Wild Oaks Campground

Environment Act Proposal

for a

Wastewater Treatment and Disposal System

PROVINCE OF MANITOBA
G. R. COUSIN
17/05/31
REGISTERED PROFESSIONAL ENGINEER

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No. 234 Date: 17/05/31

Reviewed by:

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President

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JRCC ENGINEERING CONSULTANTS

ACKNOWLEDGMENTS

To prepare this report various sources of information were investigated and researched. JR Cousin Consultants Ltd. (JRCC) wishes to thank the Wild Oaks Campground who contributed to the data and content of this study. In addition, we wish to commend the Wild Oaks Campground for their fortitude in addressing the need for a long-term solution to wastewater treatment for the private campground.

REMARKS

JR Cousin Consultants Ltd. has conducted this Environment Act Proposal in accordance with generally accepted professional engineering principles and practices for the purpose of identifying conditions that may have an environmental impact on the site. The findings and recommendations reached in this report are based on information made available to JRCC during the investigation and conditions at the time of the site investigation. Conclusions derived in this report are intended to reduce, but not wholly eliminate the uncertainty regarding potential environmental concerns on the site, and recognizes reasonable limitations with regards to time, accuracy, work scope and cost. It is possible that environmental conditions may change from the date of this report. If conditions appear different from those encountered and expressed in this report, JRCC should be informed so that mitigation recommendations can be reviewed and adjusted as required. Historical data and information obtained from personal communication used in this report, are assumed to be correct, however JRCC has not conducted further investigations into the accuracy of this data. JRCC has produced this report for the use of the client, and takes no responsibility for any third party decisions or actions based on information contained in this report.

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Environment Act Proposal Form

Manitoba
Sustainable Development

Name of the development:
Wild Oaks Campground

Type of development per Classes of Development Regulation (Manitoba Regulation 164/88):
Class 2 Development - Onsite Wastewater Treatment System

Legal name of the applicant:
Wild Oaks Campground

Mailing address of the applicant: Box 17, RR#1

Contact Person: Ray and Gisele Turenne

City: Richer Province: Manitoba Postal Code: R0E 1S0

Phone Number: (204) 422-6175 Fax: email: gturenne@mymts.net

Location of the development: RM of St. Anne

Contact Person: Ray and Gisele Turenne

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Legal Description: NE 20-8-8 EPM

City/Town: Richer Province: Manitoba Postal Code: R0E 1S0

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Date: May 31/17

Signature of proponent, or corporate principal of corporate proponent:

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EXECUTIVE SUMMARY

General

The campground owner is proposing to replace the existing wastewater treatment and disposal system for the Wild Oaks Campground. An Environment Act Licence will be required from Manitoba Sustainable Development for the construction and operation of the treatment and disposal system. JR Cousin Consultants Ltd. (JRCC) was retained for the engineering services.

Description

The existing campground peat filtration beds used for wastewater treatment are in need of replacement as they do not comply with the requirements of Manitoba Sustainable Development. The campground also utilized holding tanks for wastewater storage, which are pumped out and hauled off site for disposal. The most feasible option for upgrading the wastewater treatment system was to replace the existing system with an Enviro-Septic wastewater treatment and disposal system. As the campground owner would also like to expand the campground in the future, the new wastewater treatment system would provide capacity for the expansion.

Population and Wastewater Generation

The projected service population would be the seasonal and transient campground residents. There are 90 seasonal campsites and 27 transient campsites at the campground. Two washroom and shower facilities, and a trailer dumping station service the transient campsites. There is also a Laundromat, office and residence on the property. The owner is proposing to expand the campground by another 40 seasonal sites within five years.

Based on truck hauling records, the daily hydraulic loading from the campground residents is estimated to be 100 L/day/campsite. Utilizing 100% peak capacity of the campground the total hydraulic loading would be 11,700 L/day. With the addition of 40 new seasonal campsites, the hydraulic loading would increase by 4,000 L/day. The campground also has an office/residence and Laundromat which also contribute hydraulic loads.

Wastewater Treatment and Disposal System Design

Based on funding, the campground owner would be proposing the system to be constructed/installed in three phases. Phase 1 would be sized for a hydraulic flow of 4,400 L/day, Phase 2 would be sized for a hydraulic flow of 1,800 L/day and Phase 3 would be sized for a flow of 4900 L/day. The holding tanks would also continue to be utilized on the campground, with truck hauling of the remainder of wastewater off of the site.

The Enviro-Septic wastewater treatment and disposal system consists of several rows of corrugated and perforated plastic piping, surrounded with layers of polypropylene fibre and non-woven geotextile. This piping, which has passive air circulation, is buried below grade in a bedding of sand material. Wastewater is pumped into the piping and slowly percolates through the fibre and geotextile into the surrounding ground. A sampling trough is utilized for testing treated effluent.

Potential Concerns and Mitigation Measures

From discussions with the owner and a review of the current site operations, the potential concerns identified with the installation/construction of the wastewater treatment and disposal system and associated mitigation measures include:

Potential Concern	Mitigation Measure
Odours from system operation	The new wastewater treatment and disposal system is to be sized for the projected hydraulic and organic loadings from the campground residents. The venting system is to provide aeration to reduce odours
Contamination of surface and groundwater from system installation and operation	Construction equipment is to be properly maintained to prevent the possibility of leaks or spills. Setbacks from surface water and groundwater are to be maintained during installation and operation. Wastewater effluent is to be tested regularly to ensure treatment is occurring while being discharged below the surface
Soil erosion after construction/installation	Areas with bare soil on the treatment system are to be seeded with grass to reduce erosion
Spills or leaks during construction	Contractor to have emergency spill kit on site. Hazardous materials and fuel to be handled in accordance with all federal and provincial regulations
Reduce aesthetics of area	Treatment system is to be covered with topsoil and seeded to reduce visual impacts
Noise impacts from construction works	Construction works is to be limited to daylight hours only
Public health and safety	The construction contractor is to have a safety program onsite which is to include utilizing personal protective equipment and fencing off excavation