximately 5 k to the Dugald treatment and distribution centre. (See attached **G**. Greater Wpg. Water Treatment Plant to Dugald)

6. The RM of Springfield is blessed with many options and opportunities to draw from another new pristine fresh water supply. An example is the RM of Springfield approved a major draw of aquifer water for Sky Blue Water Inc., a water bottling company close to Provincial Highway #302 and #15.
Review SKY BLUE PERMITS AMD 24-hour water well capacity test. I am Assuming for simplicity we use the same well casing size and pumps drawing 200 U.S. gallons per minute as used by Friesen drillers and confirm the 24 hour draw rate capacity is 288,000 U.S. gallons or 1,152,000 litres per day.
Typically, a Springfield resident will consume 186 litres per day. So, the Blue Sky well would without any physical change in increase pump pressure or well casing size under currant permits will support 6200 Springfield residents and presently there are **1334 Springfield residence on piped water**.
This is the easiest example we could use to show the mayor and particularly the CAO
FAILED in their responsibility to ensure good business practises were used to identify and consider all the options available to the Municipality. New 302 and 15 wells clearly meet the criteria for lower capitol costs. a cleaner low solid sustainable water sores that is environmentally friendly including low operating costs.
so why didn't this location receive an incredibly detailed consideration? **WHY?** Was it just gross mismanagement of

the public purse or was there a deal agreed to with the previous conservative government? How did the Sio Silica application Affect the RM's decision. Was a new source of water east of Anola ruled out because of the risk of contamination from the Sio Operation? Or was this very favorable option a glaring example of insufficient due diligence on behalf of the administration and its mayor.
(See attached **H.** 1. CU24-05-SkyBlueWater-Public Engineering Report & **H.** 2. Resolution from January 25, 2024, Planning meeting minutes).

7. Commission an independent engineering study to determine where in the municipality a sustainable pristine water supply can be developed. The new location must meet the RM's future needs and be a viable cost effective and environmentally friendly location with minimal treatment requirements. Enclosed is an example of high-level costing. Costs are estimated at $8,413,222.00. (See attached **I.** Cost drawing from Pr. Hwy 302 – Dugald Pr. Hwy 206)

In closing I ask that the Environmental Approvals Board not approve, but ***deny***, a licence for this reverse osmosis water treatment plant which is far from an upgrade. This reverse osmosis water treatment plant is unnecessary, costly, lacks the required due diligence into the seven other violable option, and environmentally unfriendly.
Public Registry File 6219.00 should be added to the ongoing ethics review regarding the former Conservative government on Sio Silica and perhaps elevated to an inquiry. Should this licence not be denied, I then request that the decision on the licencing be at the very least be deferred the for a minimum of six months and that the Environmental Approvals Board require the RM of Springfield Council and administration to fully explain to both its residents and the Environmental Approval Board **why** it is not choosing one of the viable least costly and more environmentally friendly options.
Councillors Andy Kuczynski and Mark Miller who voted against this unnecessary, costly, environmentally unfriendly reverse osmosis water treatment plant can offer more insight into the lack of due diligence on this file and are in support of this submission.

Sincerely,
[redacted]

CC Premier of Manitoba
Honourable Wab Kinew premier@manitoba.ca

CC Minister of Environmental & Climate Change
Honourable Tracy Schmidt minecc@manitoba.ca

CC Minister of Municipal and Northern Relations
Honourable Ian Bushie minmnr@manitoba.ca

As the deadline for submissions is June 24, please confirm, today, that you have received this information and that you can access all files and zips, that would be much appreciated.
If you need further information, you can reach me at [redacted]

Subject: Revised route for Water Main - estimate

PR 302 & PTH 15 to future water treatment plant on Cedar Lake Road - Watermain - Estimated Cost

	27		35%	
	M	2020 unit cost	2024 unit cost	
300mm HDPE pipe	27,000	$ 225.00	$ 303.75	$ 8,201,250
Fittings	28	$ 4,200.00	$ 5,670.00	$ 158,760
Connect to storage reservoir	1	$ 25,000.00	$ 33,750.00	$ 33,750
Gate valves	2	$ 7,208.00	$ 9,730.80	$ 19,462
Total				$ 8,413,222
			Cost per km	$ 311,601
			Cost per mile	$ 519,335

Regards;

UNDER THE AUTHORITY OF
THE PLANNING ACT
NOTICE OF PUBLIC HEARING

On the date and at the time and location shown below, a **PUBLIC HEARING** will be held to receive representations from any persons who wish to make them in respect to the following matter:

Application for CONDITIONAL USE ORDER under the Rural Municipality of Springfield Zoning By-law No. 08-01, as amended.

HEARING LOCATION:	Council Chambers 100 Springfield Centre Drive, Oakbank, Manitoba	
DATE & TIME:	Thursday, January 25th, 2024	6:30 p.m.
APPLICATION:	Conditional Use No. 24-05	
APPLICANT:	Sky Blue Water Inc.	
OWNER:	Peter Ferdinand Mesa	
PROPOSAL:	To permit a "**Processing Use**" (water extraction) on the land, as per Section 84.3 27) within an "AG-1" Agriculture General Zoning District.	
LOCATED:	PR 302 42N	
AREA AFFECTED:	S ½ 7-11-8 EPM	
FOR INFORMATION CONTACT:	Planning & Development Department Telephone: 204-444-3824 Email: planning@rmofspringfield.ca	

***NOTE: Property owners are responsible for notifying "TENANTS"**

Any written submission in favour of or in opposition to the application will be posted on Council's agenda.

A copy of the above proposal and supporting material may be inspected at Unit 1 – 686 Main Street during normal office hours (8:30 a.m. to 4:30 p.m.), Monday to Friday. Subject to change due to Public Health Order. Copies may be made, and extracts taken therefrom, upon request. Council Agendas are posted on the R.M. of Springfield website (www.rmofspringfield.ca) prior to the meeting date, which may include additional information.

INTERNAL REVIEW
APPLICATIONS FOR CONDITIONAL USE

RE: CONDITIONAL USE No. 24-05 **applicant:** **Sky Blue Water Inc.**
owner: **Peter Ferdinand Mesa**

PREMISES: PR 302 42N
Part of S ½ 7-11-8 EPM

SUBJECT: To permit a "Processing Use" (water extraction) on the land, as per Section 84.3 27) within an "AG-1" Agriculture General Zoning District.

Part 7 "Conditional Uses" of The Planning Act requires a Decision of Council

1. *Rejecting the application; or*
2. *Approve the application of the relevant zoning by-law, subject to such conditions as Council considers necessary or desirable to maintain the intent and purpose of the by-law.*

Council may reject an application made under subsection 106(1)(a) or it may approve the application of the zoning by-law in one or more of the following ways, pursuant to Section 106(1)(b) of The Planning Act, that:

(i) will be compatible with the general nature of the surrounding area,
(ii) will not be detrimental to the health or general welfare of people living or working in the surrounding area, or negatively affect other properties or potential development in the surrounding area, and
(iii) is generally consistent with the applicable provisions of the development plan by-law, the zoning by-law, and any secondary plan by-law.

On Site Inspection & History

- Mr. Groumoutis of Sky Blue Water Inc., has come before Council at the October 26th, 2023 meeting requesting Council's approval to permit a Processing Use, being a water extraction and filling station business on the subject site, which was denied however, Mr. Groumoutis felt Council denied the application due to a lack of information. Mr. Groumoutis has reapplied for a new Conditional Use is now back before Council with the same proposal and but has provided additional information for Council's consideration. The additional information is within Council information packages.

- Sky Blue Water Inc. is a water bottling facility situated in the St. Boniface Industrial Park in Winnipeg and has been in operation since 1994. The company bottles natural spring water that provides bottled water to large grocers and distributors throughout Cananda. Their primary source of water is located in Piney Manitoba. During our preliminary meeting, we were advised that this site was selected as a secondary water source.

- As stated within their letter of intent, the business will operate on approximately 10 acres of land, located at the west end of the 200 acres property along PR 302 42E. The water will be extracted from two (2) wells, that are sufficiently spaced apart to have minimal impact on the water source, then loaded into tankers and shipped to the bottling facility in Winnipeg. The filling station will be a 2,000 square foot building and will be contained within a fenced compound with camera surveillance. The water pumps will be placed within a 2,000 square foot

building (filling station), therefore the noise will be minimal and will only run when the tankers are being filled. Each tanker contains approximately 40,000 litres and takes approximately one hour to fill. The anticipated number of tankers a day would be 4, running in 8-hour shifts between the hours of 6:00 a.m. to 10:00 p.m.

- Friesen Drillers has conducted a complete water analysis on the site together with a 24-hour pump test and determined that there is sufficient water to meet the requirements of 190 usgpm (US gallons per minute), without impacting the water supply. The pump test indicated that the water level recovered within 10 minutes.

- Ground water is a regulated Provincial resource that falls under the jurisdiction of Manitoba Environment and Climate. Sky Blue Water Inc must obtain a Water Rights Licence from Manitoba Environment and Climate.

Class 1, Class 2 & Class 3 Developments
Manitoba Environment Act

In Manitoba, most major projects and development undertakings require an environmental license. Typically, these projects also require various other licenses or permits or authorizations under other provincial and federal legislation.

The level of scrutiny for development projects that must undergo environmental assessment depends on the classification or 'class' of the development. The Classes of Development Regulation 164/88 defines various development projects as Class 1, Class 2 or Class 3 Developments and all developments described in the regulation require an environmental license. (see below section relating to Water Development and Control)

9. WATER DEVELOPMENT AND CONTROL

Inter basin water transfers with diversion rates of not less than 0.5 m^3/s (cubic metres per second) and not greater than 10 m^3/s

Flood control projects protecting areas not less than 1 km^2 (square kilometres) and not greater than 100 km^2

Water supply impoundments of not less than 50 dam^3* and not greater than 50,000 dam^3

Land drainage projects draining areas not less than 50 km^2 and not greater than 500 km^2

Irrigation projects withdrawing not less than 200 dam^3 but not greater than 10,000 dam^3 per year

Works resulting in modification to lake or river levels and affecting a water surface area of not less than 2 km^2 but not greater than 200 km^2

Alterations to stream channels which affect fish mobility and fish habitat

M.R. 44/94; 74/2007; 39/2016

Withdrawal of water from any body of water of not less than 200 dam^3 but not greater than 10,000 dam^3 per year, including non-consumptive closed systems where water is returned to its source and the flow rate is 25 l/s and over but does not exceed 250 l/s, but not including non-consumptive closed systems where the flow rate is less than 25 l/s (litres per second)

Aquifer recharge with a closed system where water is returned to the aquifer from which it is taken with no change in quality other than temperature and a flow rate not less than 25 l/s but not greater than 250 l/s

* one dam^3 = 1,000 m^3

M.R. 44/94; 74/2007; 39/2016

- If Council were to consider this Conditional Use, I offer the following five (5) conditions:

1. *The applicant shall obtain the required permits and approvals from Manitoba Environment and Climate and shall provide a copy to the Municipality.*

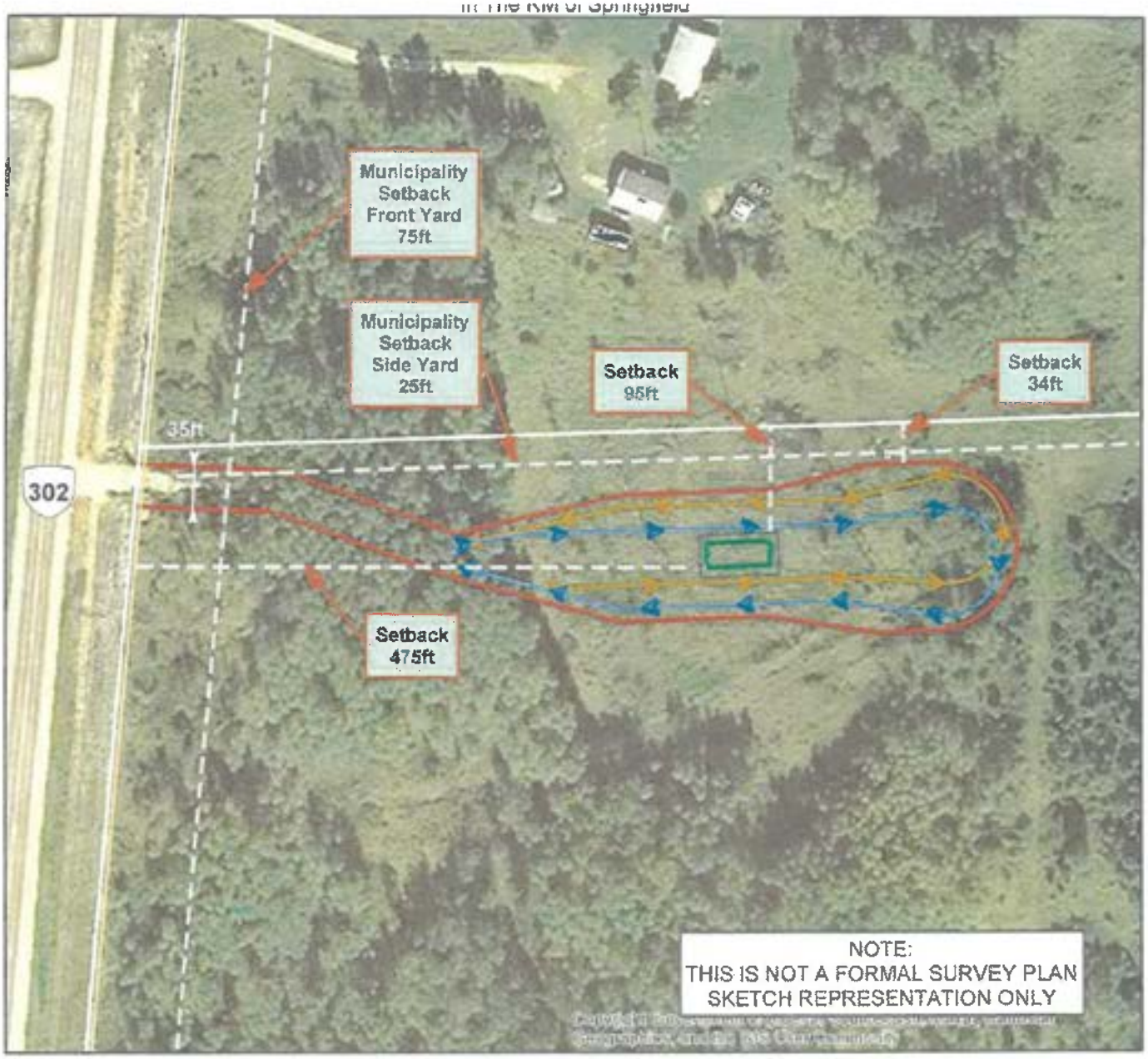
2. *The applicant shall obtain the required permits and approvals from Manitoba Transportation and Infrastructure and shall provide a copy to the Municipality.*

3. *The applicant is responsible for complying with and / or carrying out the development in accordance with any other Federal, Provincial or Municipal legislation and regulations, affecting all buildings and land use.*

4. *That a Drainage Plan be prepared and sealed by a professional engineer and approved by the Public Works Engineering Dept., as per the municipal drainage policy and Manitoba Conservation and Water Stewardship requirements; and any drainage improvements shall be constructed prior to the issuance of any building permits for the property;*

5. *That all onsite lighting be low-glare in nature, located and arranged so that no direct rays of light are directed at any adjoining properties.*

Aerial (Fall of 2020) view of subject property



evolve SURFACE STRATEGIES INC.

File #: 27026
Client #:
Revision #: 0
Sketch Date: 04-Oct-2023

Location		
Description	Latitude	Longitude
Site Center	49.903757	-96.488021
Approach	49.903958	-96.490113
Site Center Elevation		269m
Area		
Type	Area (m²)	Area (Sq. Ft.)
Total Area	5295.60	57001.10

Legend

Direction of Traffic Routes

Setbacks

Loading Station 20ft x 50ft

Access Boundary

Compound

Zoning Rural/Agricultural

Site Plan provided by applicant

WHEREAS a Public Hearing has been conducted under The Planning Act to consider an application filed by Sky Blue Water Inc., on behalf of Peter Ferdinand Mesa, owner of the property legally described as part of the S ½ 7-11-8 EPM, located on PR 302 42N north of PTH 15, for a conditional use under the Springfield Zoning By-law No. 08-01, to permit a "Processing Use" (water extraction) business;

AND WHEREAS Council is satisfied that the requirements of Part 7 "Conditional Uses" has been met;

BE IT RESOLVED THAT Conditional Use Order No. 24-05 be granted subject to the following conditions:

1. The applicant shall obtain the required permits and approvals from Manitoba Environment and Climate and shall provide a copy to the Municipality.

2. The applicant shall obtain the required permits and approvals from Manitoba Transportation and Infrastructure and shall provide a copy to the Municipality.

3. The applicant is responsible for complying with and / or carrying out the development in accordance with any other Federal, Provincial or Municipal legislation and regulations, affecting all buildings and land use.

4. That a Drainage Plan be prepared and sealed by a professional engineer and approved by the Public Works Engineering Dept., as per the municipal drainage policy and Manitoba Conservation and Water Stewardship requirements; and any drainage improvements shall be constructed prior to the issuance of any building permits for the property;

5. That all onsite lighting be low-glare in nature, located and arranged so that no direct rays of light are directed at any adjoining properties.

D. Doucet, C.E.T. Development Officer, October 20th, 2023

Bottler of DAVREN spring water

Suite 200 – 160 Provencher Blvd.

Winnipeg, Manitoba R2H 0G3

Tel: 204-949-1012; Fax: 204-949-1013

www.davrensprings.com

Letter of Intent for Use of SE 1/4, 7-11-8 EPM, (Roll# 445065)

Brief Background

Sky Blue Water Inc. is a proud Manitoba based bottling company located in the St. Boniface Industrial Park in Winnipeg. Its bottling operation has been in existence since 1994. It bottles natural spring water for many of the large grocers and distributors in Canada and ships its products throughout the Prairie Provinces.

Our Bottling Facility has an International BRC Certification. As part of that certification, we have various business continuity plans in place to ensure that our operations are sustainable for the long term. One of those plans is to have a backup source of supply for our spring water source.

Intent of Use for the Property (

Property Roll# 445065 has been identified as a suitable backup source site. The site covers just over 200 acres, and we are looking at using approximately less than five acres of the land to build a load out station of approximately 2,000 square feet and road work on the property for Super B twin water tankers to enter and leave the property.

The load out station will require access to Hydro Electricity to run pumps, filtering systems and to heat the building. The building will be set back from the highway in an existing open area. The proposed site will have a minimal impact for the need to clear exiting mature tress. The rest of the property will remain in its current natural state.

Security to the site will be achieved with the installation of a lockable gate at the highway, the load out station will be located withing a fenced in compound and surveillance camera will be installed.

We plan on having two separate wells that will be sufficiently spaced apart to ensure the minimal impact on the water source. Both wells will be secured to limit any unrelated access to them.

A complete water analysis was conducted on the site including a 24-hour pump test. The 24-hour pump test, conducted by Friesen Drillers, determined that there is sufficient water to meet our required needs of 190 usgpm, without impacting the water supply. This is the flow rate required to fill the tankers in a timely fashion. The pumps will only run during the filling process.

The 24-hour pump test also determined that after 24 hours of continuous pumping, the underground water levels recovered to their original level within 10 minutes.

[redacted]

If this site needs to be used as a backup source, it may require approximately 8 – 10 tankers loads/day to run an 8-hour shift. Each tanker load contains approximately 40,000 litres of water. Each tanker takes approximately 1 hour to load. As such, we anticipate approximately only 8 - 10 hours of use of this site to run one 8-hour shift (two tanker may load at the same time). Most of these loads would be processed and delivered between 6:00AM to 10:00PM Monday to Friday

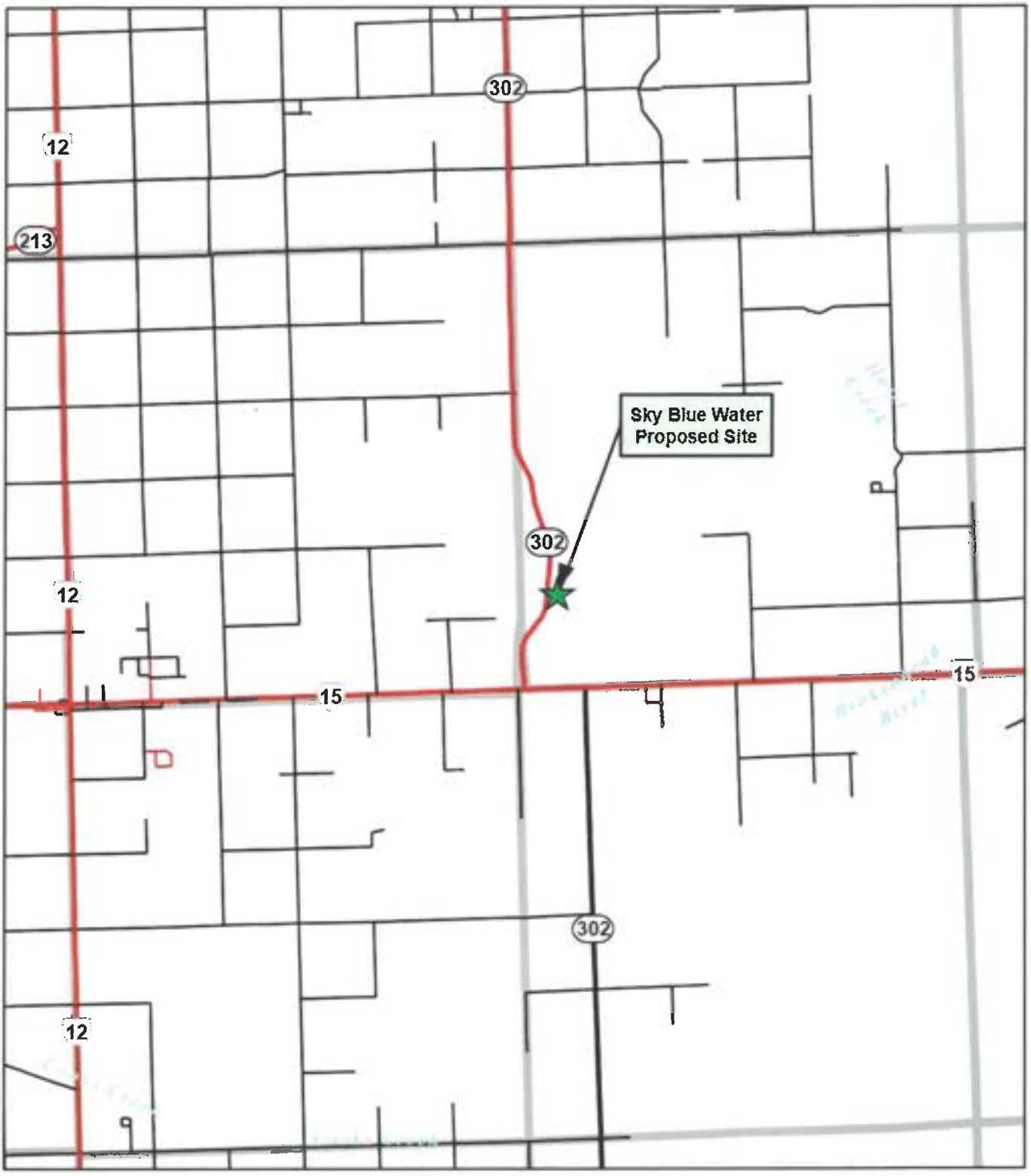
Both wells will be installed with transducers to monitor water levels 24/7 to assess the impact of regional climate changes and normal local area residences use on aquifer's water levels. This is important to ensure a long-term sustainable future for the water source, not only for Sky Blue Water but also for other users that may be accessing the same water source.

A complete water analysis will be conducted annually to monitor any changes in aquifer's mineral profile and chemistry of the water. All this monitoring will be conducted by a third-party Hydrogeologists.

Pumps and filtration systems will be housed in the insulated load out station resulting in negligible outside noise from the load out station. The only noise from the site would be from the tankers arriving and leaving the site. Due to the proximity to a Provincial Highway, it is very likely that the noise from the site will be negligible compared to that of the highway traffic.

Aside from truck drivers that will be filling the tankers and periodic visits to inspect equipment, maintenance, etc, it is expected that no permanent staff will be located on site.

[redacted]



Legend

- Gravel Road
- Gravel Highway
- Paved Road
- Paved Highway

N

0 2.5 5
Kilometres

0 2.5 5
Miles

Sky Blue Water
Proposed Site Layout
SURFACE LOCATION
SE ¼ 7-11-8 E1M

OVERVIEW MAP

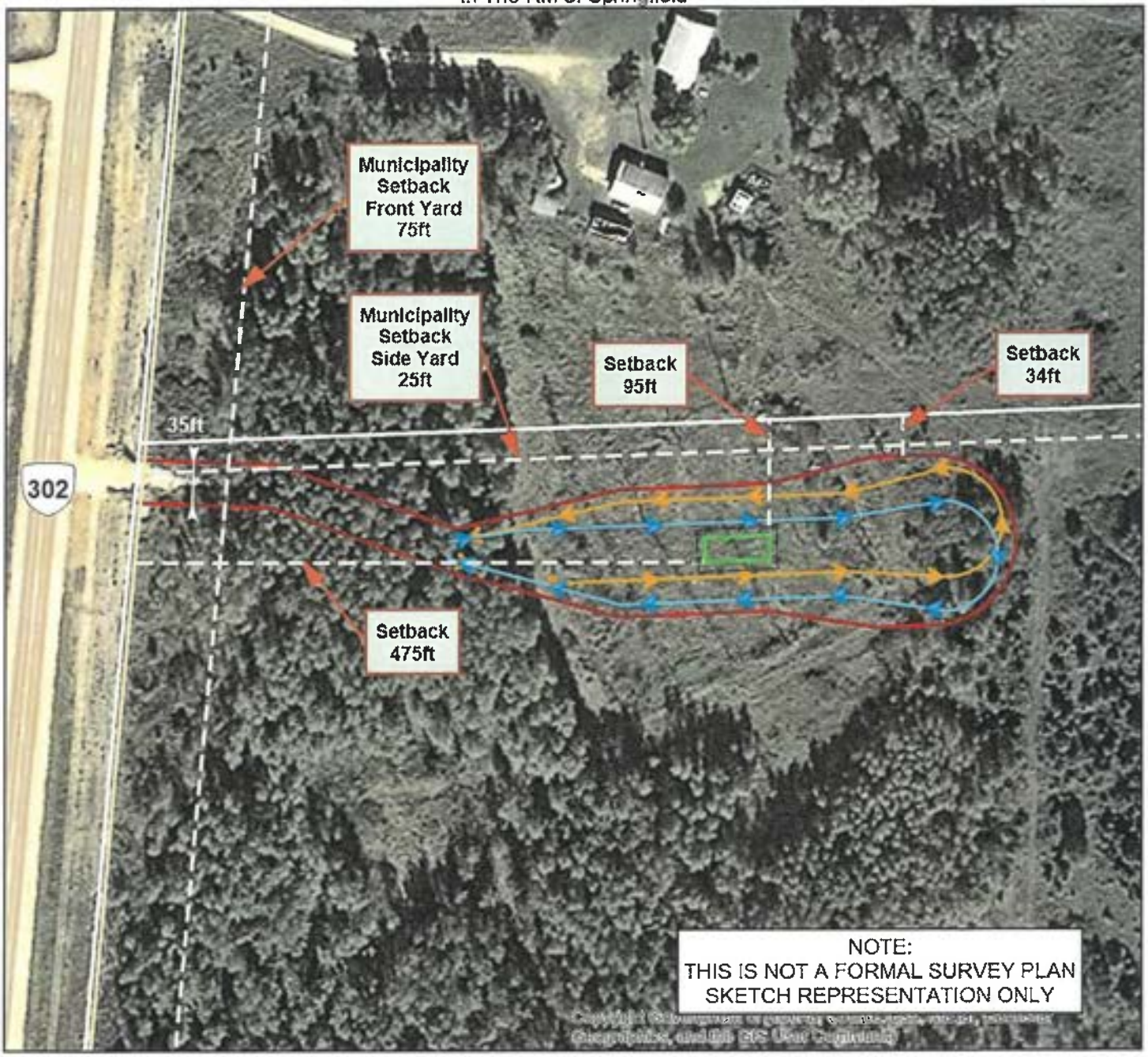
Rev.	Description	Date	Prepared By:		
		Date: November 22, 2023	evolve SURFACE STRATEGIES INC.	Evolve Project #: 27026	Coordinate System: NAD 1983 UTM Zone 14N
				Page: 1 of 1	Scale: 1:125,000

[redacted]

Sky Blue Water
Proposed Site Layout SE ¼ 7-11-8 E1M

Title No: 2238473/1 Parcel 1: SE ¼ 7-11-8 EPM EXC ALL MINES AND MINERALS Parcel 2: ALL THAT PORTION OF SW ¼ 7-11-8 EPM WHICH LIES EAST OF THE EASTERN LIMIT OF ROAD PLAN 20039 WLTO EXC OUT OF SAID PARCEL 2: FIRSTLY: PLAN 46432 WLTO AND SECONDLY: ALL MINES AND MINERALS

In The RM of Springfield



evolve SURFACE STRATEGIES INC.

File #: 27026
Client #:
Revision #: 0
Sketch Date: 22-Nov-2023

Location		
Description	**Latitude**	**Longitude**
Site Center	49.903757	-96.488021
Approach	49.903958	-96.490113
Site Center Elevation		269m
Area		
Type	**Area (m²)**	**Area (Sq. Ft.)**
Total Area	5295.60	57001.10

Legend

Direction of Traffic Routes

Setbacks

Loading Station 20ft x 50ft

Access Boundary

Compound

Zoning Rural/Agricultural

[redacted]

Manitoba
Transportation and Infrastructure
Engineering and Technical Services Division
Highway Design Branch – Roadside Development Section
1420-215 Garry Street, Winnipeg, Manitoba, Canada R3C 3P3
T 204-914-6916 F 204-945-0593
www.manitoba.ca
e-mail: RoadsideDevelopment@gov.mb.ca

September 21, 2023 PD 40.10 Ex

Johanne Marin, C.M.M.A
Administrative Planning Assistant
Planning & Development
Rural Municipality of Springfield
E-mail: jmarin@rmofspringfield.ca

Dear Johanne:

Re: Conditional Use Order No. 23-32
Pt. SE ¼ 7-11-8E
RM of Springfield
Purpose: To permit a natural resource development

In response to your e-mail dated September 13, 2023, we have reviewed the above noted Conditional Use application. The intent is to permit a "Natural Resource Development" business within an "AG-1" Agriculture General Zoning District. We note that this property has frontage and existing access on PR 302.

Based on all available information, we do not object to this Conditional Use. Please note that the Department would not be prepared to approve any additional access connections to PR 302 at this location.

Please include the following condition of approval.

- The landowner will be required to obtain a permit from Manitoba Transportation and Infrastructure for the intensification of use and access widening of the existing access and for any structures placed in the controlled area of PR 302. For permit information, please contact Erica Paulo at 431-338-9897 or by email at Access.Management@gov.mb.ca. Permit information and permit application forms can also be found at https://forms.gov.mb.ca/highway-permits-application/index.html.

Please note the following statutory requirements affecting PR 302.

Statutory Requirements:

Under the Transportation Infrastructure Act, a permit is required from Manitoba Transportation and Infrastructure to construct, modify, relocate, remove or intensify the use of an access. A permit is also required from Manitoba Infrastructure to construct, modify, remove or relocate a structure or sign, or to change or intensify the use of an existing structure (including the alteration of existing buildings) within the **38.1 m** (125 ft) controlled area from the edge of the highway right-of-way.

In addition, a permit is required from the Manitoba Transportation and Infrastructure for any planting placed within **15 m** (50 ft) from the edge of the right-of-way of this highway.

Please let us know if we can be of any further assistance.

Sincerely,

ORIGINAL TO BE SIGNED SEPTEMBER 25, 2023

Shannon Burnett
Development Review Technologist

Cc: Capital Region

SB/ms

RM of Springfield
January 25, 2024
Planning Meeting
Minutes

The Chair closed the evidentiary portion of the meeting.
Resolution No: 24-023
Moved By: Melinda Warren
Seconded By: Patrick Therrien

WHEREAS a Public Hearing has been conducted under The Planning Act to consider an application filed by Sky Blue Water Inc., on behalf of Peter Ferdinand Mesa, owner of the property legally described as part of the S ½ 7-11-8 EPM, located on PR 302 42N north of PTH 15, for a conditional use under the Springfield Zoning By-law No. 08-01, to permit a "Processing Use" (water extraction) business;

AND WHEREAS Council is satisfied that the requirements of Part 7 "Conditional Uses" has been met;

BE IT RESOLVED THAT Conditional Use Order No. 24-05 be granted subject to the following conditions:

1. The applicant shall obtain the required permits and approvals from Manitoba Environment and Climate and shall provide a copy to the Municipality.
2. The applicant shall obtain the required permits and approvals from Manitoba Transportation and Infrastructure and shall provide a copy to the Municipality.
3. The applicant is responsible for complying with and / or carrying out the development in accordance with any other Federal, Provincial or Municipal legislation and regulations, affecting all buildings and land use.
4. That a Drainage Plan be prepared and sealed by a professional engineer and approved by the Public Works Engineering Dept., as per the municipal drainage policy and Manitoba Conservation and Water Stewardship requirements; and any drainage improvements shall be constructed prior to the issuance of any building permits for the property;
5. That all onsite lighting be low-glare in nature, located and arranged so that no direct rays of light are directed at any adjoining properties.

Name	Yes	No	Abstained	Absent
[redacted]	✓			
		✓		
		✓		
	✓			
	✓			

CARRIED

ATTENTION SPRINGFIELD RESIDENTS

Mayor Therrien and Couns. Warren and Fuhl's MASSIVE PROPERTY TAX PROPOSAL

Usually, local improvements for major infrastructure projects, which provide services to new homes and multi residential developments, are funded by the property developers. Purchasers of these new properties **usually** pay their share of development costs, as the infrastructure costs are reflected in the purchase price of new homes and properties. Developers are **usually** expected to carry a majority of the water and waste infrastructure costs, as these improvements significantly increase the value of their properties, usually doubling the property's value. New residents, who will eventually use these services, could also be required to pay for the remaining offsite service costs.
Most municipalities **usually** administrate these user pay projects via a **LOCAL IMPROVEMENT BYLAW**.

HOWEVER... here is Therrien, Fuhl and Warren's Plan...

Mayor Therrien, along with Couns. Fuhl and Warren, are now preparing a **GENERAL BORROWING BYLAW** that will force ALL SPRINGFIELD RESIDENTS to pay for these offsite services, which are intended for the benefit of four planned developments in Dugald and one in Oakbank.

HOW ARE SPRINGFIELD RESIDENTS AFFECTED?

Estimated costs to supply new services, exclusively for the benefit of new development, is north of $55 million. This will undoubtedly increase all resident's property taxes substantially. Initial estimates including the debt servicing fees will certainly add hundreds of dollars per year to all residents' property taxes.

Allan Akins, Director of Springfield Taxpayers Rights Corp (STRC), states that this appears to be another rushed, poorly thought-out plan, by Therrien, that has very little to no support from our community. Therrien's plan appears to increase the profits of business developers and Builders, at the expense of Springfield residents.

Therrien's plan is also to accelerate the availability of serviced lots for home builds, from our current 70 new builds per year to a minimum of 200 new residences each year. WE believe this number of new builds is excessive and will not only affect our rural identity, but it will continue to increase traffic congestion and safety concerns on Dugald and Garven Roads for commuters. This plan would also place significant stress on our schools as their capacity is already extended.

Most Importantly, a vast MAJORITY of Springfield residents have already invested up to $50,000 for their own wells and/or septic fields. Why should we be forced to pay for the services of new residents in these new developments?

Akins also stated, "Therrien is not offering funding for existing and new acreage residents. Currently all residents on acreages must provide for their own services, by drilling new wells and septic fields on their property." Why is Therrien giving new residential small lot builders and developers a free ride at our expense? We have already paid once for our own services, why then should we pay for someone else's?

Couns. Andy Kuczynski (Ward 2) and Mark Miller (Ward 3) have been vocal against the proposed new tax and spend scheme. They are fighting for fair taxation for all Springfield residents. Couns. Kuczynski and Miller promote the benefit, user pay approach that will not additionally tax existing residents and safeguarding the key concerns of our community members.

WHAT ARE RESIDENTS REQUESTING?

STRC members have recently completed an extensive canvas throughout the **ENTIRE MUNICIPALITY**, meeting with over 800 residents.
Akins confirmed the following results:

1. Over 90 per cent of the residents we consulted with, said, "NO" to Therrien, Fuhl and Warren's excessive costly growth plan which includes PAYING $55 MILLION FROM RESIDENT POCKETS FOR SERVICES from which they will receive no benefit.
2. Overwhelmingly, Springfield residents want to keep their rural community identity and not move towards becoming a suburb of Winnipeg.
3. All proposed new development plans for Springfield must not affect residents existing quality of life.

The executive and members of STRC believe all residents should be aware of this massive **multi million-dollar TAX HIKE,** which is also most quite likely contravening Springfield's Master Land Use Development Plan, its master bylaw, as proposed by these three council members.
We have contacted an exceptionally large number of our Springfield residents, most of whom have no idea about this pending proposed bylaw.

PROPOSAL TO MAYOR THERRIEN AND COUNCIL

New Developments

With less than 10 per cent support from the community on Therrien, Fuhl and Warren's tax increase, and after listening to what residents said at the door,

WE ARE PROPOSING THE FOLLOWING:

1. Mayor Therrien and council withdraw the General Borrowing Bylaw.
2. That council agrees to hold and commits to meaningful public hearings and follow the recommendations of the community that it 'SERVES"!
3. Council confirms adoption of a user pay bylaw for all new developments.
4. Council reaffirms that they will uphold and follow Springfield's existing bylaws including our Master Land Use bylaw development plan.
5. Council reaffirms the rights of its ratepayers and restores residents' full access and participation on important matters affecting our community at council meetings.
6. Council agrees to establish, with residents, a fair and reasonable annual cap on all new home and residential construction in Springfield. Additionally, Council will provide a detail forward looking financial plan that identifies how projects will be funded and to address the concerns of residents.
7. Council agrees to establish a comprehensive, fair and honest review of costs regarding our proposed current freshwater reverse osmosis treatment plant with the goal of reducing the capital costs by 50%. Currently there are seven viable options to explore that Mayor Therrien and Couns. Fuhl and Warren failed to consider prior to first reading.

For more information contact:
Allan Akins
204-791-6270
aakins@mymts.net

The information provided herein is approved by Springfield Taxpayer Rights Corp

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Most importantly, a vast MAJORITY of Springfield residents have already invested up to $50,000 for their own wells and/or septic field, including serviced town water and sewer hookups. Why should we be forced to pay for the services of new residents in these new developments?

Akins also stated, "Therrien is not offering funding for existing and new acreage residents. Currently all residents on acreages must provide for their own services by drilling new wells and septic fields on their property." Why is Therrien giving new residential small lot builders and developers a free ride at our expense? We have already paid once for our own services, why then should we pay for someone else's?

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For more information contact:
Allan Akins
204-791-6270
aakins@mymts.net

June 22, 2024

[redacted]

Agnes Wittman, Director
Environmental Approvals Board
Environment and Climate Change
14 Fultz Boulevard
Winnipeg, MB R3X 0L6

Jay Mak jaymak@gov.mb.ca
Senior Environmental Engineer
Department of Environment and Climate Change

To whom it may concern,

I am a resident of Springfield and a member of the Springfield Taxpayers Rights Corp., a large group of over a 1000 concerned Springfield residents which was instrumental in the stopping of the Sio Silica Project. The Springfield Taxpayers Rights Corp. consist of many professionals including but not limited to engineers, retired Chief Administrative Officer, Professors of University of Manitoba & Winnipeg, former Councillors, politicians, doctors, teachers, business owners, farmers, and a whole host of lay peoples. The following submission has been constructed from the gathering of the wealth of knowledge that this group has to offered.

RE: Public Registry 6219.00
Rural Municipality of Springfield - Water Treatment Plant Upgrades

Please find attached:

A.) Petition with close to 1200 signatures opposing the water treatment plant.
(consists of six zip files A. Batch_1, 2, 3, 4, 5, 6 Petition OPPOSING PR6219.00Water Treatment Plant
B.) The audio for the June 18, 2024, Council meeting. There are many people that speak to this environmentally unfriendly reverse osmosis water treatment plant and offer other solutions which most of the Council and the CAO have failed to consider.
C.) Photo of Maple Leaf Aggregates discharging dirty gravel wash water into the recharge of the aquifer which creates the GUDI.
D.) Map of Heatherdale Wells & Potential New Locations Area for Wells
E.) Lorette – Dugald water estimate – Dugald force main.
F.) Untreated Water from Aqueduct
G.) Greater Wpg. Water Treatment Plant to Dugald
H.) 1. CU24-05-SkyBlueWater-Public Engineering Report
2. RM of Springfield, January 25, 2024, Planning Meeting Minutes – Resolution for Sky Blue Water extraction for the sale of bottled water.
I.) Cost drawing from Pr. Hwy 302 – Dugald Pr. Hwy 206
J.) Two full page informational Clipper Newspaper ads informing all to other options and avenues.

We ask that the Environmental Approvals Board deny this application or, at the very least, defer its decision and require the RM of Springfield to do its due diligence on the seven viable, less costly, and more environmentally friendly options that have been put forward. Deferring (4 to 6 months) the license of a project not yet scheduled to commence for 2 years, will allow, and consider the following:

1. Comprehensive independent water source review, capital cost comparisons and dependability of the reservoir, delivery method and a review of the operating costs. ***This is important as this environmentally unfriendly reverse osmosis water treatment plant was birthed by the former Conservative government, perhaps to accommodate the questionable Sio Silica project for when it would have polluted the aquifer. As we know, the former Conservative government, regarding the Sio Silica project, is under review by the Ethics Commission. Therefore, I am requesting that you inform the Minister of Environment and Climate Change the Honourable Tracy Schmidt that broadening the scope of the ethics review should include this file.***

2. Protecting the Carbonate/Moosenose Aquifer by not decommissioning the Heatherdale wells for 4,700+ residents. This represents 77.4% of the RM of Springfield residents on private domestic wells (including the towns of Oakbank, Dugald and the businesses). Please let us not forget East St. Paul which also draws its water from the same aquifer. This adds **many more people to <u>consider</u> which are outside the RM of Springfield**! Council and the application do not properly address the decommissioning of the Heatherdale wells. Council, as of June 18, was not aware of the importance of protecting these Heatherdale wells. This is made evident when listing to the audio of the June 18, 2024, Council meeting (listen to **B**. the attached audio of the June 18,2024 Planning meeting) when Janet Nylen (2:14) and Sue Zemsky (1:30) speak. Sue Zemsky, on the attached audio Council meeting (time starting at 1:30) speaks to the issue of decommissioning the Heatherdale wells and the extreme risk of doing so. She further states that the aggregate mining industry want to have unfathered access to the sand and gravel around these Heatherdale wells. ***The RM of Springfield's MLA, Conservative Ron Schuler's, major campaign contributors are from the aggregate industry who have openly lobbied for less protection rules and more access. By allowing a license for this costly environmentally unfriendly Water Treatment Plant and decommissioning the Heatherdale wells, Ron Schuler's major campaign contributors will have a great windfall at the expense of 4700+ private wells! I am requesting that you inform the Minister of Environment and Climate Change the Honourable Tracy Schmidt, to consider that this issue should also be added to the scope of the ethics commission investigation.*** Janet Nylen also spoke as an emergency delegation to the dangers of decommissioning the Heatherdale wells. Her comments can be heard on the attached audio Council meeting (time starting at 2:14). After Janet Nylen speaks, one councillor asks if the decommissioning of the Heatherdale wells will affect his well and she confirms that it will. This speaks to the lack of awareness within Council. Most strikingly, Councillor Melinda Warren (time starting at 41:39) stated that she wants to investigate other options other than a reverse osmosis plant but went on to vote for the by-law.

3. Licensing the more environmentally unfriendly & most costly water treatment plant puts great fear & undue burden & hardship on a lot of families that are now barely making ends meet. Residents in the RM of Springfield have received their property assessments with an average of 15% increase to our homes, 45% to our land, additional water levies for those on piped water, and an expected 17% school tax increase. All these excessive increases add up and equate to a large property tax increase for years to come, especially if the annual 200 REU are not sold. We now only average less than 75 residential building permits a year (1 REU = 1 Resident)! Also, no developer expense contributions for offsite infrastructure have been identified in the debt repayment schedules produced by the RM of Springfield. ***This increased capacity of water will be used to support four new developments /developers considered to be staunch supporters of the provincial Conservative Party.***

The CAO Colleen Draper's responsibility is to direct the management team to review and search out options that would be the most viable, less costly, and most environmentally friendly. Colleen Draper has greatly failed this responsibility and instead has directed Council into accepting this albatross of a costly environmental unfriendly water treatment plant.

Options to choose from that will be more environmentally friendly and less costly:

1. A Reservoir/holding tank could easily be installed prior to entering the Oakbank treatment facility which allows the fines in the water supplied from Heatherdale wells to settle. Less than a 72 hour hold time prior to treatment is all that would be required to remove the fines.

2. Expropriate surrounding quarry operators causing the pollution to the municipal water supply. These quarries are almost depleted and in a brief period of time will no longer be able to cost-effectively mine sand and gravel in these quarries. Enforce existing by-laws and prohibit washing of aggregate materials in commercial quarries. (See attached **C**. Photo of Maple Leaf Aggregates discharging dirty gravel wash water into the recharge of the aquifer which creates the GUDI.)
The RM of Springfield's Aggregate Task Force was disbanded by former Conservative Mayor Tiffany Fell and good friend of Ron Schuler, as the Task Force was asking too many sensitive questions exposing potential threats to the aggregate industry including environmental hazards.

3. If required, move, and redrill the Heatherdale wells slightly south or east, one or two kilometres but remain in the pristine water supply within the Moosenose aquifer. (See attached **D**. Map of Heatherdale Wells & Potential New Locations Area for Wells

POLITICAL INTERFERENCE

The Moosenose is a large aquifer with its southern boundary intersecting the town of Oakbank and extending north into the Birds Hill Provincial Park. The eastern boundary crosses provincial highway 206 and the western boundary ends at the Red River Floodway.

This pristine water supply is currently providing all Oakbank and Dugald residents with serviced water. The site was originally chosen by qualified engineers as the best location in Springfield to supply freshwater infrastructure to Oakbank and Dugald's current and future needs.

We believe the reason Mayor Therrien wants to decommission the Heatherdale wells and construct a more costly water supply and treatment plant is primarily Political.

We believe significant political pressure from the gravel quarry operators, including Chris Lorenc from the Manitoba Heavy Construction Industry and our Springfield MLA Ron Schuler have influenced the decision of enough council members to agree to decommission the Heatherdale wells and commission an environmentally unfriendly, inferior, and more costly water supply from the Dugald Area at a significant additional cost to residents.
The RM of Springfield Chamber of Commerce executive are from the aggregate industry and the president was also a paid employee of Sio Silica .
These forces showed their power to influence decisions even at the Provincial level as seen by another significant Gravel excavation operator applicant to Environment and Climate known as Sio Silica.

Additional evidence

Under previous agreements the RM of East St. Paul has two primary wells in the RM of Springfield's Moosenose aquifer situated an approximately 2.5 miles west of the Heatherdale wells nudging on the eastern edge of the Red River Floodway This water supply supports residents drinking water needs in East St. Paul and is of the highest quality with no requirement to aggressively treat its Moosenose water supply. **NOTE** the RM East St. Paul is in the process of commissioning a third well in the Moosenose to meet its increased demand for residential drinking water.
This is the most glaring and current example of political influence. It seemingly illustrates concerns the public should have regarding corruption involving the past conservative provincial government and conservative leaning municipal elected councillors.
Also supporting our argument of political influence is that the RM of Springfield's one Provincial grant does not seem to have had an application to the Province for financial assistance for a new RO water treatment plant, yet $5,650,000.00 was received in advance and prior to work done or approval. This Provincial grant application was not applied for and processed through normal channels at the province. It appears to have been driven by MLA and past minister Ron Schuler through cabinet for approval.
In summary, we strongly believe the power of the aggregate industry has been successful in lobbying the past Provincial Conservative Government to provide two substantial grants of over 10 million dollars and convince a majority of municipal council members to implement a general borrowing bylaw to tax all residents for a new serviced water supply that they will receive no benefit for the balance.

4. Reach a cost sharing agreement with the RM of Tache to pipe treated water from the water treatment facility in Lorette to the Dugald treatment centre. Estimated cost of pumps and water line is $5.7 million. (see attached **E**. Lorette – Dugald water estimate – Dugald force main).

5. Draw untreated water from the Shoal Lake Aqueduct prior to entering the water treatment facility on Provincial Highway #207. Check with Provincial Archives and confirm what the previous agreements are with the City of Winnipeg as RM of Springfield gave up land and right-of-ways allowing the water rail line and aqueduct through RM of Springfield (See attached **F**. Untreated Water from Aqueduct)
Or
Draw water directly from the Greater Winnipeg Water Treatment Plant on Provincial Highway #207 and pipe approximately 5 k to the Dugald treatment and distribution centre. (See attached **G**. Greater Wpg. Water Treatment Plant to Dugald)

6. The RM of Springfield is blessed with many options and opportunities to draw from another new pristine fresh water supply. An example is the RM of Springfield approved a major draw of aquifer water for Sky Blue Water Inc., a water bottling company close to Provincial Highway #302 and #15.
Review SKY BLUE PERMITS AMD 24-hour water well capacity test. I am Assuming for simplicity we use the same well casing size and pumps drawing 200 U.S. gallons per minute as used by Friesen drillers and confirm the 24 hour draw rate capacity is 288,000 U.S. gallons or 1,152,000 litres per day.
Typically, a Springfield resident will consume 186 litres per day. So, the Blue Sky well would without any physical change in increase pump pressure or well casing size under currant permits will support 6200 Springfield residents and presently there are **1334 Springfield residence on piped water**.
This is the easiest example we could use to show the mayor and particularly the CAO FAILED in their responsibility to ensure good business practises were used to identify and consider all the options available to the Municipality. New 302 and 15 wells clearly meet the criteria for lower capitol costs. a cleaner low solid sustainable water sores that is environmentally friendly including low operating costs.

so why didn't this location receive an incredibly detailed consideration? **WHY?** Was it just gross mismanagement of the public purse or was there a deal agreed to with the previous conservative government? How did the Sio Silica application Affect the RM's decision. Was a new source of water east of Anola ruled out because of the risk of contamination from the Sio Operation? Or was this very favorable option a glaring example of insufficient due diligence on behalf of the administration and its mayor.
(See attached **H.** 1. CU24-05-SkyBlueWater-Public Engineering Report & **H.** 2. Resolution from January 25, 2024, Planning meeting minutes).

7. Commission an independent engineering study to determine where in the municipality a sustainable pristine water supply can be developed. The new location must meet the RM's future needs and be a viable cost effective and environmentally friendly location with minimal treatment requirements. Enclosed is an example of high-level costing. Costs are estimated at $8,413,222.00. (See attached **I.** Cost drawing from Pr. Hwy 302 – Dugald Pr. Hwy 206)

In closing I ask that the Environmental Approvals Board not approve, but ***deny***, a licence for this reverse osmosis water treatment plant which is far from an upgrade. This reverse osmosis water treatment plant is unnecessary, costly, lacks the required due diligence into the seven other violable option, and environmentally unfriendly.
Public Registry File 6219.00 should be added to the ongoing ethics review regarding the former Conservative government on Sio Silica and perhaps elevated to an inquiry. Should this licence not be denied, I then request that the decision on the licencing be at the very least be deferred the for a minimum of six months and that the Environmental Approvals Board require the RM of Springfield Council and administration to fully explain to both its residents and the Environmental Approval Board **why** it is not choosing one of the viable least costly and more environmentally friendly options.
Councillors Andy Kuczynski and Mark Miller who voted against this unnecessary, costly, environmentally unfriendly reverse osmosis water treatment plant can offer more insight into the lack of due diligence on this file and are in support of this submission.

Sincerely,
[redacted]

CC Premier of Manitoba
Honourable Wab Kinew premier@manitoba.ca

CC Minister of Environmental & Climate Change
Honourable Tracy Schmidt minecc@manitoba.ca

CC Minister of Municipal and Northern Relations
Honourable Ian Bushie minmnr@manitoba.ca

As the deadline for submissions is June 24, please confirm, today, that you have received this information and that you can access all files and zips, that would be much appreciated.

If you need further information, you can reach me at [redacted]

From: [redacted]
Sent: May 12, 2025 7:50 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Objection to water plan in Eastern Manitoba

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

Please register my objection to Well Field Expansion File: 6013.10 highlighting the following concerns.

*The Environment Assessment process allowed for separate assessment of the current well field, the well field expansion and the Reverse Osmosis Water Treatment Plant(ROWTP). "Project splitting" is highly criticized as it prevents full assessment of all environment, economic and social risks and impacts from the project. This is particularly distressing given the need to protect local and regional groundwater sources.

*I do not support the location of the well field. Two miles further east, Water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure. In my opinion this is a waste of public funds.

*The more "technical and economic" area for the Dugald/Oakbank well field was abandoned. (p.10 EAP 6013.00) However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. I see this as a better use of public funds and meets sustainable development.

*Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels.

There are several other concerns. Please respect recommendations from scientific reports and the real economic consequences over the long-term as well as the environement concerns related to each project.

[redacted]

From: [redacted]
Sent: May 12, 2025 11:04 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: OLS Post-objection to Well Field Expansion file 6013.10

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

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*Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels.

*There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge.

*Calculations project water draw to occur in the saline portion of the Sandstone aquifer. Assessment of impacts from saline water draw to the aquifer system, to neighboring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the Proposal stage not after licensing through "a staged approach".

*In 2007, The MB Clean Environment Commission(CEC) found “insufficient information available in respect of the sustainability of the water resources” and recommended the MB govt prioritize the “development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers”. Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.

*In order for environmental assessments “to be done well, they must include an assessment of cumulative effects.”(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

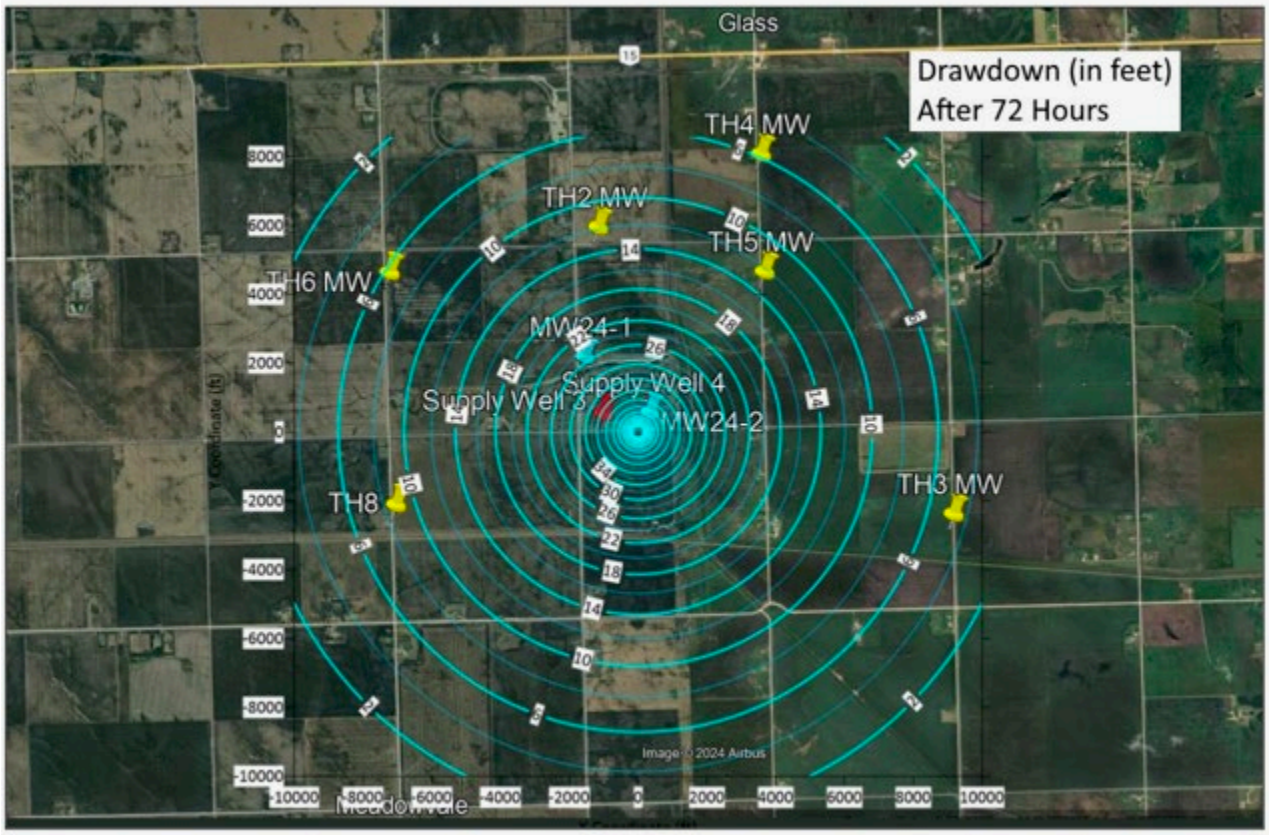
*****In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

The handling of this development once again shows the need to reform MB’s assessment & licensing regime under The Environment Act.

As proposed, the project must not be licensed.

Image: Map of test site locations; Radius of drawdown for 72-hour pumping test from proposed Well 4; Longterm Drawdown using half of proposed 1,600dam3/year groundwater allocation in year 5 shows draw in saline; Flow in Cooks Creek Diversion.

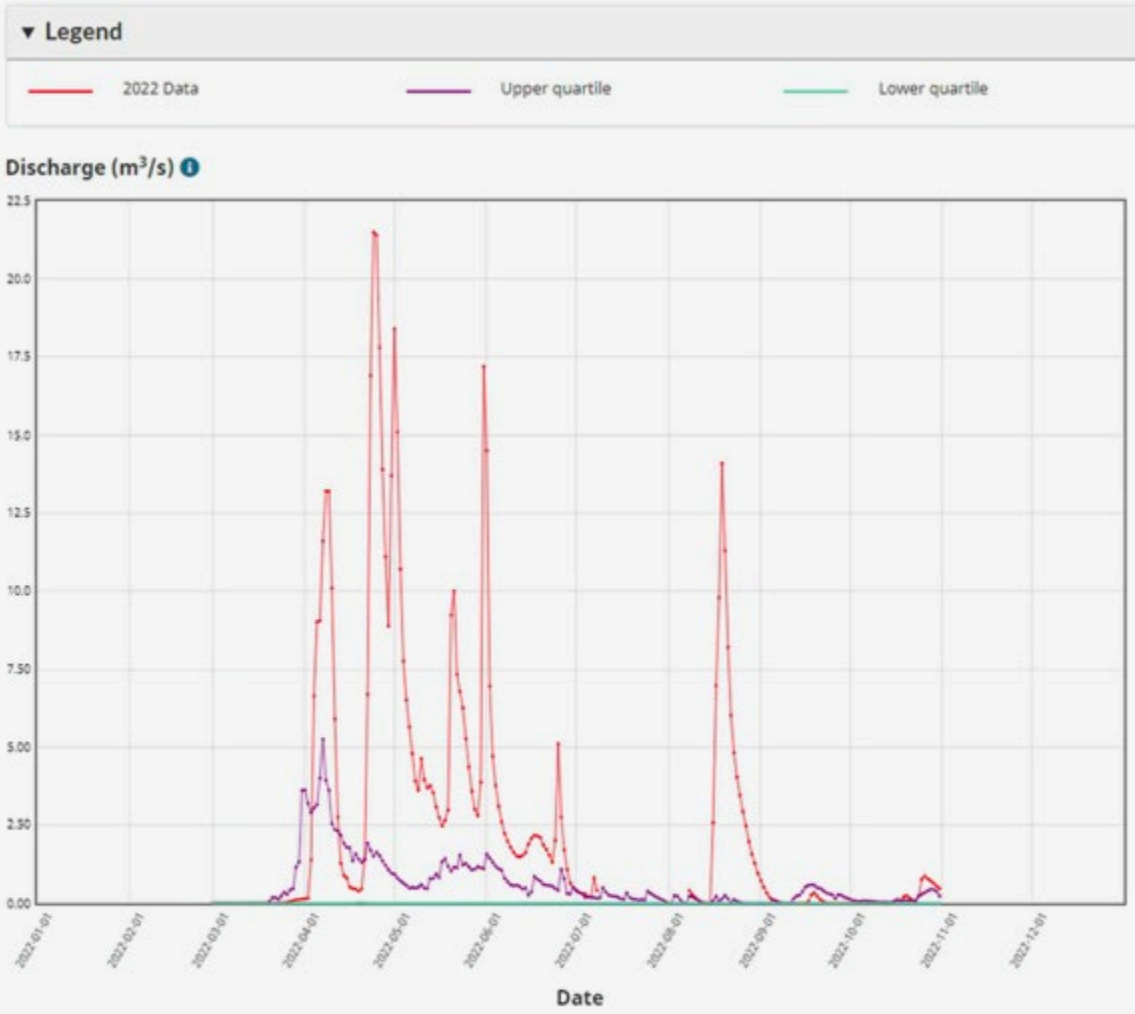
Figure 33 - Drawdown in the Sandstone Aquifer – 72 hours



Note: Sandstone Aquifer drawdown (in feet), after 72 hours of pumping at 500 U.S.G.P.M.
(Source – Friesen Drillers, 2024)

Figure 1 – Map of test site locations.

Figure 4-1: Flow in Cooks Creek Diversion at Inlet



The daily flow records and long-term statistics presented on the WSC webpage show that the lower quartile (i.e., the 25th percentile, or 1/4th of measurements) for the Cooks Creek Diversion are zero for the proposed period of discharge (i.e., April 1 to November 15). This implies that the 7Q10 and 30Q10 are zero as well and that the water body is t considered an intermittent stream. Therefore, the mixing calculations were completed for the Cooks Creek Diversion when there is flow and for Red River for periods of no flow in the Cooks Creek Diversion.

Table 14 – Long Term Drawdown – Year 5

Table 14 **Projected Drawdown – Year 5 (2030)** **Estimated Use: 800 dam³/year total (154 dam³/year above current licence)** **365 Days Pumping at 77 U.S.G.P.M.**						
Radius	**1,000 ft.**	**½ mile**	**1-mile**	**1.5-miles**	**2-miles**	**3-miles**
Drawdown	11.8 ft.	9.4 ft.	7.7 ft.	6.7 ft.	5.9 ft.	4.9 ft.
Calculations follow the assumptions of the Theis (1935) equation.						

[redacted]

From: [redacted]
Sent: May 12, 2025 3:57 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Re: RM of Springfield Well Field Expansion File 6013.10

May 12, 2025

Jay Mak
Senior Environmental Engineer
Manitoba Environment and Climate Change

Re: Rural Municipality of Springfield
Well Field Expansion
File: 6013.10

Mr. Mak, **please register my opposition** to the application, File 6013.10, which the RM of Springfield is making to Manitoba Environment and Climate Change for approval of a Well Field Expansion in support of a new water treatment plant in Dugald.

I oppose the plan because of the negative impact the reverse osmosis plant will have upon the Lake Winnipeg Watershed. By way of public notification, on page 11 of *The Clipper,* dated 10 April 2025, the project description asserts that "The membrane concentrate and backwash water will be seasonally discharged to Cooks Creek Diversion."

I, for one, have appeared before the RM Council to state upon previous occasions that releasing contaminants into the Cooks Creek Diversion will contribute to the deterioration of the Lake Winnipeg Watershed. I received no indication that my concern, or that of other citizens, was taken into consideration in the design and development of the plant.

Cooks Creek Diversion flows into the Floodway which flows into Lake Winnipeg.

Additionally, I must ask again why it is necessary to proceed with the wells as described in the application the RM of Springfield is making? It is on record with Council that the proposed well field expansion is suitable through the freshwater wells on Heatherdale Road, SE of the proposal submission. Council has not produced a firm argument for the location they propose in the application. Council has not made the case against choosing other well locations.

There exist other wells which may well serve. For instance, the Heatherdale Road wells meet Canadian drinking water guidelines. Please see the RM water quality reports: https://www.rmofspringfield.ca/p/municipal-water-systems. The EAB, in all likelihood, does have this information. The Heatherdale Road wells do require treatment but it is not reverse osmosis treatment; it is chlorination and UV treatment. To my knowledge, the Heatherdale Road water may be blended with water available through the Dugald/Oakbank wellfield, achieving guideline standards. Why are the Heatherdale Road wells not on the table for discussion?

What would be saved by going this route? Excess water use (am I correct - is it 20 to 1 to process RO water?); increased debt to the RM and increased costs to the ratepayer; and, in my mind the greatest saving of all - no need to poisonously pollute the Lake Winnipeg Watershed for decades to come.

Since towns and villages first were built in Manitoba, our water systems have been the number one convenient solution for effluent, or liquid waste. The fresh water system has been habitually, purposefully chosen as a convenient dumping ground, a sewer. In 2025, however, we know better. We see all around us the effects of ignoring the consequences of abusing the natural world. We are dependent upon

clean water, clean air and clean soil. Dumping heavy metals produced by reverse osmosis can no longer serve as the default solution to an issue that does not go away when it is out of sight. Who actually witnesses the dumping of the effluent? Who actually witnesses the degradation of the web of life? The act of dumping effluent is a silent betrayal. But we need not close our eyes. We can make an active decision on behalf of Lake Winnipeg.

Reverse osmosis is touted as a good system for water you can buy in a jug from the convenience store. But look more closely. Beyond a familiar ring, what else is there to recommend it? The choice of reverse osmosis (RO) as the water treatment process reflects very poorly on the decision-making ability of the design engineers and the Council: RO is expensive, and it is a threat, in this particular case, to the Lake Winnipeg Watershed. It uses large volumes of clean water and produces contaminants which, while cleaning the proposed well water will contaminate water, air and soil. To date, the design engineers and Council have demonstrated no serious interest in protecting the water system beyond the extraction wells and the pumps. There is no substantive proof that these particular wells, as named in the RM's application, are the singular, exceptional plan to follow.

When the LUD of Beausejour proposed to build a water system which included the reverse osmosis process, Dr. E. Pip, B.Sc.(Hons.), PhD Professor (retired) Toxicology and Water Quality University of Winnipeg, submitted an analysis of the Environmental Assessment Plan. Dr. Pip is nothing if not an expert in the field of Manitoba's freshwater systems. She has decades of experience in the field and she speaks science in a way which we all can understand. **I have attached the document** she produced for the Beausejour review. The document is on the record, and in my opinion is applicable to the RM of Springfield's current situation. Let Dr. Pip's analysis be the scientific evidence of the costs and the value of reverse osmosis.

Summer is closing in, and so are wildfires. Wildfires are but one indication of climate change. Algae in Lake Winnipeg are another signal of what happens when we turn a blind eye. There is growing evidence to warn us that we need to act responsibly to steward the natural world we rely upon. So far, the RM of Springfield has not produced the documentary justification for choosing the well extensions named in the application, and the reverse osmosis process for the treatment plant. Reverse osmosis will not support the intricate life systems we depend upon: instead, it will be another poisonous assault upon the Lake Winnipeg Watershed.

Thank you for registering my point of view.

[redacted]
long time resident of Springfield

COMMENTS RE: Proposed Beausejour Water Supply System – Environment Act Proposal FILE 6059.00

E. Pip, B.Sc.(Hons.), PhD
Professor (retired)
Toxicology and Water Quality
University of Winnipeg
e.pip@uwinnipeg.ca

OBJECTIVE

The present document puts forward comments with regard to the Proposed Beausejour Water Supply System as described in the Manitoba Environment Act Proposal FILE 6059.00. It focuses primarily on two aspects of the project: A) suitability of reverse osmosis as the treatment of choice, and B) concerns regarding the water source wells.

ACRONYMS used in this document

AO = Aesthetic objective

CDWQG = Canadian Drinking Water Guidelines https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#t2

EAP = Environment Act Proposal FILE 6059.00

EAPHR = Environment Act Proposal Hydrogeological Report (Appendix G of EAP)

RO = Reverse osmosis

WHO = World Health Organization

1.0 Reverse Osmosis (RO)

RO is a water treatment process which utilizes pressure to force water through a microporous membrane. Water molecules pass freely through the membrane and form the usable water (i.e. permeate). Solutes and particles which exceed the micropore size cannot cross the membrane and are retained in the wastewater (i.e. concentrate, aka retentate, aka brine) which is discharged and the rejected water is wasted. The efficiency of RO systems is highly variable and is dependent on numerous factors such as the concentration of materials in the raw water, pore size, water pressure. Removal of different substances is not related to their toxicity, but to molecular, colloidal or particle size and configuration. Because undesirable or toxic small molecules can cross the membrane, some reverse osmosis systems utilize an added activated carbon filter to remove these molecules from the permeate.

Quoting from Kozisek (2020) in a WHO report: “These technologies became more extensively applied in drinking water treatment in the 1960’s as limited drinking water sources in some coastal and inland arid areas could not meet the increasing water demands resulting from increasing populations, higher living standards, development of industry, and mass tourism. Demineralisation of water was needed where the primary or the only abundant water source available was highly mineralized brackish water or sea water. Drinking water supply was also of

concern to ocean-going ships, and spaceships as well….. However, some countries focused on public health research in this field, mainly the former USSR where desalination was introduced to produce drinking water in some Central Asian cities."

RO water treatment plants are still largely used where raw water contains **very high total dissolved solids**, such as desalination plants for seawater, treatment of briny groundwaters, mitigation of mining waste and other industrial wastewater, and tertiary sewage treatment (Perez-Gonzalez et al., 2012), or where contaminated water must be reused. According to Joo and Tansel (2015), this technology is associated with "relatively high operational cost and energy consumption", as well as high environmental costs. The central question therefore arises why RO has been chosen as the process method for the Beausejour water treatment plant.

1.1 Water source quality and suitability of RO

Current water quality as reported in Appendix D (EAP) demonstrates the following items of note as summarized in Table 1 below. CDWQG exceedances are in **bold**.

Table 1. Notable water quality parameters in the two source wells located on Road 71N.
AO = aesthetic objective

Parameter	**East well**	**72 Hour pump test (range) West well**	**CDWQG maximum**
Total dissolved solids mg/L	475	372 - 431	500 (AO)
Total alkalinity mg/L (equivalent $CaCO_3$)	357	318 - 357	
pH	7.5	7.61 - 7.67	7.0 – 10.5
Hardness ($CaCO_3$)	497	353 - 376	80-100 suggested
Ammonia (N) mg/L	0.23	0.15 (72 hr only)	**<0.05 (N) preferred**
Calcium mg/L	94.9	63.2 - 64.4	
Magnesium mg/L	63.3	47.4 – 52.5	
Potassium mg/L	4.56	3.56 – 4.02	
Sulphate mg/L	61.3	29.7 - 39.0	500 (AO)
Iron mg/L	2.38	0.94 - 1.19	**0.3 (AO)**
Manganese mg/L	0.058	0.016	**0.02 (AO**)
Silica mg/L	15.9	16.4 (72 hr only)	
Organic carbon mg/L	2.84	1.96 (72 hr only)	

- **Total dissolved solids** are **within** the CDWQG.
- **Total alkalinity and pH** indicate moderately alkaline water of low aggressive index and minimal leaching capacity
- **Sulphate** is well within the CDWQG AO. Hydrogen sulphide gas is present in this aquifer (Pip, unpublished data) but was not included in the analytics of the EAP.
- **Hardness** is above the suggested CDWQG. The majority of hardness is contributed by calcium.
- **Iron** exceeds the CDWQG AO in all samples.
- **Manganese** shows a significantly greater East well value than the CDWQG AO, while the West well values are relatively constant and within the AO.
- **Ammonia** is a concern and indicates contamination.
- **Organic carbon** is a concern and indicates contamination. The organic concentration approaches/falls within the concentration found in many surface waters (2-5 mg/L) (Malaeb and Ayoub, 2011).
- Heavy metals (EAP, Appendix D and Addendum) are not a concern in the raw water.
- A problematic and substantial disparity exists between the East and West well values for total dissolved solids, hardness, calcium, magnesium, potassium, sulphate, iron, manganese, ammonia and organic carbon, where the East well concentrations are strikingly higher. The two wells are only 792 meters apart (EAP, p. 47), yet why is their water quality so different? The EAPHR seems to provide little comment on this matter.

The primary issues with this water are: A) hardness, B) iron, and C) evidence of contamination, viz. ammonia and organic carbon. Hardness and iron, the two principal reasons for treatment of this water, are aesthetic concerns: hardness promotes formation of scale on pipes and interferes with detergents, while iron causes staining of fixtures and laundry.

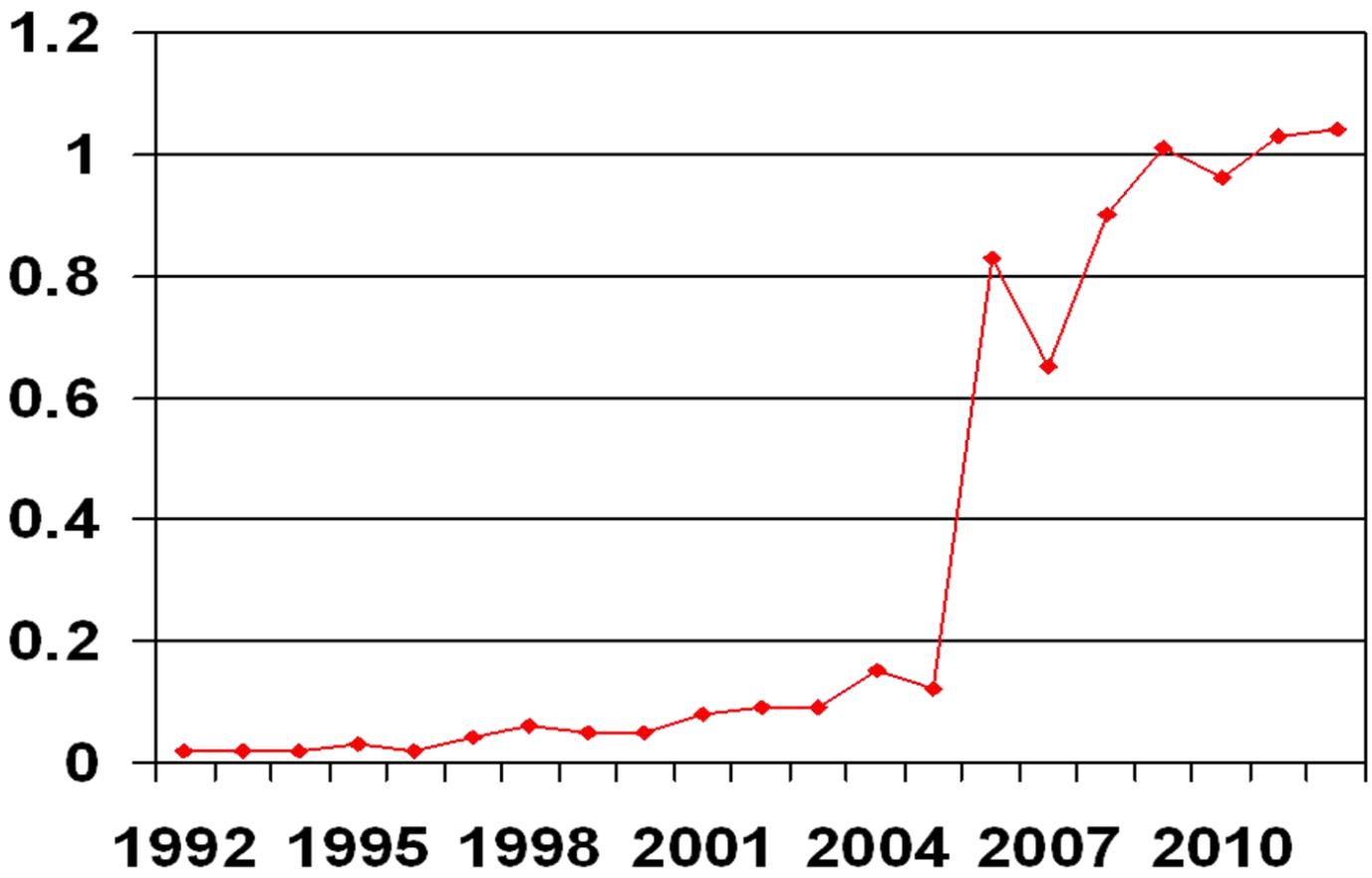
The presence of ammonia and organic carbon in this **confined** aquifer (EAP, p. 14), shows that the upper confining layer(aquitard) is not intact and pollutants have been allowed to intrude into the aquifer. According to the EAPHR (p. 71), "It is noted, however, that the confining layers include sandy materials, especially at the east well site. The permeable sand and gravel intervals will limit the overall effectivness [sic] of the overburden as a protective boundary. It should also be noted that quarry operations west of the sites, further reduce the local overburden cover and increase the potential for surface water impacts to reach the local groundwater aquifer." Here may be a clue to the East-West well conundrum: the East well is right on the edge of Town, where the sandy materials are unfortunately the enablers for percolation of pollutants. Indeed, both wells suffer from the occurrence of permeable deposits that: A) make these sites not the best choice for a permanent water supply, and B) require all the more that these sites be protected and restricted from any influences that might result in contamination.

Ammonia and organic carbon are most commonly associated with agricultural pollution (ammonia fertilizers, manure, pesticides) and with septic tank effluent or ejection systems (human and household waste) that are located near well casings of either abandoned wells or poorly constructed/maintained newer wells. As the number of wells drilled into the confined aquifer increases, the contamination potential escalates. Other drilling activities, for example unrestrained test core drilling in gravel pits (e.g. Road 70N) provide vastly more potential for intrusion of pollutants such as oil, mechanical fluids and human and animal waste, and these sites also become repositories for garbage dumping.

With regard to ammonia, the statement in the EAPHR (p. 63): "While Health Canada does set a limit on this parameter, it is an important consideration for the water treatment process." This should read "Health Canada does NOT set a limit…" Ammonia is also a consideration in the concentrate, because discharge to the Brokenhead River will affect fish and other biota, and be accompanied by nitrification to nitrite and nitrate.

During the three decades that I have lived just over 2 miles southwest of the West well location, I have monitored my well water weekly in my lab, until I retired. Figure 1 is comprised of data points which, for the sake of simplicity, represent the first week of April every three years.

Figure 1. Nitrate-N (mg/L)(vertical axis) in the first week of April every three years in my well water >2 miles southwest of the West well on Road 71N.



From Figure 1 it can be seen that nitrate-N in my well water abruptly increased around 2005, and the upward trend continued beyond to approximately 1 mg/L nitrate-N. During this time there was increased residential development in the Cloverleaf area 2 miles to the south, increased cattle production to the east, northeast and northwest of my property, and intensive drilling and excavation in the gravel pit diagonally across the road from my property. A new well was drilled ca. 2001 inside a cattle enclosure northwest of my property. However the specific cause(s) cannot be definitively attributed.

According to the EAPHR (p. 37), "From the available data, nitrate concentrations around Beausejour are below the MAC and were below detection limits in provincial stations G05OJ155 and G05SA011. Nitrate was detected at concentration of 2.6 mg/L in station G05OJ164, located west of Beausejour. The cause of the elevated nitrate in this area was not defined, although it is suspected that the bedrock in this area is relatively shallow with a thinner protective layer." Since station GO50J155 (Figure 13, EAPHR) was below detection limits and is located less than a mile from my property, this, as well as the differences in water quality between the East and

West production wells, illustrates how heterogeneous and unpredictable hydrological conditions are in the region, as well as the importance of direction of flow and contaminant plumes. The time of year may also be a factor: I selected the first week of April, as this falls within the snowmelt period and time of major recharge. Indeed nitrate-N in my well water varies throughout the year. It is suggested that many more sampling locations are needed in order to gain a better insight into nitrate conditions in the area.

The composition of the organic carbon found in the raw water samples (Table 1) has not been characterized, and it is not known whether these are natural compounds (e.g. humic acids, polysaccharides, lipids), or whether agricultural pesticides or petroleum compounds can also be detected. The performance of RO in removing these compounds will depend on their size. Small volatile organics will pass through the membrane, larger molecules will be removed more efficiently. Organic substances on the RO membrane have the potential for promoting growth of microorganisms and biofouling (Jiang et al., 2017).

Although not considered in the EAP, this aquifer contains the toxic dissolved gas hydrogen sulphide and small amounts of sporadic radon (Pip, unpublished data). For worker safety, the treatment plant must be well ventilated.

1.2 RO and Taste

According to Bruvold and Ongerth (1969) total dissolved solids affect the organoleptic properties of water, with values between 300-600 mg/L (i.e. the current well water) rated as **good**, and unacceptable above 1200 mg/L. Water containing less than 50 mg/L total dissolved solids has “negative taste characteristics” (Kozisek, 2020), and is aesthetically undesirable because of the “flat, insipid taste” (WHO, 2003). It is also perceived to be “less thirst quenching” (WHO, 1980).

Perceived **freshness** of water is correlated with calcium concentration (Vingerhoeds et al., 2016). Decreased alkalinity is associated with a “drying, bitter taste”(Burlingame et al., 2007).

For these reasons, bottled RO water may be remineralized, i.e. calcium carbonate, magnesium chloride as well as other salts are added to the permeate to improve taste (Vingerhoeds et al., 2016) (e.g. Dasani brand bottled water).

As a point of interest, my own raw well water, drawn from the same aquifer, is consistently commented on by visitors as having excellent taste, and some request taking a container of it back with them to Winnipeg. The calcium is the primary reason. Thus from the standpoint of taste, unamended RO water decreases consumer experience and satisfaction. While the distributed water from the treatment plant will consist of a blend of ca. 20% of raw water (EAP, pp. 15-16), it will not have the taste that it does now. Furthermore, the mandatory chlorine

residual will be more noticeable for many consumers, who may defect in favor of bottled water, which is ozonated, carbonated, or has no disinfection at all (Pip, 2000a).

1.3 RO and health impacts

RO water contains low concentrations of dissolved minerals, and beneficial elements such as calcium, magnesium and potassium are particularly deficient in the permeate (Burlingame et al., 2007). According to Islam et al. (2016), RO drinking water does not support human health, and may be particularly harmful for children and low income consumers who are already prone to malnutrition. The latter authors define low total dissolved solids as <100 mg/L: thus all unamended RO permeate falls into this category. Water used in drinking and cooking can constitute a source of numerous micronutrients. These are especially valuable in that they are usually present in water in easily absorbed ionic forms, whereas in food they are often bound to organic molecules which may be less assimilable (Kozisek, 2020). RO can severely reduce these nutrients.

In a current WHO report, Kozisek (2020) commented that "It was clear from the very beginning that desalinated or demineralised water without further enrichment with some minerals might not be fully appropriate for consumption." Demineralized water adversely affects the ionic and water homeostatic mechanisms of the body. A WHO (1980) study summarized by Kozisek (2020) found that "Low-mineral water markedly: 1.) increased diuresis (nearly 20%, on average), body water volume, and serum sodium concentrations, 2.) decreased serum potassium concentration, and 3.) increased the elimination of sodium, potassium, chloride, calcium and magnesium ions from the body."

Many studies have reported an **inverse** relationship between **reduced hardness** in public water supplies and **increased incidence** of:

- **cardiovascular and heart disease** (e.g. Schroeder, 1960; Bernardi et al., 1995; Sauvant and Pepin, 2002; Kozisek, 2020)
- **hypertension** (Lutai, 1992 and Mudriy, 1999: both in Kozisek, 2020)
- **colon cancer** (Yang et al., 1997)
- **stomach cancer** (Yang et al., 1998)
- **esophageal, pancreatic, breast cancer** (see review by Kozisek, 2020)
- **higher mortality rates** (e.g. Crawford et al., 1968)
- **chronic degenerative diseases** (e.g. Donato et al., 2003; Nardi et al., 2003)
- **cognitive impairment in the elderly** (Jacqmin et al., 1994)
- **bone fractures in children** (Verd et al., 1992 in Kozisek, 2020)
- **low birth weight** (Yang et al., 2002)

The beneficial effects of calcium and magnesium in drinking water are particularly striking in cardiovascular disease, and **exposure to a deficient water supply need not be lengthy**.

According to Kozisek (2020), citing a heart attack study by Rubenowitz et al. (2000), "While the effects of most chemicals commonly found in drinking water manifest themselves after long exposure, the effects of calcium and, in particular, those of magnesium on the cardiovascular system are believed to reflect recent exposures. Only a few months exposure may be sufficient consumption time effects from water that is low in magnesium and/or calcium." Other symptoms linked to consumption of RO water include fatigue, and weakness and muscle cramps, suggestive of magnesium/calcium deficit (Kozisek, 2020).

The significant relationship between water of low hardness/calcium and higher incidence of many cancers is believed to result from the ability of calcium to form insoluble, unassimilable complexes with toxic heavy metals, and thus mitigate their carcinogenic effects (Pip, 2000). As hardness, pH and alkalinity decline, the solubility of metals increases. Intracellular absorption of metals is directly related to their solubility in water. While RO reduces metal concentrations in the permeate, and while metal concentrations in the raw well water in question are low, the concern here stems from the acquisition of metals within the distribution and plumbing systems after the finished water has exited the plant (see further discussion in section 1.6 below).

Water that is used in cooking and subsequently discarded presents another concern regarding the nutritional quality of the food that has been cooked. Water of low hardness may leach essential nutrients from vegetables, meats and cereals during the cooking process: for example up to 60% for calcium and magnesium, 66% for copper, 86% for cobalt. Hard water, on the other hand, is associated with smaller losses, and calcium content of the food may even increase (Haring and Van Delft, 1981).

Many rural residences in the Municipality of Brokenhead that draw their water from a private well contain a separate tap in the kitchen that supplies raw water for drinking and cooking, bypassing the softener, and thus providing all of the health benefits of the minerals in the water. My own residence was built in 1980 and was provided by the builder with such an arrangement: therefore the health benefits of hard water have been known for a long time.

After lengthy study, WHO issued the following conclusion, as summarized by Kozisek (2020):
"After evaluating the available health, organoleptic, and other information, the team recommended that demineralised water contain 1.) a minimum level for dissolved salts (100 mg/L), bicarbonate ion (30 mg/L), and calcium (30 mg/L); 2.) an optimum level for total dissolved salts (250-500 mg/L for chloride-sulfate water and 250-500 mg/L for bicarbonate water); 3.) a maximum level for alkalinity (6.5 meq/l), sodium (200 mg/L), boron (0.5 mg/L), and bromine (0.01 mg/L)."

Plainly, unamended RO drinking water does not approach most of these metrics. Note that **total dissolved salts in the raw water are already within the WHO optimum range of 250-500 mg/L.**

The EAP (p. 15-16) states that "The membrane system will be designed to reduce hardness ions to range between 80 – 120 mg/L CaC03). Membrane systems remove a significant portion of the dissolved minerals. In order to achieve an aesthetically–acceptable level of hardness, approximately 20% of the raw water flow will by-pass the membrane unit and receive treatment in a greensand pressure filter to be blended with treated membrane permeate following removal of iron and manganese. Alone, membrane permeate is generally chemically unstable and benefits from the addition of filtered greensand bypass water and/or caustic soda to adjust the pH to a suitable level within the distribution system. The blend flow will be set to increase the longevity of the membranes and decrease operational costs."

Thus, energy will be used to remove minerals from the water, and energy will be used to blend raw water back in. We are not told what exactly is meant by "significant portion of the dissolved minerals" as it relates to the proposed system, nor what "suitable level" of pH will be sought, using sodium hydroxide (EAP, Figure 2.2), which will enrich the finished water with unhealthy sodium. Figure 2.2 also indicates that a "sequesting agent" [sic] will be added (surely "sequestering agent" is meant?), but is not specified. After all of this bypassing and blending, the EAP remains vague on details of the finished product. The composition of the blended water does not seem to be included in the model in Appendix E (EAP, p. 52) i.e. Table 3 below.

How will the "longevity of the membranes" and "operational costs" (EAP, p. 16) be assessed with respect to how the final blend flow will be determined? How long a period will be required for sufficient data? With respect to membrane longevity, what are the projected lifespans, how often will the membranes need replacement, and what are the projected costs?

1.4 RO and membrane fouling

RO membranes are subject over time to accumulation of deposits on the membrane surface or inside the micropores, and growth of organisms which cause decline in permeation and solute rejection (Malaeb and Ayoub, 2011). Fouling may require pretreatment of the raw water and more frequent membrane cleaning, involving the use of chemicals, and may affect membrane longevity (Jiang et al., 2017). Fouling may be associated with a variety of substances in the raw water, for example calcium carbonate and calcium sulphate which cause scaling, silica (e.g. see Table 1), and organic compounds. However in practice, fouling is usually attributable to several foulants operating together, and these foulants in turn may become colonized by bacteria (i.e. biofouling)(Jiang et al., 2017).

In the present case, hard water (Table 1) will present the potential for calcium carbonate scaling, which is one of the most common types of RO membrane fouling (Jiang et al., 2017). Silica (Appendix D, EAP), iron (Table 1) and large organic macromolecules can also present risk of colloidal fouling (Jiang et al., 2017). RO membrane fouling with organic matter (e.g. polysaccharides) is in turn aggravated by calcium (Lee et al., 2006). Organic matter in the raw

water (Table 1) can further present the potential for biofouling. Iron and manganese fouling may occur with water that has not been pretreated to reduce these metals.

1.5 Manganese greensand filtration

According to the EAP (pp. 14-16) the portion of the raw water destined for blending with the permeate will pass through manganese greensand filters. In Figure 2.2 of the EAP, it appears that water destined for membrane treatment will bypass the greensand. Therefore iron and manganese in the RO stream will be removed by the membranes, but membrane fouling by iron and manganese seems to be not considered as a concern in the present design.

According to Joo and Tansel (2015), "The most significant drawbacks of using pressurized membrane systems for water treatment are membrane fouling and concentrate management." Iron and manganese fouling can be addressed by manganese greensand filters, which also reduce hydrogen sulphide (Ning, 2009). The composition and mechanics of manganese greensand filters have been reviewed by WCWC (2018). This type of filter is suitable where combined concentration of iron and manganese in the untreated water are less than 15 mg/L: the current raw water is well below this level (Table 1); other options to reduce these metals are water softening, or aeration and filtration (McFarland and Dozier, 1996).

At small concentrations, iron and manganese are essential elements in human nutrition (Pip, 199a). In order to be toxic, large quantities of iron must be ingested, and iron poisoning is rare and limited to certain idiopathic conditions (e.g. haematochromatosis)(Health Canada, 1978). Concerns with iron in water supplies are unrelated to health.

Groundwater is devoid of oxygen, and thus iron is present in soluble Fe(II) form. On exposure to oxidants, Fe(II) oxidizes to Fe(III) which is insoluble and precipitates. Above concentrations of 0.3 mg/L (the Canadian aesthetic objective), iron may color the water a reddish hue (due to oxidation of Fe(II)) when exposed to air, and can stain plumbing and laundry.

Iron may also affect taste, but sensitivity varies greatly in the population. Cohen et al. (1960) reported that 5% of a taste test panel were able to detect ferrous sulphate in distilled water at a concentration of 0.04 mg/L, ca. 20% detected a concentration of 0.3 mg/L, while about half of the panelists detected a concentration of 3.4 mg/L. Based on these data, the concentrations in the present raw water (Table 1) of ca. 1 mg/L in the West well and double that in the East well would not be detected by some of the population.

Iron may provide an opportunity for iron bacteria of various taxa to grow and colonize plumbing systems, creating aesthetic and mechanical issues with nuisance slimes and acidic exudates. According to Cullimore and McCann (1978), these bacteria cause "corrosion of water pumps, pressure tanks, galvanized pipes and fittings; the clogging of metal and plastic pipes; the reduction of water flow and water pressure and the coating of the resin beds of water

softeners with slime, reducing efficiency and imparting unpleasant tastes and odours to the water". According to the latter authors, infestations are common in the southern Prairies, as is iron as a substrate in groundwater, and they are frequently the result of infected drill bits, tools and repair equipment. Cullimore and McCann (1978) found that suitable conditions for growth occur at iron concentrations above 0.2-0.5 mg/L., thus the present aquifer is easily at risk (Table 1). Problems ensue rapidly after a well has been drilled or repaired. Control of an infestation is difficult, and the problem often recurs because the bacteria easily spread outside the treatment zone (Cullimore and McCann, 1978). In southern Manitoba a number of cases have been associated with drill bits that have not been properly disinfected (Pip, unpublished data).

Excessive manganese may also cause colouring of the water and staining issues, and impart a metallic taste, as well as interfering with the disinfection treatment process (Ellis et al., 2000). High concentrations of manganese in drinking water have been linked to neurological diseases in the elderly (WHO, 2011), as well as in children (Health Canada, 2016). The raw source water contains relatively low manganese levels from the standpoint of human health risk, but whether it does or does not fall within the aesthetic objective is ambiguous as the results for the two wells vastly disagree (Table 1).

According to Figure 2.2 and p. 23 of the EAP, the greensand backwash will be discharged to the sewage lagoons; the volume that will be generated and the additional burden on the lagoons is not quantified. Section "2.1.1.4 Backwash and concentrate disposal" (EAP, p. 16) makes no mention of backwash in the text, and deals only with concentrate disposal to the Brokenhead River. However lagoon effluent is eventually routed to the river.

Incidentally, the manganese brown water problem in the City of Winnipeg water supply has been unrelated to greensand, but was due to manganese present in the ferric chloride coagulant used in the treatment process (City of Winnipeg, 2014).

1.4 Water wastage

As water resources of good quality continually dwindle on our planet, conserving those resources becomes imperative in securing our future existence. Approximately 3% of the earth's water is freshwater, the great majority of which is contained in polar ice caps, glaciers, and deep groundwater. Roughly 1.2% of the earth's freshwater can be used for consumption. (https://www.nationalgeographic.org/media/earths-fresh-water/)

1.4.1 Water (non)conservation

RO is contrary to all principles of water conservation. Recovery of usable water in RO treatment plants varies from 35 – 85% (Perez-Gonzalez et al., 2012). According to the EAP (p. 22), the proposed treatment plant is projected to produce 5.3 L of concentrate per **per second**; the

public Notice of Environment Act Proposal reads: “Up to 6 litres per second of concentrate water would be produced in the treatment process.”. According to the EAP estimate (p. 15), 16% of the drawn water will be wasted. This amounts to **approximately 167,000,000 + L** of squandered water per year. This is equivalent to more than **67 Olympic swimming pools** per year (an Olympic pool contains 2,500,000 liters (source: Wikipedia)). Since a major reason for putting the new wells into production is the imminent insufficiency of the present water supply, it seems paradoxical and counterproductive to be profligate with what we do have, when demand for it is only going to increase.

The reported wastage of the RO treatment plant for nearby Tyndall-Garson is given in Table 2 (Brokenhead, 2013, p. 2-10): the percentage of reject water per raw intake water ranged from 25.1% to 29.9% between 2008 and 2011. The average daily water consumption increased as well, as did the number of users. The Beausejour EAP does not identify design details that will achieve nearly half of the expected wastage compared to that of the Tyndall-Garson plant.

Table 2. Water consumption and reject water percentage for the Tyndall-Garson RO water treatment plant (Brokenhead, 2013).

Year	2008	2009	2010	2011
Average Daily Raw Water Usage (m^3/day)	155	245	286	335
Average Daily Water Consumption (m^3/day)	115	171	205	237
Percentage Reject (Reject Water/Raw Water Intake)	25.1%	29.9%	28.3%	29.3%
Estimated Population (Calculated based on building permits issued since 2004)	1,254	1,286	1,342	1,405
Actual Average Per Capita Water Consumption (L/person/day)	91	133	153	169

RO with its extravagant waste is a poor option in light of burgeoning climate change, where water shortages and drought on the Prairies are expected to intensify, and therefore aquifer recharge will decline, while water usage will skyrocket. Coupled with increased demands of future development, increasing population in the Town and the surrounding area, and proliferating subdivisions with increased numbers of wells on the aquifer, it is irresponsible to fritter away so much water. The EAP estimates of projected water use (section1.1.3, p. 7) are based on per capita population but seem to omit industrial users, which may require vastly

greater amounts of water (at bulk rates), and which users Beausejour may wish to attract. No data are provided for current industrial park consumption, or businesses such as car washes. As future demand increases, will the plant be enlarged to waste even more? Water is precious, and will become increasingly so.

In section 5.8, headed "Water Conservation" (EAP, p. 35), we find the paragraph: "Water conservation measures include metering and pricing of water. Water conservation information in water bill mailings can be implemented. Leak detection will consist of reconciling on a quarterly basis the volume of water pumped and charged to ratepayers. Since these services are metered, abnormalities can be identified and rectified." We are talking about educating hapless consumers about water conservation and pernickety leak detection at the same time that we are discarding many Olympic-size pools of water. We should be ashamed.

While the amount of wasted water is in itself heartbreaking, it is doubly shocking that this untreated water contains the concentrated reject minerals, metals and organics, which will be piped untreated to the Brokenhead River. Joo and Tansel (2015) have reviewed the numerous available technologies for reducing volume of concentrate, and therefore wastage, citing the benefits and drawbacks of each. However in the end, reduced volume equals increased environmental toxicity, and the problem of disposal remains. Short of prohibitively expensive dewatering, environmentally benign solutions have yet to be found.

1.4.2 Water uses

According to U.S. statistics, only **1%** of distributed tapwater is consumed in drinking and cooking (Cotruvo et al., 2016). The remainder is used for washing, watering lawns and gardens, flushing toilets, filling pools and hot tubs, air conditioning, heating and cooling, or simply wasted. The same tapwater is also supplied to industrial users, who usually get it at a preferential bulk rate which discourages conservation.

In Beausejour, what is the rationale for using RO water to wash cars, water lawns, and flush toilets?

For those residents who want RO water to drink, they can buy it at a variety of outlets, or install their own home RO systems complete with activated carbon filters. They do not require RO water for all of their other needs.

1.5 Concentrate disposal

RO treatment plants generate large volumes of waste concentrates which pose “a potentially serious threat” to aquatic ecosystems (Perez-Gonzalez et al., 2012). The disposal of RO concentrates requires due consideration of their environmental impact (Mauguin and Corsin, 2005).

The calculated concentrate solute loads have been copied from the EAP (p. 52) in Table 3 below. It is proposed that this concentrate will be dumped untreated into the Brokenhead River. Water quality values for the Brokenhead River (ranges for the 2008 ice-free season) (Pip and Reinisch, 2012) are given in Table 4, where the third column references the final concentrate values from Table 3.

It is immediately apparent from Table 4 that the total dissolved solids and chloride values will require substantial dilution in the river before they approach ambient values, and therefore the zone immediately downstream of the effluent outfall may adversely affect the soft-water species in the river, especially during low volume and velocity conditions. Given the huge volume of concentrate (section 1.4.1 above), the annual load of total dissolved solids discharged to the river will amount to >670,000 kg, that will subsequently be carried to Lake Winnipeg.

Table 3. Concentrate projection from Appendix E, page 52 of EAP.

Ion (mg/l)	Raw Water	Feed Water	Permeate Water	Concentrate 1	Concentrate 2
Hardness, as CaCO3	375.41	484.52	28.506	1161.4	2348.9
Ca	84.10	82.73	4.867	198.3	401.1
Mg	52.50	67.76	3.986	162.4	328.5
Na	30.30	36.70	9.995	80.3	145.9
K	4.02	4.69	1.897	9.6	16.1
NH4	0.19	0.21	0.102	0.4	0.6
Ba	0.107	0.137	0.011	0.3	0.7
Sr	0.287	0.368	0.030	0.9	1.7
H	0.00	0.00	0.000	0.0	0.0
CO3	0.86	3.19	0.009	9.4	43.1
HCO3	432.00	551.17	50.312	1291.9	2558.4
SO4	39.00	50.80	1.436	123.2	252.6
Cl	32.20	40.10	7.005	91.7	175.4
F	0.28	0.32	0.137	0.7	1.1
NO3	0.00	0.00	0.000	0.0	0.0
PO4	0.00	0.00	0.000	0.0	0.0
OH	0.00	0.00	0.000	0.0	0.0
SiO2	16.40	20.32	3.931	46.1	87.3
B	0.00	0.00	0.000	0.0	0.0
CO2	20.40	20.40	20.40	20.40	20.40
NH3	0.00	0.00	0.00	0.00	0.00
TDS	**672.24**	**858.50**	**83.72**	**2015.02**	**4012.48**
pH	**7.61**	**7.71**	**6.71**	**8.06**	**8.33**

Table 4. Water quality in the Brokenhead River upstream from Highway 44 and downstream from agricultural manure spread fields, weekly samples spanning May 1 – November 5, 2008 (Pip and Reinisch, 2012). The river values are compared with the final concentrate values from Table 3.

Parameter	**Brokenhead River**	**Final concentrate**
Total dissolved solids mg/L	90 - 330	4012
Chloride mg/L	1.0 – 5.0	175
pH	6.9 – 8.1	8.3
Total alkalinity mg/L	90 - 190	NA
Nitrate (N) mg/L	0.12 – 0.67	NA
Orthophosphate mg/L	0.09 – 0.77	zero

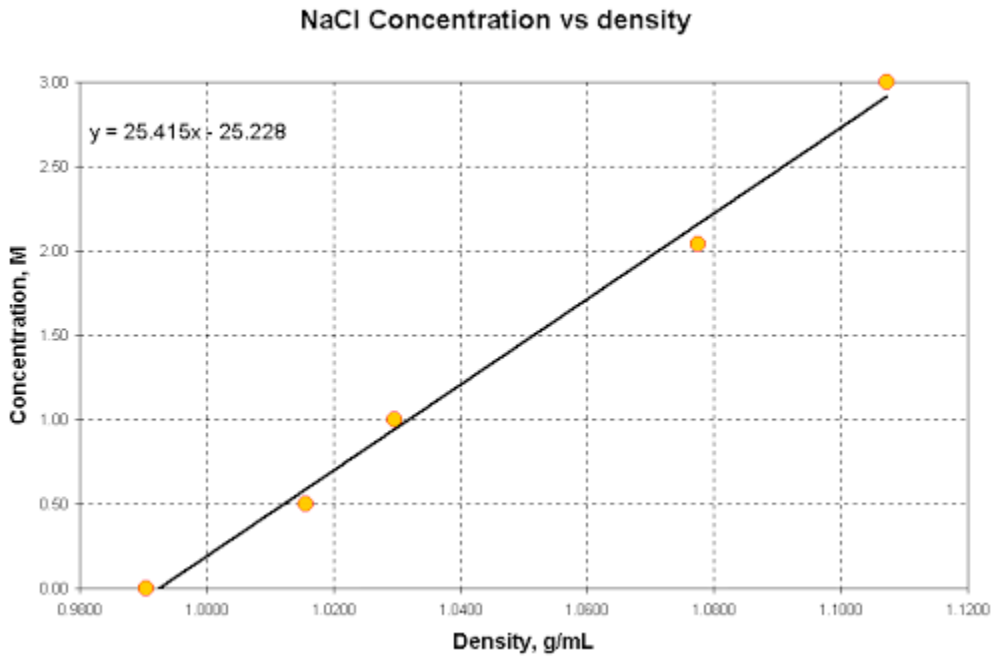
According to the EAP (pp. 26-27), "Two parameters above are conditionally exceed [sic] the limits of the Tier 2 guidelines: conductivity and total dissolved solids (TDS). The Water Quality Guidelines stipulate that discharge must be below a conductivity of 1000 µS/cm for periods where greenhouse irrigation is likely to occur and below 1500 µS/cm for periods when field, park, or garden irrigation is likely to occur. These guidelines also correlate to require a TDS of below 700 mg/L for greenhouse irrigation, or 500 –3500 mg/L crop dependant for field, park, or garden irrigation. Since irrigation is only likely to occur in the months of June, July or August, additional calculations are required to determine the minimum concentration which apply at the minimum flows observed in these conditions." Greenhouse irrigation occurs mostly in the winter and spring months, not June, July or August. How will the exceedances of total dissolved solids and conductivity be addressed? Will even more water be used to dilute the effluent to meet the Tier 2 guidelines?

According to the EAP (p. 22), "The discharge of the concentrate is through a discharge pipe with orifice holes installed on the bottom of the river to allow for an even discharge into the receiving waters", and "The concentrate flow from the WTP will undergo significant mixing upon entering the Brokenhead River." What is meant by "even discharge"? Will this be a diffuser laid across the bed of the river? If so, motile biota such as fish will be unable to avoid the discharge on travelling upstream. If not, the effluent will plume and travel some distance downstream until turbulence and eddy currents mix it. The least mixing will occur under conditions of low water levels and low current.

A complicating factor that has not been considered in the EAP is the high density of the concentrate compared to the river water. As solute concentration increases, so does the density of the solution (Figure 2). The dense concentrate, discharged at the bottom of the river, will tend to pool along the bottom unless flow at the bottom is turbulent. During low flow conditions, for example during drought years or in the latter part of summer, this trend analogous to meromixis could impair oxygenation of the bottom sediment and affect benthic communities in the vicinity and downstream of the outfall.

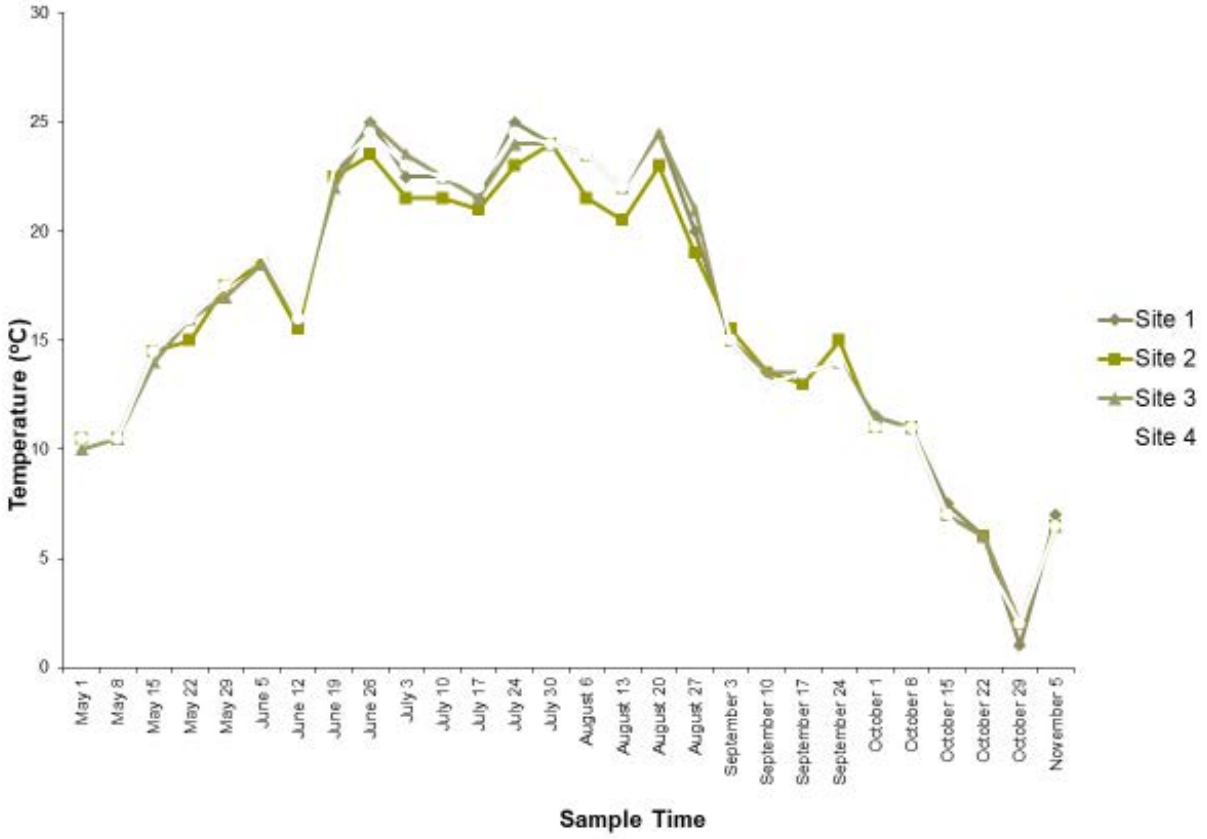
The effects of pooling will be aggravated by the dam structure that is located roughly 300 m downstream of the proposed outfall. This structure reduces turbulence and retains the water and its dissolved burden.

Figure 2. Relationship between aqueous solution density and salt concentration (http://chem.gmu.edu/results/samples/Density_sample_charts/density.htm)



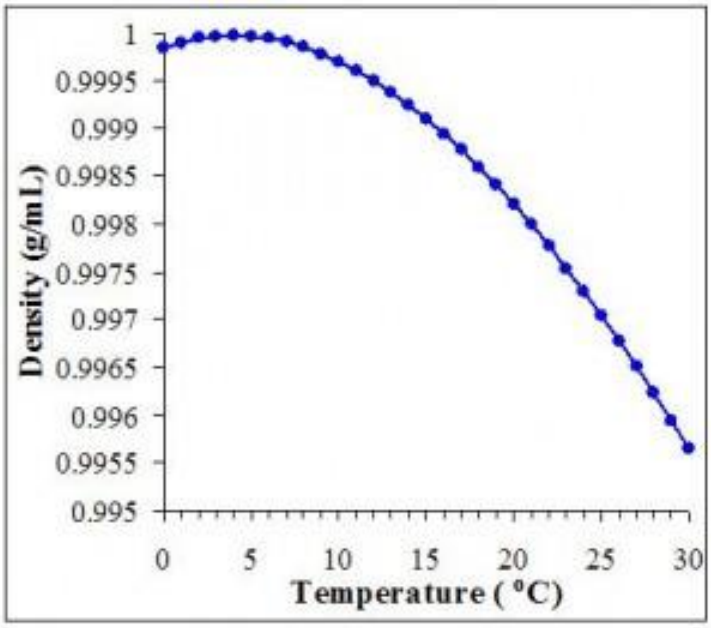
Stress on aquatic organisms will be compounded by the stress of low oxygen levels at high temperatures in summer, and under ice cover in winter. The weekly temperature profile of the Brokenhead River for the ice-free season of 2008 is shown in Figure 3 (Pip and Reinisch, 2012). From the second half of June through August, water temperatures reached 25^{o}C., which is in itself stressful for many of aquatic organisms in the river (Pip, 1993b). At these temperatures, oxygen saturation levels are low (see below), and additional stresses will have synergistic effects. Similarly, oxygen levels are very low under ice cover in winter as aeration from turbulence is absent.

Figure 3. Weekly temperature of Brokenhead River from May 1 – November 5, 2008 (Pip and Reinisch, 2012).



Density is also dependent on temperature, with decreasing density as temperature rises (Figure 4). When the temperature of the effluent is colder than the river water, for example in the summer when temperatures can be high (Figure 3), it will tend to sink and retard mixing, and may travel in a plume along the bottom until it is eventually incorporated fully downstream. This may expose benthic organisms to excessive concentrations of solutes along its path. When the temperature of the effluent is warmer than the river water, during the cold season, it will tend to rise to the top of the water column and travel in plumes for some distance downstream (Kalinowska and Rowinski, 2015). During winter this will create a zone of open water at and immediately downstream of the discharge point.

Figure 4. Relationship between water density and temperature.
https://www.lakescientist.com/temperature-and-ice/

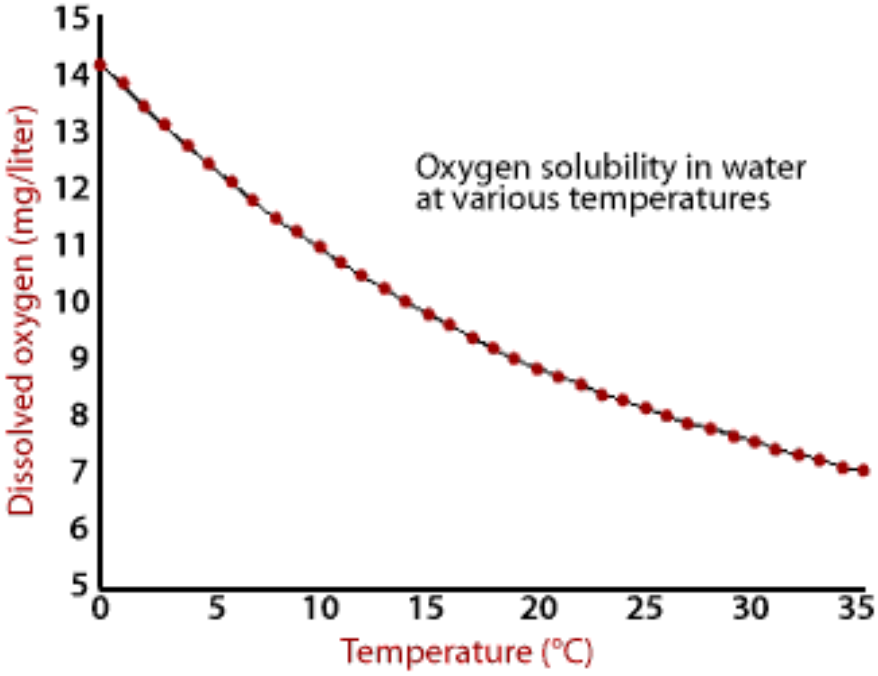


The EAP (p. 22) indicates that "While some ice cover will surround the discharge point, open water may persist into the winter depending on flow, however, no detrimental effects are anticipated from the discharge of membrane concentrate." Thermal pollution is a concern when effluents discharged into a natural water body are warmer than those of the receiving waters. This is particularly problematic in winter. The area of open water encourages waterfowl to remain instead of migrating (Svazas et al., 2001), resulting in starvation in the Manitoba climate.

Water temperature is one of the most important environmental factors that govern all aspects of fish ecology: life cycle, growth, behavior, feeding and spawning (Golovanov, 2013). According to Nakatani (1968), "The general effects of increased water temperatures on fish are well known. Increases in metabolic rates and oxygen requirements, in reduction in stamina, in sensitivity to toxic materials and fish diseases, are but some of the effects… associated with increased temperatures".

Higher temperatures govern the amount of dissolved oxygen in water: saturation values are **inversely** related to temperature (Figure 5). Thus warmer water may result in reduced oxygen availability for aquatic animals.

Figure 5. Relationship between water temperature and oxygen solubility.
http://www.cotf.edu/ete/modules/waterq3/WQassess3f.html



Other biota in the river are sensitive to temperature as well: the importance of this parameter has been documented in the distribution of freshwater macrophytes (Pip, 1989) and gastropods (Pip, 1993b). Aquatic microbial communities are altered, with impacts on nutrient cycling and budgets, and with consequences for all organisms in the system (Horvath and Brent, 1972). Benthic macroinvertebrate communities may show sensitivity even to relatively small river temperature changes (≤ 3^{o} C.) (Quevedo et al., 2018).

With respect to solute concentration, the large difference between the effluent and the river water in the vicinity of the discharge and beyond, will impact many aquatic organisms in the river, which contains vulnerable and endangered soft-water species such as the nationally recognized endangered Chestnut Lamprey (*Ichthyomyzon castaneus*).

The Brokenhead River is an aquatic ecosystem of notable interest in that it forms an abrupt western boundary for the dystrophic and nitrogen-poor waters to the east and northeast, where relatively insoluble Precambrian igneous and metamorphic rock ascends to the surface (e.g. Fig. 9, EAPHR). I have monitored the river as one of my long-range study sites since 1975. The aquatic communities in the river are those of bogs and granitic geological parent materials; the water quality is characterized by low total dissolved solids and alkalinity, calcium deficiency, low nitrogen and phosphorus, high dissolved organic matter with a predominance of humic and humolimnic acids (Pip, unpublished data).

A list of aquatic molluscs documented in the Brokenhead River is given in Table 4 (Pip, unpublished data). Species such as *Helisoma campanulatum* and *Gyraulus deflectus* are typical of the Precambrian Shield (Pip, 1988). *Amnicola walkeri, Armiger crista and Ferrissia paralella* are all very rare in Manitoba, and The Brokenhead River is one of the few places in the province where they have been found. The most spectacular example is the gastropod (snail) *Bulimnea megasoma* (Mammoth Lymnaea), which is the world's largest lymnaeid snail. The Brokenhead River constitutes this soft-water mollusc's westernmost occurrence in Canada. Abundant in the Brokenhead River in the 1960s and early 1970s, it is now almost extirpated there, and has been in catastrophic decline in Manitoba (Pip, 2000b).

Table 4. Aquatic molluscs documented in the Brokenhead River (Pip, unpublished data).

Lymnaea stagnalis
Stagnicola elodes
Bulimnea megasoma
Physa gyrina
Aplexa hypnorum
Heisoma trivolvis
H. campanulatum
Planorbula armigera
Promenetus exacuous
Armiger crista
Gyraulus deflectus
G. parvus
G. circumstriatus
Ferrissia paralella
Valvata tricarinata
Amnicola limosa
A.walkeri
Pyganodon grandis (unionid mussel)

Significant changes have occurred in the mollusc communities of the river since I began monitoring in 1975. Perhaps the most telling has been the disappearance of all but one of the freshwater mussel (unionid) species. Unionids are extremely sensitive to habitat degradation. Their long lifespans (100+ years for some species) and their lifestyle as filter feeders make them vulnerable to severe bioaccumulation and biomagnification of contaminants (Pip, 1995). The sole remaining species in the Brokenhead River is one of the two most tolerant Manitoba species that typically are the last to disappear in the face of advancing pollution.

The Brokenhead River also hosts stands of wild rice (*Zizania aquatica*), which has been shown to be sensitive to elevated total dissolved solids, total alkalinity and nitrate (Pip, 1984), and is usually found on the Precambrian Shield. The river is the westernmost natural occurrence of this plant in southeastern Manitoba. Harvesting of wild rice in Manitoba is the prerogative of indigenous peoples. The soft water habitat of wild rice renders it susceptible to heavy metal accumulation due to solubility of metals in such waters, and therefore preservation of water quality where rice will be used for human consumption is important (Pip, 1993c).

A list of aquatic macrophytes documented in the Brokenhead River is given in Table 5 (Pip, unpublished data). The high species diversity is typical of soft-water habitats.

Table 5. Aquatic macrophytes documented in the Brokenhead River (Pip, unpublished data).

Myriophyllum exalbescens
Ceratophyllum demersum
Utricularia vulgaris
Najas flexilis
Ranunculus aquatilis
R. flabellaris
Megalodonta beckii
Potamogeton pusillus
P. natans
P. richardsonii
P. foliosus
Nuphar variegatum
Lemna minor
L. trisulca
Zizania aquatica
Sagittaria cuneata
Alisma triviale
Sium suave
Sparganium sp.
Eleocharis sp.
Equisetum sp.

The macrophyte community composition mirrors that of the molluscs, with a number of species that are characteristic of dystrophic and Shield waters (Pip, 1984). *Utricularia vulgaris* is a submerged floating plant that is carnivorous in order to obtain the nitrogen that its environment normally lacks. It has specially modified leaves that trap zooplankton and insects, which are subsequently digested.

The concentrate will contain significant total dissolved solids, hardness, alkalinity, carbonates and calcium (Table 3), which are not favorable for some of the calciphobic species in the river. Potentially it may change the community composition and contribute to disappearance of some species downstream, with concomitant reduction in species diversity and ecosystem stability (Pip, 1987a and b).

The concentrate will also contribute nitrogen and phosphorus to the nutrient load of Lake Winnipeg. The table provided in the EAP (i.e. Table 2 above) is misleading because it purports that the orthophosphate will be zero, which is not true, and not possible. The phosphorus in the analytical report in Appendix D of the EAP was below detection limits for the analytical procedure used, **which is not synonymous with zero**. Levels below detection limits in the source water will be magnified in the concentrate to measurable values. Furthermore, at times there is indeed measurable orthophosphate in the aquifer (Pip, unpublished data). Similarly the nitrate concentration in Table 2 is reported as zero, implying no nitrite and nitrate contribution to the river. When the concentrate containing ammonia is discharged to the river, nitrification will convert ammonia to toxic nitrite and then nitrate.

According to Joo and Tansel (2015), "Untreated or improperly managed concentrate can result in adverse environmental effects", as "contaminants in concentrate can impact ecosystems and water quality in areas where the concentrate is discharged." Various approaches have been proposed to deal with the problem of untreated concentrate, for example demineralization using isothermal evaporation (Mohammadesmaeili, 2010). Biological treatment of RO concentrate from potable water systems of lower salinity has been described, but the drawback is that non-biodegradable substances in the concentrate still require that "some physical or chemical process (e.g. flocculation, precipitation, or adsorption) may be needed in addition to the biological treatment process." (Kim et al., 2016). Thus, concentrate disposal is a big problem with few mitigating solutions, and must be taken into account in considering whether RO is an appropriate choice for Beausejour.

Our environmental review and approval process suffers from the impediments of massive tunnel vision. Each new project is treated as though it were hanging by itself in space, rather than considered **in the context of all of the other pressures and stressors that are also acting on the same system.** The poor Brokenhead River is not a large river. Its flows can be small enough that it accommodates a number of low level crossings. Yet it already suffers the indignities of the Town of Beausejour sewage lagoon discharge effluents, livestock manure runoff (Pip and Reinisch, 2012), residential and recreational runoff, and a host of other impacts. Thus, while the impact of one single project can be shoe-horned into seeming that it is not that momentous by itself, it becomes objectionable indeed when added to the myriad other impacts, that may not just be additive, but in many cases, synergistic. We cannot continue to use the Brokenhead River as the sewer that will carry away our inconvenient problems while we avert our eyes.

1.6 RO and distribution system leaching

The Beausejour distribution system reportedly includes approximately 28,000 meters of pipe: “about 68% is cast or ductile iron installed between 1957 and 1985. The remaining 32% of piping material is PVC plastic pipe installed after 1985.” (Beausejour, 2019). Plumbing systems within residences and businesses are various. In Manitoba, some plumbing systems installed prior to 1946 which have not been updated may consist of lead pipes. Copper plumbing systems installed between 1946 and 1989 are joined with 50:50 lead/tin solder, which can provide a significant source of lead leaching into the water. This is aggravated in hot water pipes. In 1989 the Manitoba Plumbing Code was revised so that all solders and fluxes used in new plumbing installations must contain no more than 0.2% lead. However even in newer systems, lead may still enter tapwater from sources such as brass plumbing fixtures, while certain types of PVC pipes may contain lead-based stabilizers that are added to extend the life of the plastic.

Hard water mitigates leaching of metals by forming scale on exposed surfaces, creating a barrier between the metal source and the water. However excessive scale can also be undesirable where it diminishes water flow, accumulates in boilers, and coats taps and filters.

According to Kozisek (2020), “Demineralised water is highly aggressive and if untreated, its distribution through pipes and storage tanks would not be possible. The aggressive water attacks the water distribution piping and leaches metals and other materials from the pipes and associated plumbing materials”. Decreased alkalinity, hardness, pH and total dissolved solids are associated with a higher aggressive index and increased leaching and corrosion within the distribution and plumbing systems (Burlingame et al., 2007). Thus water mains, pipes, join solder, hoses, fittings, storage containers, hot water tanks, etc. may present a variety of metals and organic coatings that can be leached by RO water.

The EAP (Figure 2.2) indicates that sodium hydroxide will be added to raise the pH (to what level?) as well as a “sequesting agent” [sic]. The reduced hardness and total dissolved solids will still remain as factors influencing corrosivity (Volk et al., 2000).

2.0 Water Source Wells

Concerns regarding the wells can be categorized into two primary areas of concern: security and contamination potential. In large part both are due to the unhappy circumstances of the well locations, where a number of factors present potential risk.

2.1 Security

The two wells are located in a ditch beside a municipal roadway, Road 71N, and the East well is right on the edge of Town at the intersection of two busy roads. Road 71N sustains both thru traffic and daily visits from dog drivers who bring their animals to the ditch in their vehicles. The wells are prominently visible to all who pass by, and are conveniently directly accessible via the two field approaches across the ditch. People can drive right up to the wellheads if they want. Curiosity is a normal human trait.

The exposed and vulnerable condition of the wellheads is a major security concern. In addition to pranksters and idle youth, the world in which we live today is rife with vandals, terrorists and mentally unbalanced individuals and groups. Not in Beausejour? In 2019 RCMP raided the Beausejour home of a (later) nationally and internationally publicized neo-Nazi white supremacist who advocated the poisoning of water supplies, and provided instruction to members of his group. https://www.cbc.ca/news/canada/manitoba/patrik-mathews-reservist-accused-neo-nazi-group-1.5253212

In April, 2020, two Brokenhead RM officials noticed one of the well caps was off. On a closer look, they observed that foreign matter resembling feces was floating in the well, and the water was covered with a foamy substance (Figure 6). They took pictures and replaced the loose cap. It was only after another complaint that the wells were sealed more securely.

The very close proximity of the wellheads to the roadway raises the question of their fate in the event of a road accident: automobile, snowmobile, large truck, tractor, farm machinery. On page 13 of the EAP we read: "The new production wells will be equipped with pitless units, mechanized, and protected from surrounding runoff and vehicular traffic". Page 8 of the EAP promised "bollards to protect the well-head". Three rocks have now been placed around the West well (barely visible in Figure 9 below), but only after the above complaints. The East well is still completely unprotected. The EAP makes no further mention of exactly how the wells will be protected – will they be enclosed and locked?

The wells are located in approaches to agricultural fields, which were widened (see section 2.2.1 below). Farm machinery can be very wide, in some cases wider than the roadway, and many large tractor attachments can be lifted only to a limited height. The farmers will always have to ensure that they have adequate clearance so that the wellheads and rocks (in the case of the West well) are not clipped by their equipment, both while using the approaches, and while working near the edges of the fields. What are the legal liabilities in the event of mishap: can the Town sue the farmer for expensive damage to the wellhead, and/or can the farmer sue the Town/RM for expensive damage to her/his equipment?

The EAPHR (p. 76) briefly mentions: "The wells should be protected from vehicular impact and be secured against vandalism.", but gives no guidance or suggestions on how this will be accomplished.

Figure 6. Photograph inside unsecured well on Road 71N, taken by a Brokenhead RM official, who observed the well cap was off. Floating feces-like material has been dumped in the well. Third week of April, 2020.

Photo used by permission

2.2.0 Contamination potential

The EAP report (p. 21) admits the uncertainty of current knowledge with respect to aquitard integrity and surface water intrusion into the confined aquifer: "On-going testing in the future is recommended to affirm the effectiveness of the aquitards at preventing surface water intrusion into the aquifer."

The two source wells have been sited in a ditch that periodically floods, between a frequently travelled public road and agricultural fields. A number of concerns regarding contamination potential are identified below. While it may be argued that some of these concerns, for example agricultural pollution, exist in hundreds of other places on the aquifer, the difference here is that at this location, drawdown from intensive pumping will be greatest, and therefore contaminants near these sites will be drawn in from upper strata at an accelerated rate through fractures, boreholes and patches of permeable overburden. For these reasons, it is important to keep the area clean, dry and inaccessible, yet the unfortunate locations of these wells will preclude the ability to take these precautions to the desired or even necessary level.

2.2.1 Flooding

The two wells are located in a ditch, which by definition is designed to carry runoff water. This water originates as meltwater from the adjacent fields, or as runoff after rainfall from the fields and road. When the volume of water exceeds the drainage capacity of the ditch and culvert, flooding occurs, such that the water overflows onto the adjacent field (Figure 7). In spring, the culvert at the field access driveway at the West well may be frozen, or plugged with debris. This dirty contaminated water can encroach on the wellhead and casing (Figure 8). The concern is that this water may travel through the surrounding porous and fractured matrix to the well source. The wells are in a "confined aquifer and [are] not in artesian condition" (EAP, p. 14), i.e. the water is not under pressure. Thus contaminants may enter, particularly in conditions of drawdown at and around the pumping sites ("suction").

The EAP (p. 8) promised "mounding to ensure surface runoff from the surrounding area does not approach to the pitless unit and casing." Figures 7 and 8 clearly indicate that this was not done.

The aggregate around the wellheads has since been somewhat built up (after complaints), and the field access driveway has been widened to accommodate the passage of farm machinery. This widening has been accompanied by the installation of a longer culvert, but the flooding problem is likely to persist because the new culvert has a very small diameter (Figure 9), which will easily become plugged with debris and garbage, and its greater length will exacerbate problems with freezing.

Figure 7. Flooding of ditch and adjacent field, encroaching on West well casing in foreground.

Photo: E.Pip 29 March 2020

Figure 8. Dirty ditch water encroaching on West well casing.

Photo E.Pip 29 March 2020

Figure 9. New, longer culvert (bottom arrow) installed in widened field access driveway across ditch at West well. Note the ludicrously tiny culvert diameter. Wellhead is at top left of centre behind weeds (top arrow).

Photo E.Pip 12 July 2020

2.2.2 Beausejour Dog Nuisance Ditch

The section of ditch between and including the two wells is a primary traditional dog nuisance ground for Beausejour dog owners. Every day, year-round, numerous town residents bring their dogs here in their vehicles, and let their dogs out into the ditch. Many owners do not get out of their cars. Due to the lack of other suitable objects in the area, some dogs have adopted the well casings in lieu of fire hydrants.

The accumulated dog waste soaks in the water when water is present in the ditch. The proximity of this ditch water to the well casings is a concern, given the porous nature of the soils and the potential for pathogens to travel. While it has been argued that the treatment plant will remove pathogens, this will benefit only those users who are receiving treated water.

Other residents, who depend on private wells, will be drinking this water in its unfiltered and undisinfected state.

A large number of pathogens associated with dog feces and capable of transmission to humans have been found as contaminants in drinking water. These include, but are not limited to: various *Escherichia coli* serotypes, *Salmonella* (Procter et al., 2013), *Campylobacter* (Procter et al., 2013), *Arcobacter* (Houf et al., 2008), *Clostridium* (Ferguson et al., 2009), and the protozoan parasites *Giardia* (Liang et al., 2012; Procter et al., 2013; Sotiriadou et al., 2013) and *Cryptosporidium* (Ferguson et al., 2009; Sotiriadou et al., 2013). Dogs often do not exhibit symptoms of infection, yet can shed these organisms in their feces (Kozak et al., 2003; Procter et al., 2013). Significant microbial loads to the environment can result (Wright et al., 2009).

The EAP (p. 15) states: "The proposed membrane filtration process with primary and secondary disinfection through gaseous chlorine is effective in protecting against viruses and cysts such as Cryptosporidium oocysts and Giardia lamblia cysts." While filtration is indeed effective, chlorination is only partially effective for *Giardia,* requiring high concentrations and extended contact time, but **completely ineffective** for *Cryptosporidium* (Betancourt and Rose, 2004). Just small numbers of these parasites are enough to cause human illness (Wright and Collins, 1997).

The above EAP quoted statement (from p. 15) also touts membrane filtration and chlorine as effective against viruses. Again, membrane filtration is effective, but some percentage of viruses may persist after chlorination, particularly enteroviruses, including coxsackievirus, echovirus and picornavirus (Payment et al., 1985). According to Keswick et al. (1985), "Norwalk virus appears to be very resistant to chlorine". The concern here is that 20% of the finished water will consist of raw water that has bypassed the RO process, but has passed through the manganese greensand filter. In order to remove viruses, specialized filters are required, such as biosand amended with iron oxide to enable electrostatic absorption of negatively charged virion particles (Bradley et al., 2011).

Pathogenic bacteria vary in their vulnerability to chlorination, and exhibit extended survival times at low water temperatures (Flint, 1987). Groundwater typically averages 4^{o} C. year round. In groundwater, pathogens are not subject to inactivation by ultraviolet light from the sun (e.g. Pip, 2015).

Page 12 of the EAPHR states: "Surface water sources now require significantly more complex and expensive treatment to remove such things as giardia, crypto sporidium [sic], and various bacteria's [sic] and viruses that can be present in surface water." All of these "things" can and have been found in groundwater. Bacterium = singular, bacteria = plural.

Helminthic parasites (e.g. *Echinococcus, Dirofilaria, Toxocara*, *Baylisascaris* (Villeneuve et al., 2015; Baneth et al., 2016,) can also be transmitted to humans from dogs, and through well water. The eggs shed in feces can survive in the environment for many years (Villeneuve et al., 2015), during which time they may travel some distance from the source.

2.2.3 Agricultural pollution

The two wells are immediately adjacent to agricultural fields, and therefore are at potential risk from cropland management practices conducted thereon (Figure 10). Liquid ammonia as a fertilizer is extremely soluble. Manure contains ammonia, nitrite and nitrate, phosphates, as well as pharmaceuticals, vaccines and metals, a large array of organic compounds, and various pathogens (Pip, 2000c). Cropland spraying contributes numerous synthetic herbicides, fungicides and insecticides. These sprays contain not only the active ingredient, but also a host of other chemicals including adjuvants, surfactants, synergists and extenders. Some of these ancillary compounds may be more toxic to people than the active ingredient (e.g. the surfactant in Roundup, which is significantly more toxic than the active ingredient, glyphosate (Cox, 1998)). Since the formulations of pesticides are proprietary and protected under the Canada Trade Secrets Act, the ingredients are not listed. When the chemicals degrade, they may generate other toxic products, that may be just as or more toxic and persistent than the original substance (Kolpin et al., 1998). In groundwater, these substances may persist for long periods of time, due to the low temperature, lack of oxygen, and lack of exposure to the lytic effects of ultraviolet light from the sun.

Human health impacts of various herbicides and their breakdown products are an ubiquitous concern in drinking water. Some of these include:

Endocrine disruption (Gasnier et al., 2009)
Chromosomal damage (Biradar and Rayburn, 1995)
Cancer (Sterling and Arundel, 1986; Morrison et al., 1992)
Parkinson's disease (Rajout et al., 1987)(Canadian well water in agricultural areas)
Intrauterine growth retardation (Munger et al., 1997)
Birth defects (Sterling and Arundel, 1986)

The concern in the present instance is that these compounds may percolate or travel through the porous matrix in the vicinity of the wells to the source aquifer. Blanchard and Donald (1997) found that even where a claypan layer restricts percolation to groundwater beneath, herbicide (atrazine and alachor) application to agricultural fields still resulted in detection of the herbicides in the monitoring wells. Pionke and Glotfelty (1990) reported that atrazine applied to fields, and its breakdown products, subsequently "were found in most groundwaters including deep wells". Precipitation soon after application particularly facilitates movement of herbicides to groundwater, and field tillage vs. no-tillage makes little difference in herbicide movement (Ritter et al., 1994).

The location of the wells in a ditch beside the fields also raises the question of field edge losses, which are themselves important stressors on water quality (Leonard and Knisel, 1988). According to the latter authors, in regional aquifer systems, "no clear separation between surface water and groundwater can be made". In the present case, flooding may create a

continuous body of water lying in the field and ditch (Figure 7); thus edge losses become moot, as materials from the field become directly dissolved/suspended in the water around the wells.

Figure 10. East well, showing proximity of staging ground for spraying adjacent agricultural field. Note the killed crop from chemical spillage behind the well.

Photo E.Pip 12 July 2020

Pathogens may enter surface and ground water from livestock enclosures, direct access of livestock to streams and ditches, or from the application of manure to cropland and pastureland. Hog and cattle manure may contain a variety of viruses, bacteria, protozoa, helminthic pathogens and possibly prions that may be transmitted to humans (see Pip, 2000c). Coliform bacteria have been documented in the Brokenhead River after application of manure to adjacent fields in the fall (Pip and Reinisch, 2012).

In 1993, more than 400,000 people in the Milwaukee, Wisconsin area became ill from *Cryptosporidium* in the treated water supply; 69 people died (Gradus, 2014). Cattle manure combined with precipitation and runoff was identified as a likely cause (MacKenzie et al., 1994).

Both *Cryptosporidium* and *Giardia* are present in Manitoba, and in Shoal Lake, the source of the City of Winnipeg's water supply (Pip, unpublished data; MacBride, 2000). In 1996 the public water supply of Dauphin was compromised by *Giardia* (MacBride, 2000): that well water source was also located in a municipal right-of-way (MEAP, 2014). In 2001 Dauphin was beleaguered again by an outbreak of *Cryptosporidium* (Macey et al., 2002).

The worst, but preventable, waterborne tragedy in Canada occurred in 2000 in Walkerton, Ontario. Nearly half of the residents of this community of 5000 became ill, and 7 people died as a result of contamination of their groundwater source with surface runoff, combined with treatment plant inadequacy and incompetence. "... the source of the contamination was most likely Well No. 5, a well which had been constructed in 1979 and supplied the town with about 60 per cent of its water. When the well was designed one of the original recommendations was that there should be a protected buffer zone, but this had not been implemented and livestock were grazing in the fields around the well. After heavy rainstorm floods in early May, bacteria-laden manure had probably run off the surface and entered the well or its aquifer. The chlorine disinfecting system had not been able to cope."
(https://www.canadianconsultingengineer.com/features/what-happened-in-walkerton/)

No protected buffer zone is in the offing for the Beausejour wells, according to the EAP. Given their location, in a ditch that carries dirty water, a suitable buffer zone is not even possible. Manure may be applied to the fields at any future time, and the unsanitary dog park remains. No lessons to be learned here, folks.

2.2.4 Ditch spraying

Intermittently, Agassiz Weed Control sprays municipal ditches with herbicides. On some occasions, ditches full of water have been sprayed. The location of the wells in a roadside ditch is a concern because of the elevated risk of persistent, toxic chemicals and their breakdown products being directly applied to the ditch and contaminating the water at its source. In a wider perspective, ditch spraying in general in the RM presents another risk of migration of contaminants to the aquifer. While some of these chemicals can be addressed by the water treatment plant, other stakeholders utilize the same aquifer, and they will not have the benefit of the treatment plant.

2.2.5 Road runoff

An unpaved road runs along the ditch between the two source wells. Such roads are a recognized source of environmental pollution (Colbert, 2003). When the road is dry, dust is raised by each passing vehicle and settles in the ditch. During rain and snowmelt, runoff from the road enters the ditch. Road dust and runoff are associated with a variety of pollutants, most

of which originate from wear and tear of the vehicles and tires, as well as leakage of fluids. Contaminants that have been documented include Pb, Zn, Fe, Cu, Ni, Cd, Hg, Cr (Leitao, 2007; Helmreich et al., 2010). Oil, hydraulic fluid, coolants and various other substances such as corrosion inhibitors, lubricants, sealants, polyaromatic hydrocarbons, products of fuel combustion, fuel additives, paints, polishing compounds, etc. are also shed by vehicles.

The extreme proximity of the wells to a well travelled public road exposes them to the potential of contamination when these substances enter the soil or ditch water, that can subsequently percolate through the porous matrix. De-icing salts also easily enter groundwater (Howard and Haynes, 1993).

Aside from ongoing runoff, the potential for crashes and spills always exists on a well-used public road. Crashes and vehicles going off the road into the ditch carry the risks of gasoline and diesel oil spills, and loss of hydraulic fluids, antifreeze, transmission fluid and engine oils. Spills from pesticide tanks, liquid ammonia tanks, bulk fuel farm delivery tankers, and so on could jeopardize the water at its source. Is a plan in place for immediate response? Whose responsibility: the Town, the RM, or the Hazmat team from the Province, that would take some time to arrive?

2.2.6 Garbage

The section of Road 71N where the wells are located sustains a great deal of traffic, not only as an approach to the Town from the rural area to the west and southwest, but also for town residents who daily visit this section with their dogs. Sundry garbage, both loose and in garbage bags, is a common sight in the ditch between the two wells. Whether it “accidentally” fell off the truck into the ditch, or was tossed in passing, household trash contains almost every chemical contaminant imaginable, as well as microbial risks from diapers, tissues, and rotting or spoiled food.

Pet waste is a common component of garbage, although in the present case of dog waste it is vastly redundant. However pets can be of various other species: cats, rodents, birds, reptiles, each of which may bring their own set of zoonotic diseases capable of transmission to people through excrement and bedding, and occasionally the dead animals themselves placed in the garbage.

After the wells were drilled, the litter selection was augmented with debris at the two drilling sites: food wrappers, coffee cups, plastic bottles, plastic bags, tape roll ends, rags, various metal discards and sundry unidentified scraps. People seem to have little respect for their or somebody else’s environment.

When the ditch floods, the garbage soaks in the water and presents a potential for contamination. The location of the wells in such an open and communal place makes it difficult to keep the area clean, and to restrict public access in the vicinity of the wells.

3.0 Construction

Section 4.6 of the EAP (p. 31) states: "Construction will occur primarily within municipal right of ways or easements that are previously disturbed, regularly managed, and comprised primarily of grasses. As the areas are already disturbed, they are unlikely to contain rare plant species, and the amount of vegetation disturbance is expected to be minimal." Several species of native orchids (for example 3 species of Lady Slippers, *Cypripedium*) may be found growing on the municipal rights-of-way in the immediate area (e.g. on Road 70N within a 2-mile radius of the wells), and they frequent disturbed areas, as well as grassed areas, despite occasional spraying if they are shielded by other vegetation. Habitat for Manitoba orchids is listed as: "**Habitat**: Ditches, deciduous and mixed forests, coniferous bogs, and tall-grass and mixed-grass prairie." http://www.nativeorchid.org/wordpress/manitoba-orchids/

The Western Silvery Aster (*Aster sericeus*) has a registered occurrence in the **immediate** area. "Western silvery aster is found in central North America, from Manitoba south to Texas. In Canada, Western silvery aster is found only in southeastern Manitoba and in the Rainy River area of northwestern Ontario. Most of Manitoba's Western silvery aster plants are found in three areas: Birds Hill Provincial Park and vicinity, Carlowrie and between Gardenton and the Manitoba-Minnesota border. Additional plants can be found near Beausejour, Grunthal and Zhoda" https://www.gov.mb.ca/sd/wildlife/sar/pdf/western_silvery_aster.pdf

This species is listed as Threatened under the Manitoba Endangered Species Act, as well as the national Committee on the Status of Endangered Wildlife in Canada.

It is irresponsible to prejudge "they are unlikely to contain rare plant species" without actually looking.

"Displacing whole portions of topsoil with any known rare or endangered plant species can be implemented if necessary such that this material and plants can be placed back in its original location with minimal disturbance."(EAP, p. 34). A permit for such an operation is required. How will these species be recognized – who will be engaged to survey and identify them? Section 4.6 (see above) already assumed such species are unlikely.

Section 5.3 pertaining to surface water (EAP, p. 33) states: "Mitigation of surface water issues may be achieved by limiting open cut trenching to within 30 m ahead or behind the pipe laying, redirecting surface water runoff, pumping accumulated water to adjacent ditches and providing erosion control practices as required." Will erosion-control dams be used during the period of construction to prevent disturbed soil from entering ditches? Will erosion-control mats be installed on ditch slopes?

"Re-establishment of vegetation will occur as soon as possible on areas of disturbed soil." (EAP, p. 33). What is the plan to revegetate disturbed soil? Will it be seeded with native grasses? Will an appropriate contractor be hired to do this?

"The proponent will conduct long term monitoring of Brokenhead River to verify impacts on water quality." (EAP, p. 34). Proponent = Town of Beausejour. Will the Town hire a contractor to carry out monitoring? What is meant by "long term"? A few months, a year, 5 years, or….?

A similar observation applies to fish in the river: "Water quality monitoring on the Brokenhead River will provide data for the assessment of any water quality impacts affecting fish species." Who will do this monitoring, how often, and how long? Is the hope here that this duty will maybe be carried out by the Province, or maybe Fisheries and Oceans?

4.0 Non-town aquifer users

It must be emphasized that the aquifer in question is not the exclusive property of the Town, but that there are many additional users in the surrounding area that depend on the same water source, and who will be affected by the Town's requirements and the Town's wasteful practices. These include residential users as well as agricultural operations including livestock producers who have a large water demand for their animals. There is also at least one registered ecological reserve (i.e. my property) whose integrity depends on relatively stable water table levels to protect the established ecosystem and registered endangered species. "Due to the extremely high transmissive conditions observed for the area, it is common for influences from pumping to travel great distances."(EAPHR, p. 60), and "The high transmissive conditions in the carbonate aquifer result in drawdown cones that are shallow with a large areal extent." (EAPHR, p. 72). Thus the longterm impacts of pumping may affect many users.

In estimating the groundwater use in the area (section 15.4, EAPHR, p. 74-75), besides licensed users, "the value for domestic use was conservatively estimated by assuming each of the 6,500 wells in the GWDRILL database (2018) supplies groundwater for a family of four at the average rate of 250 L/day/person". Other living arrangements, such as communes and ethnic/religious colonies, would have substantially greater domestic usage per well, but do not seem to have been included.

For some reason, domestic animals were excluded. What about the cattle, pigs, horses, sheep, goats and so forth, kept by farmers and residential users? What is the animal population of the area, which is, after all, rural? How much of this water demand relies on wells vs. surface water? Sample estimates for daily water consumption by livestock are given in Table 6 (Ontario data) (OMAFRA, 2019). These values do not include additional water demands such as barn washing, and animal and equipment hygiene.

Table 6. Estimated maximum daily water consumption for livestock (OMAFRA, 2019).

Livestock type	Daily water consumption L
Dairy cow	Up to 155
Beef cow	Up to 67
Pig	Up to 22
Horse	Up to 59
Sheep	Up to 11
1000 chickens 5-8 weeks old	450-770 Dependent on temperature
1000 turkeys	Up to 1100 Dependent on temperature

On p. 71-72 of the EAPHR, "the large number of private water wells documented within and around the Town of Beausejour is of concern for groundwater quality and must be considered in a GUDI assessment. A review of GWDRILL (2018) revealed more than 124 wells within a two mile radius of the new well field site. It is further assumed that the GWDRILL database typically under represents the actual number of wells in a region, as the database effectively covers water wells completed from 1964 to present. Consequently, wells drilled before 1964 generally do no have a well log record. In the well log review, most of the wells were completed in the carbonate aquifer. It is unknown at this time how many of these wells are still in use or if they have been properly abandoned. The overall density of private wells within the area is cause for concern with regards to groundwater quality, as each additional well increases the potential for surface impacts to enter the aquifer." The EAPHR does not mention the large number of test drill cores at aggregate mining operations in the area of concern. In one example (adjacent to GO50J155 on EAP map, p. 40), four separate and independent series of cores by different contractors were reportedly drilled on this property in the winter of 2019-2020 alone, whereas this property had already been extensively test drilled at least once, more than a decade previously. This is of concern, since "In generally [sic], quarry operations often increase the potential for groundwater recharge and can impart some hydraulic influence on local groundwater dynamics" (EAPHR, p. 26), and "Quarry operations in the region further reduce the local overburden cover and also increase the potential for surface water impacts to reach the local groundwater aquifer"(EAPHR, Appendix A, p. 178 of total 332 EAP). Such a situation provides enormous potential for contamination, as the water table associated with the unconfined aquifer is exposed and unprotected at the pits, and this property has become a haven for garbage disposal, recreational vehicles, youth gatherings and partying, swimmers, dog walkers, target shooters, hunters, and has been cursed with oil and mechanical fluid leakage from abandoned mining equipment left on site, including in the water, that created

slicks on the ponds. When the gravel pits were in all-day operation, for several years there were no toilet facilities on site, and currently the 'irregular' users often spend the entire day there.

On p. 21 of the EAP we see the statement: " the drawdown of the proposed wells will be within the historical natural groundwater fluctuation and no impacts on surrounding users is anticipated." This statement is based on the following EAPHR paragraph (p. 69): "The amount of addition [sic] drawdown calculated for the wellfield is within the historical range of natural groundwater level fluctuations observed in regional hydrograph stations. After one year of municipal pumping, the cumulative additional drawdown impact observed in the closest domestic wells is calculated to be 5.6 ft., or about six feet. The natural groundwater level fluctuations observed in regional hydrographs were up to approximately 7.5 feet. Thus, it is expected that existing wells in the area are already capable of handing this amount of water level change." This statement is misleading. First, the drawdown of 5.6 feet should be considered **in addition to, not within,** the existing fluctuations of 7.5 feet. The drawdown will be constant, and the simultaneous "natural groundwater fluctuation" will not cease. With climate change, the latter may even increase. Thus a drought year where the natural level is at its lowest will result in a total change of 13.1 feet from the natural condition at its maximum. And this is with the assumption for "wells that are perfectly efficient with no losses" (EAPHR, p. 66, bottom paragraph). We know that nothing is perfectly efficient, and that the numbers provided are the best possible case scenario, in other words, unlikely.

The above statement is paraphrased but hedged in the EAP (p. 31) as: "The available information indicates that the proposed withdrawal of groundwater is unlikely to result in adverse changes to groundwater levels outside of normal seasonal variation. Nevertheless, the potential still exists and monitoring of the groundwater levels will be required to identify any such adverse effects and allow the appropriate adjustments in the system operation to be made." What monitoring will be in place, what will the "appropriate adjustments" for adverse effects consist of, and are they even possible? If groundwater levels turn out to be a problem, surely the amount of withdrawal will not be scaled back? Therefore what is the plan to help the people who will be affected?

The above statement also assumes that **recharge capacity of the aquifer will remain constant.** However the reality of climate change and changes in precipitation levels must be taken into account, and it must be acknowledged that drawdown levels will almost certainly be greater than those in the simulated model presented in the EAP. According to the EAPHR (p. 72) itself, "The carbonate aquifer is highly responsive to seasonal and climatic variations. Water levels in the carbonate aquifer appear to decline rapidly during prolonged dry periods. The aquifer appears to be similar to an open reservoir and pipe analogy; when the water level in the reservoir falls, the potential in the pipe declines very rapidly. This means that during prolonged dry periods, static water levels in the area will respond rapidly, and decline accordingly." Similarly, poorly considered drainage projects undertaken by the RM in recharge areas also worsen the longrange outlook.

The model also assumes that **demand on the aquifer will remain constant**. However the reality has been and will be that as development proceeds and more wells are drilled, the burden on the aquifer will concomitantly grow.

According to the EAP (p. 34), "The recommended groundwater level monitoring program would include the use of existing wells on the current WTP property." What about the surrounding rural users? Monitoring should include a suitably large number of diverse wells, not just a few monitoring wells that may or may not represent the broader picture.

I live just over 2 miles away from the West well. Drawdown changes on my property can be severe and catastrophic. In 1999, the RM CAO gave unauthorized permission to the aggregate mining operation (at Roads 70N and 39E) diagonally across the road from me to operate a high-speed pump in order to dewater their gravel pit. As a result, my well went dry, as did that of another neighbor to the north on Road 39E, at the same time. While I was away at work, my pump continued to pump air until it burned out. I was without water for several days, and the RM did not provide me with water. The cost to rectify the situation and install another pump amounted to thousands of dollars. To this day, **I have never been reimbursed by the RM** for the grief they inflicted on me, although the RM did tell me to save my receipt (as a memento, I suppose). The Province did, in response, install a monitoring well beside the gravel operation, but too little, too late.

Therefore it was of great interest to me to read the following paragraph in the EAPHR (p. 71), which impacts me directly: "The presence of quarries and gravel pits in the area present another concern for GUDI conditions. The expansion of the drawdown cone around the wellfield after long term pumping will likely extend under existing surface water features and gravel pits; most notably, the surface water feature located directly north of the wells in west Beausejour, and southwest of the wells along Rd 70 North between Rd 40 and 39 E. The locations of these features requries [sic] that monitoring be in place to observe for potential surface water-groundwater interactions under long term pumping conditions." My neighbor and I can already bitterly vouch for the fact that these interactions exist. If intensive pumping of the gravel pit can affect the immediate area of the aquifer, then pumping of the aquifer can affect the surface water. So, what remedy can monitoring provide?

The impacts on surface water features bring into question the issue of pastured livestock that depend on dugouts. In the event that a well must be drilled to replace the lost surface watering source, will the Town compensate the livestock owner? Oh, wait. They will be told to save their receipt.

The bottom line is that the matrix is very porous and water travels easily and quickly through it, as indicated in the EAPHR (p. 53). Contaminants also easily enter it, and this has been aggravated by the many drill holes through the top aquitard that facilitate intrusion from the surface stratum (unconfined aquifer) to the confined aquifer(s) beneath. Drawdown in the confined aquifer is expected to accelerate the vertical movement of contaminants from the

unconfined to the confined strata via the numerous holes as well as natural areas of aquitard weakness. Contaminant plumes will be horizontally attracted to wells due to the hydraulic forces of pumping.

"As per the conditions of the Groundwater Exploration Permit, the Town of Beausejour, as the proponent of the water supply project, is responsible to correct any existing water supplies that are negatively impacted as a result of a new municipal groundwater supply." (EAPHR, p. 69). How will the Town be able to correct somebody's compromised water supply? It will take years and thousands of dollars of litigation for a resident to prove that the new municipal wells caused the problem, and indeed such proof may be impossible. Will the Town undertake to provide the unlucky residents with water in the meantime? Probably not. The unfortunate resident will be forced to undertake the drilling and installation of a new well on their own, and keep their receipts. Like myself (above), they will keep those receipts until they die. "The last sentence of section 14.3 (EAPHR, p. 69) states: "Long term monitoring and a well interference program will be required to address these concerns." There is no mention of what exactly the "well interference program" will entail or achieve, nor who will administer and conduct it.

Over the three decades that I have lived on my property, I have also documented declining water quality. After the spring melt, nitrogen spikes in my well water (Figure 1), and coliform bacteria now appear sporadically where in the 1990s there were none. Growing development, location of subdivisions and communities on recharge areas, the drilling of more wells, the failure of more septic fields, small residential lots where septic fields are embarrassingly close to wellheads, drilling of wells in livestock enclosures, abuse of land by greedy mining interests, leaking of abandoned well casings, increased application of manure, inappropriate RM and private drainage practices, and many other factors in my immediate area have contributed to the irreversible soiling of a once magnificent aquifer.

It is unsettling to see how much uncertainty and assumption blur the expectations concerning the impacts of this project, and the different slippery gambles that will be undertaken, with no useful fallback plan for any of them, other than "monitoring".

During the course of my career in the past 50+ years, I have reviewed and evaluated a great many environmental impact models in sewage and water treatment, industrial agriculture, mining, hydro dam flooding, cottage development, nuclear power installations, and so on. They have all had one thing in common: nobody is ever held accountable when the projections and models fail, and reality turns out to be very different. Who knew? Assertions. Assurances. Empty words.

5.0 Other remarks

- The EAP and EAPHR suffer from hundreds of typographical, spelling, grammar and syntax errors, as well as contradictions, indicating the reports were prepared in haste and not proofread.
- The present document was likewise prepared in haste. The time allotted between the publication of the Environment Act Proposal notice and the deadline for comment submissions was too short to prepare a more complete and organized response, given the complexity of the issue, the amount of data, and the magnitude of the consequences of this project.

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From: [redacted]
Sent: May 12, 2025 4:40 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>; [redacted]
Subject: Re: RM of Springfield Well Field Expansion File 6013.10

Mr. Mak, last question on May 12, 2025, if I may: I am hoping there will be a Clean Environment Commission hearing re: File 6013.10.

In a timely article published in *The Narwhal* on the weekend, Julia-Simone Rutgers wrote a compelling article called "Let's talk about sewage overflow..". She writes: "...Winnipeg dumps billions of litres of sewage into its iconic waterways every year, pumping them full of bacteria and nutrients that can damage aquatic ecosystems and threaten public health. The city has been aware of this problem for decades. It's an unwritten rule that we don't really swim in the rivers around here..."

Maybe the time has actually come to talk about dumping effluent into the rivers and the Lake Winnipeg Watershed. What would it take to have a Clean Environment Commission hearing about the File 6013.10 issue? Should I have made the request for a public hearing in my written submission? Would I be able to make the request via this email?

[redacted]

From: [redacted]
Sent: May 12, 2025 7:41 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Please Reject Well Field Expansion File: 6013.10

Hello,

Please register my objection to Well Field Expansion File: 6013.10. Attaining water must be done in a way which is best for all current and future Manitobans while reducing risks.

I do not support the location of the well field. Two miles further east, Water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure.

There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrated storage pond and planned or accidental discharge. In order for environmental assessments "to be done well, they must include an assessment of cumulative effects." (CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

As proposed, the project must not be licensed.

Sincerely,

[redacted]

Settler on Treaty One Territory, the lands of the Anishinabeg, Assiniboine, Cree, Oji-Cree, and Dakota First Nations, and homeland of the Red River Metis. I acknowledge the harms of the past and present and commit to act with truth, respect, reconciliation, and collaboration.

From: [redacted]
Sent: May 12, 2025 3:48 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RM of Springfield - Well Field Expansion - File 6013.10

Good Afternoon Mr. Mak;
RE: [redacted] Resident of RM of Springfield
Please accept this email as my ***opposition*** to the selection of a Reverse Osmosis System.
My concerns include the justification for this level of filtration, the costs of such a filtration system and the impacts of a Reverse Osmosis system as it relates to the removal and dilution of filtrates in the Cooks Creek Diversion system and the redirection to Lake Winnipeg.
I am interested to see how your Department addresses these common themes of concerns.

Blessings,
[redacted]

From: [redacted]
Sent: May 12, 2025 2:53 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RM of Springfield Well Expansion Proposal File 6013.10

To: Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

Re: Rural Municipality of Springfield
Well Field Expansion
File: 6013.10

Please register my objection to Well Field Expansion File: 6013.10 whereby the RM of Springfield has made application to Manitoba Environment and Climate Change for a well field expansion to support a proposed water treatment plant. I highlight the following concerns.

The Environment Assessment process allowed for separate assessments of the current well field, the well field expansion and the Reverse Osmosis Water Treatment Plant (ROWTP). "Project splitting" is highly criticized as it prevents full assessment of all environmental, economic and social risks and impacts from the project. This is particularly concerning given the need to protect local and regional groundwater sources.

I do not support the proposed location of the well field as the water is not suitable for drinking, thus requiring an extremely expensive water treatment process. The current proposal would require a $26 million+ reverse osmosis water treatment plant and associated infrastructure. Two miles further east of the proposed drilling site, water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination. The cost to run a pipeline two extra miles would be far less than building an expensive treatment plant. The proposed well field location and associated water treatment plant is a massive waste of public funds.

The more "technical and economic" area for the Dugald/Oakbank well field was abandoned. (p.10 EAP 6013.00) However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. This is a better use of public funds and meets sustainable development.

Location of the well field produces water that requires a costly reverse osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels. It also uses a great deal of water in the process, typically around four gallons to produce one gallon of purified water. Another question that needs to be addressed is with climate change factors changing our environment, can you be certain that the water supply in these aquifers will be sustained over time.
Ultimately the treated water will drain into Lake Winnipeg, further compromising the water quality of the lake, which has deteriorated over time as a result of increasing nutrients, especially phosphorus and nitrogen levels, primarily from agricultural runoff, municipal wastewater, and effects of climate change. This has produced increasing levels of algal blooms which have negatively impacted the lake's ecosystem, fishery, and recreational uses.

There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge.

Calculations project water draw to occur in the saline portion of the Sandstone aquifer. Assessment of impacts from saline water draw to the aquifer system, to neighbouring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the proposal stage, not after licensing through "a staged approach".

In 2007, The Manitoba Clean Environment Commission (CEC) found "insufficient information available in respect of the sustainability of the water resources" and recommended the Manitoba government prioritize the "development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers". Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.

In order for environmental assessments "to be done well, they must include an assessment of cumulative effects."(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

Furthermore, the RM of Springfield has never provided actual irrefutable detailed data in support of the projected need for such an extreme development for the foreseeable future. Canadian Census data over the past ten years shows that Springfield is growing at a declining rate and that the municipality has adequate drinking water to meet the needs for at least a decade and more, with less invasive modifications. This has been outlined in previous submissions from individuals who are educated in these matters.

As proposed, the project must not be licensed. There is no need to do such an exaggerated expansion for at least a decade, espcially since the future is less predictable than ever before. This project needs to undergo much more detailed scrutiny to confirm its feasibility and whether it is necessary at this time, and to ensure that all of these questions have been addressed.

In 2018, the Clean Environment Commission stated "Environmental impact assessments consider the impacts of an individual project or activity but, in order to be done well, they must also include an assessment of cumulative effects." The municipality and their consultants have brushed this aside and have given it no weight.

The handling of this development once again shows the need to reform Manitoba's assessment and licensing regime under The Environment Act. It is imperative to take the time to ensure that the necessary checks and balances are in place.

RM of Springfield residents are already struggling, and this unnecessary debt load will only increase the burden in these trying times. Considering the potential of the U.S. tariffs to increase the level of hardship for Canadians on many levels, costs associated with these massive infrastructure projects will only increase, and the ability to handle the debt load will decrease inversely. We need to get it right.

My questions to you: What is the rush? Do you want to ensure that all the environmental issues have been addressed in order to protect our water resources and to use our limited finances wisely? Do you want to be certain that this proposal is in fact addressing the needs efficiently for the foreseeable future? Are our aquifers an unlimited resource or could they also decline over time with the effects of climate change? If the potential exists that they will decline over time, is a reverse osmosis the most efficient way to provide clean drinking water, considering how much waste water is used in the process?

There are many questions that still do not have answers at this time and if they are not dealt with appropriately, this could be an extremely expensive mistake. Please take the time to ensure that the correct decisions are made every step of the way.

From: [redacted]
Sent: May 12, 2025 4:06 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: Springfield well extension

I'm writing to you about my concerns about the municipality of Springfield's plans of having a reverse osmosis plant for the town of Dugald.
The town of Beausejour has one and they are dumping the effluent into the Brokenhead River which runs into Lake Winnipeg. This is poisoning the waters of Lake Winnipeg.
I really don't know this whole system will work in our Municipality but it has to dump the effluent somewhere.
Can you look into this situation as I believe it's not environmentally safe.
Thanks
[redacted]

Sent from Gmail Mobile

From: [redacted]
Sent: May 12, 2025 8:24 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: [redacted]
Subject: Well Field Expansion File 6013

Jay Mak, Senior Environmental Engineer
Manitoba Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

Please register my objection to Well Field Expansion File: 6013.10 highlighting the following concerns.

*The Environment Assessment process allowed for separate assessment of the current well field, the well field expansion and the Reverse Osmosis Water Treatment Plant(ROWTP). "Project splitting" is highly criticized as it prevents full assessment of all environment, economic and social risks and impacts from the project. This is particularly distressing given the need to protect local and regional groundwater sources.

*I do not support the location of the well field. Two miles further east, Water in the Sandstone and Carbonate Aquifers are both fresh and meet drinking water parameters. At most, this water quality would require chlorination not a $26M+ Reverse Osmosis water treatment plant and required infrastructure. In my opinion this is a waste of public funds.

*The more "technical and economic" area for the Dugald/Oakbank well field was abandoned. (p.10 EAP 6013.00) However, fresh water from this area can be used to blend with water from the current well field as presently accomplished using Heatherdale well water. I see this as a better use of public funds and meets sustainable development.

*Location of the well field produces water that requires costly Reverse Osmosis treatment. This treatment produces a deleterious concentrate that will discharge into the Cooks Creek Diversion. However, the Diversion is incapable of safely diluting the concentrate at certain flow levels.

*There are no environment management plans provided or assessment of impacts to the environment, local wells, wildlife etc. from the concentrate storage pond and planned/accidental discharge.

*Calculations project water draw to occur in the saline portion of the Sandstone aquifer. Assessment of impacts from saline water draw to the aquifer system, to neighboring wells, to the proposed treatment requirements, concentrate composition and volumes and to the environment have not been provided. Assessment of these impacts must occur now at the Proposal stage not after licensing through "a staged approach".

*In 2007, The MB Clean Environment Commission(CEC) found “insufficient information available in respect of the sustainability of the water resources” and recommended the MB govt prioritize the “development of an integrated watershed plan for the Manitoba portion of the Red River Basin and associated aquifers”. Until this data collection is completed by the Province to ensure a sustainable and sound use of the southeast bedrock aquifer system, an Environment Act License must not be issued for this Project.

*In order for environmental assessments “to be done well, they must include an assessment of cumulative effects.”(CEC, Regional Cumulative Effects Assessment Review, 2018). Cumulative effects are changes to environment, social, and economic values caused by combined impacts of past, present, and potential future human activities and natural processes. Where is the cumulative impact assessment for the proposed project over the next 20, 50 years? The Manitoba government should postpone any licensing or finding respecting this application until a full and proper assessment of project impacts are available for consideration.

*****In 2007, a proposed water supply project at less than the proposed 126 L/s and 1,600 dam3/year allocation was sent to the CEC. Given the need to protect local and regional groundwater sources, I request the government convene the CEC to review the proposed Dugald/Oakbank water supply and treatment facility, to include public hearings and participant funding.

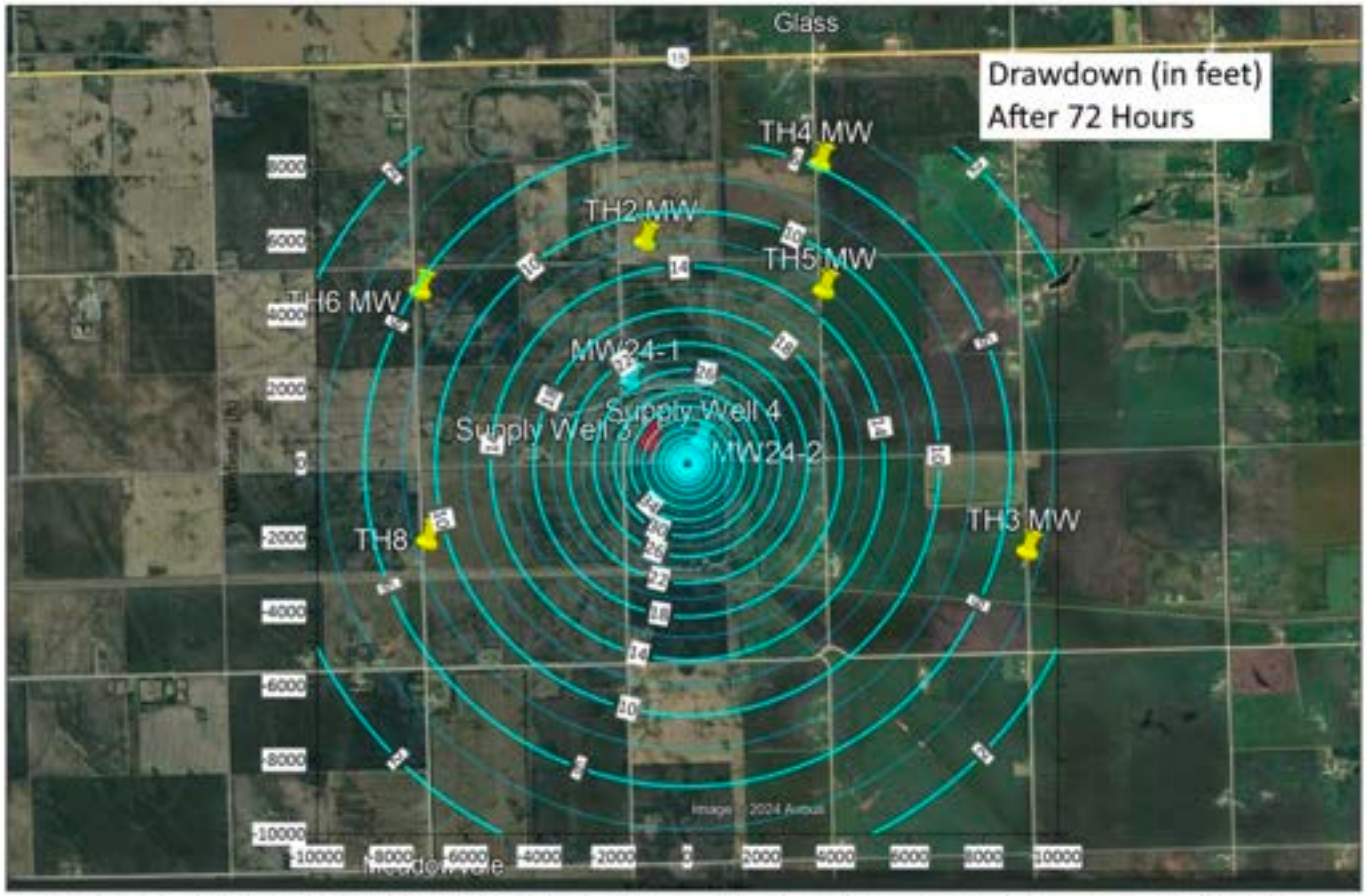
The handling of this development once again shows the need to reform MB’s assessment & licensing regime under The Environment Act.

As proposed, the project must not be licensed.

Image: Map of test site locations; Radius of drawdown for 72-hour pumping test from proposed Well 4; Longterm Drawdown using half of proposed 1,600dam3/year groundwater allocation in year 5 shows draw in saline; Flow in Cooks Creek Diversion.

Figure 1 – Map of test site locations.

Figure 33 - Drawdown in the Sandstone Aquifer – 72 hours

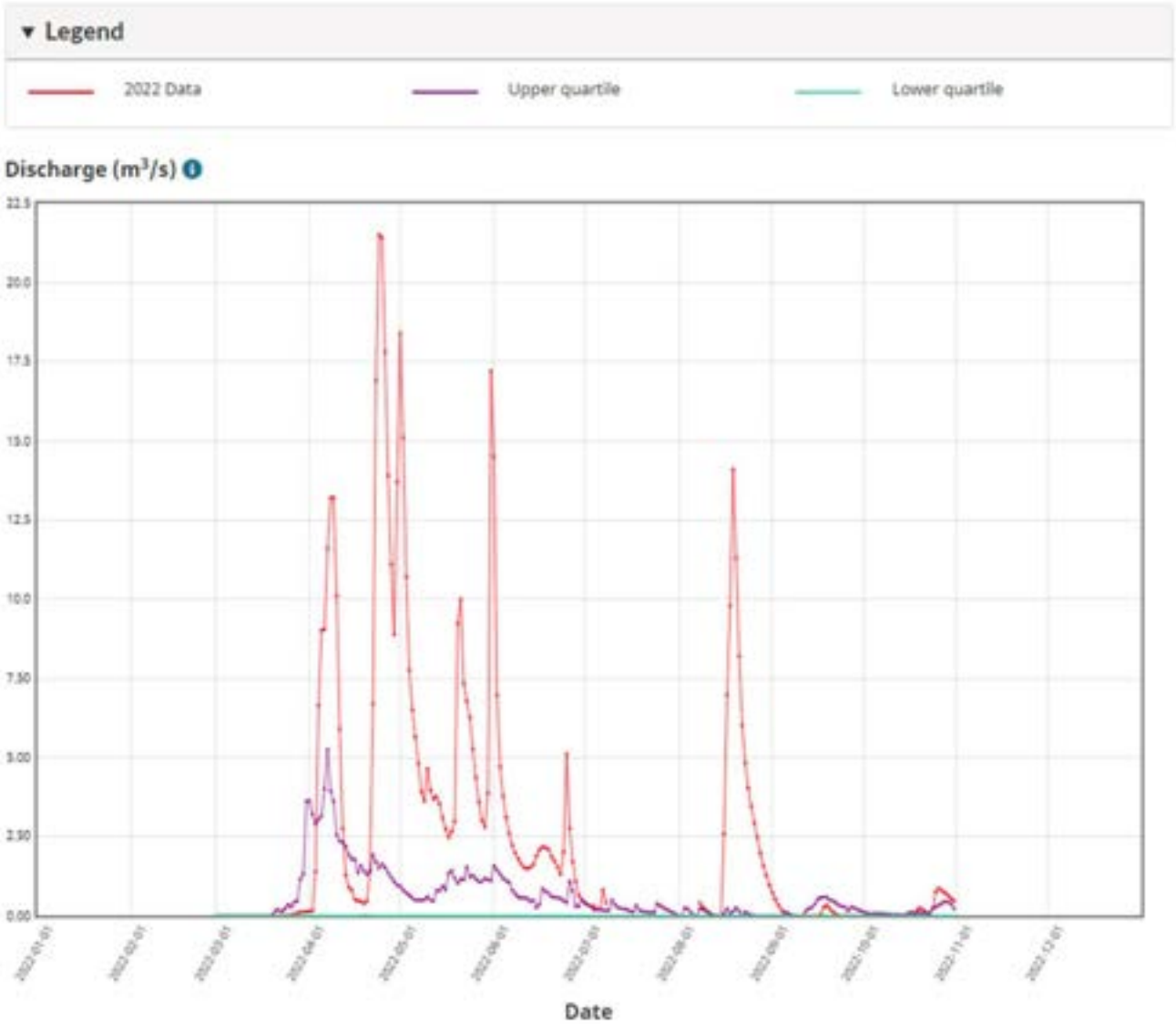


Note: Sandstone Aquifer drawdown (in feet), after 72 hours of pumping at 500 U.S.G.P.M. (Source – Friesen Drillers, 2024)

Table 14 – Long Term Drawdown – Year 5

Table 14 Projected Drawdown – Year 5 (2030) Estimated Use: 800 dam³/year total (154 dam³/year above current licence) 365 Days Pumping at 77 U.S.G.P.M.						
Radius	**1,000 ft.**	**½ mile**	**1-mile**	**1.5-miles**	**2-miles**	**3-miles**
Drawdown	11.8 ft.	9.4 ft.	7.7 ft.	6.7 ft.	5.9 ft.	4.9 ft.
Calculations follow the assumptions of the Theis (1935) equation.						

Figure 4-1: Flow in Cooks Creek Diversion at Inlet



The daily flow records and long-term statistics presented on the WSC webpage show that the lower quartile (i.e., the 25th percentile, or 1/4th of measurements) for the Cooks Creek Diversion are zero for the proposed period of discharge (i.e., April 1 to November 15). This implies that the 7Q10 and 30Q10 are zero as well and that the water body is t considered an intermittent stream. Therefore, the mixing calculations were completed for the Cooks Creek Diversion when there is flow and for Red River for periods of no flow in the Cooks Creek Diversion.

MANITOBA SUSTAINABLE DEVELOPMENT
ENVIRONMENTAL APPROVALS BRANCH
MAY 13 2025
RECEIVED

Jay Mak
Senior Environmental Engineer
Department of Environment and Climate Change

Re: Objection to RM of Springfield Well EAP File: 6013.01

Friesen Drilling under the direction of their hydrogeologist Jeff Bell, have had major role in advising the RM of Springfield in their quests for suitable water sources.

How is it then that Friesen Drillers/Jeff Bell can facilitate the RM of East St. Paul in sourcing water for years from the RMS's west side-with yet another new well,P-10 to come on stream this year??

The same applies to Sky Blue's bottled "World Class Water" drawn from two major wells east under the direction of Friesen/Bell-approved by the RMS, January 25, 2024 ??

Yet Springfield ratepayers are now being called on to shoulder the costs of yet more well water to be processed at the 26+M Reverse Osmosis Plant Complex(that a majority of us will derive no direct benefit from).

I submit that Friesen/Bell need to be removed from further involvement in this project based on the fiasco they created in establishing Well#1 on Suthwyn Road in too close proximity to residential wells;
1) Not setting up the mandated well monitoring transducers.
2) Not halting their drilling when serious interference issues occurred.
3) Stonewalling affected residents who had to resort to legal actions to enforce their rights.
4) Water from Well#1 did not meet drinking water standards even when drilled deeper into the sandstone formation.

They then drilled Well#2 close by with draw zone overlapping Well#1 and the two replaced domestic wells-still with unsuitable for drinking water guidelines, without RO treatment.

File: 6013.10 is seeking approval for two wells #3 and #4 already drilled one mile away on Mission Road with overlapping draw zones-also requiring RO treatment.

This is CONTRARY to Friesen/Bell's recommendations from their 2016 Water Study commissioned by the RM, the best water source was south/south east to avoid mineral and salinity encroachment issues.

File: 6013.10 now implies that further wells are anticipated to compensate for possible saline boundary issues.

All those involved in proposing EAP Files: 6013, 6013.10, and 6219 need to be investigated for their complicity as the entire project makes no sense.

As was done in 2002, when the Floodway Authority tried to "Ram" through deepening the channel with clear disastrous implications for Springfield's ground water.

Out of province engineers, Clifton& Associates of Regina provided real facts that corrected the local 'authorities' to head off a major miscarriage.

Springfield is long overdue for a fact based correction on how Springfield exercises prudent environmental stewardship of its water resources.

[redacted]

TAC comments

Manitoba

Memorandum

DATE: April 10, 2025

TO: Jay Mak, M.Sc., P.Eng.
Senior Environmental Engineer
Land Use, Waste Management & Energy
Environmental Approvals Branch
Environment and Climate Change
14 Fultz Boulevard
Winnipeg MB R3Y 0L6
Jay.Mak@gov.mb.ca
Tel: 204-619-0709

FROM: Asit Dey, P.Eng.
Engineering Manager
Land Use, Waste Management & Energy
Environmental Approvals Branch
Environment and Climate Change
14 Fultz Boulevard
Winnipeg MB R3Y 0L6

PHONE NO.: 204-794-3389
FAX NO.: 204-945-5229
E-MAIL: Asit.Dey@gov.mb.ca

SUBJECT: RURAL MUNICIPALITY OF SPRINGFIELD
WELL FIELD EXPANSION
RM OF SPRINGFIELD
FILE: 6013.10

Thank you for your email dated April 2, 2025, seeking comments on the subject Environment Act proposal.

The proposed project is not in an area of water power interest. I do not have any further comments on the proposal.

ORIGINAL SIGNED BY

Asit Dey

AD/PS/MM:mm

From: Penner, Rachel <Rachel.Penner@gov.mb.ca>
Sent: May 9, 2025 4:05 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Good afternoon Jay,

Environmental Compliance and Enforcement has reviewed the Environment Act Proposal for the Rural Municipality of Springfield Water Treatment Plant Well Expansion and has no comments at this time.

Thank you,

Rachel Penner
Environment Officer
Environmental Compliance and Enforcement |Environment and Climate Change
14 Fultz Blvd, Winnipeg, MB, R3Y 0L6
Phone: (431) 276-1065
Rachel.penner@gov.mb.ca

From: +WPG569 - Drinking Water - Approvals <drinkingwater.approvals@gov.mb.ca>
Sent: April 2, 2025 2:22 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

No concerns.
Office of Drinking Water (ODW)

Cory Vitt, P.Eng. M.Eng. CPPA CMMA
(pronouns: they/them; please don't use "Mr. Vitt")
Senior Approvals Engineer
Office of Drinking Water
Cell: 204-806-1363
Email: Cory.Vitt@gov.mb.ca

NEW ADDRESS:
Box 19
14 Fultz Blvd
Winnipeg, MB R3Y 0L6

From: Wai, Callan <Callan.Wai@gov.mb.ca>
Sent: April 7, 2025 11:08 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: Butterfield, Tamara <Tamara.Butterfield@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Good morning Jay,

The RM of Springfield currently holds a Water Rights Licence for this project. An application for the expansion has been received and a Groundwater Exploration Permit was issued. The project is considered in good standing.

Thank you,

Callan Wai, P.Geo.
Licensing Hydrogeologist
Environment and Climate Change
Box 16 – 14 Fultz Boulevard
Winnipeg, MB, R3Y 0L6
Callan.Wai@gov.mb.ca | Cell: 431-278-7454

From: +WPG137 - Parks Circulars <ParksCirculars@gov.mb.ca>
Sent: May 12, 2025 3:20 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Hello,

Parks Branch, including the Protected Areas Initiative, has reviewed the File 6013.10 TAC comment request for RM of Springfield well field expansion - due by May 12, 2025. The Branch has no comments or concerns to offer as it does not affect any provincial parks, park reserves, ecological reserves, areas of special interest, or proposed protected areas.

Sincerely,

Jessicca Lagimodiere
Park Ecologist
Parks Branch | Environment and Climate Change
258 Portage Ave, 4th Floor, Box 50, Wpg MB, R3C 0B6
Jessicca.Lagimodiere@gov.mb.ca | pronouns: she/her
204-619-8646
ManitobaParks.com

From: Murray, Colin <Colin.Murray@gov.mb.ca>
Sent: April 8, 2025 11:56 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: Zbigniewicz, Maria <Maria.Zbigniewicz@gov.mb.ca>; Maksymchuk, Michael <Michael.Maksymchuk@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Hello
Wildlife Branch advises that there are known occurrences of Riddell's goldenrod (*Solidago riddellii*) along right-of-ways generally east of the project site (SW-29-010-06E1). Riddell's goldenrod is provincially listed Threatened under the Endangered Species and Ecosystems Act and listed Special Concern under the Federal Species at Risk Act. Under the Endangered Species and Ecosystems Act it is prohibited to kill or injure a species listed under this act or to destroy or disturbed habitat of the listed species. Although there are no known occurrences of this or other rare species at the project site or at the test well locations, due to the proximity to the known occurrences, and not being able to determine the suitability of the habitat in the right-of-way from aerial imagery, the Wildlife Branch recommends pre-development vegetation surveys be carried out when likelihood of detection is highest.

The Wildlife Branch further recommends that future well drill sites associated with this or any other project be screened for rare species before ground work commences.
Species occurrence screening data requests can be submitted electronically at: https://gov.mb.ca/nrnd/fish-wildlife/cdc/request.html

Colin

Colin Murray
Information Manager- Manitoba Conservation Data Centre
Wildlife Branch, Natural Resources and Indigenous Futures
14 Fultz Boulevard, Winnipeg, MB R3Y0L6
E: colin.murray@gov.mb.ca **T**: 204-914-2849

From: +WPG569 - Forestry and Peatlands Circulars <FPB.circulars@gov.mb.ca>
Sent: April 8, 2025 8:04 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Forestry and Peatlands has no concerns.

Jane Epp

From: +WPG1195 - Mines Regulatory <MinesBr_Regulatory@gov.mb.ca>
Sent: April 8, 2025 2:56 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: +WPG1195 - Mines Regulatory <MinesBr_Regulatory@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Hello,

There is an aggregate belt crossing the location SW 29-10-6 EPM for new wells proposal. Please see the orange belt in the map as below.
And there were some Private Quarry (PQ) registrations applied by RM of Springfield in the past in this location. No new PQ is registered for now.

Regards,

Vicky Fu, M.Eng
GIS Specialist
Mining, Oil and Gas
Business, Mining, Trade and Job Creation
360-1395 Ellice Avenue, Winnipeg, MB R3G 3P2

From: Leonen, Leonardo <Leonardo.Leonen@gov.mb.ca>
Sent: May 9, 2025 8:52 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: Curtis, Jasmine <Jasmine.Curtis@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Petroleum Branch has no concerns

Leo

From: +BEA208 - Beausejour CRP <BeausejourCRP@gov.mb.ca>
Sent: May 6, 2025 11:37 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: Enns, Ellen <Ellen.Enns@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

RE: Environmental Act License 6013.10
Springfield Well Expansion 2025
SW 29-10-6 EPM
RM of Springfield

The subject areas are designated Agricultural Preserve Area and zoned “AG” Agricultural General Zone per the RM of Springfield Development Plan and Zoning By-law, respectively.

No concerns.

Thank you,

Pauline Ordoñez, M.C.P., B.EnvD.
Community Planner
Community Planning – Beausejour Office
Municipal and Northern Relations
L01 - 20 First Street, Box 50
Beausejour, MB, R0E 0C0
204-823-8335
BeausejourCRP@gov.mb.ca
Manitoba

From: Fender, Robert <Robert.Fender@gov.mb.ca>
Sent: April 7, 2025 2:24 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Good afternoon.

The municipalities proposed well expansion does not appear to be within the departments ROW, therefore we have no concerns.

Regards,

Rob Fender
Planning Technologist
Easternl Region | Transportation Operations Division
Manitoba Transportation and Infrastructure
316-323 Main Street | Steinbach MB R5G 1Z2 | 204.371.6858

From: DiNella, Jeff <Jeff.DiNella@gov.mb.ca>
Sent: May 9, 2025 11:33 AM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

Hi Jay

We have reviewed EAP 6013 for a well field expansion and have no concerns.

Thank You

Jeff DiNella
Senior Development Review Technologist
Manitoba Transportation and Infrastructure
Highway Design
Cell: (204) 430-7176

1420-215 Garry Street
Winnipeg, MB R3C 3P3

From: Robinson, Karen <Karen.Robinson@gov.mb.ca>
Sent: May 21, 2025 4:26 PM
To: Mak, Jay <Jay.Mak@gov.mb.ca>
Cc: Benoit, Peter <Peter.Benoit@gov.mb.ca>; Hilderman, Tim <Tim.Hilderman@gov.mb.ca>; Sturgess, Yvonne <Yvonne.Sturgess@gov.mb.ca>
Subject: RE: TAC comment request for RM of Springfield well field expansion 6013.10 by May 12, 2025

I have no concerns.
Karen

Karen Robinson MD, CCFP, FRCPC
Medical Officer of Health
589 3rd Ave South
Stonewall, MB,
R0C 2Z0
Phone: 204-467-4410
Cell: 204-918-1051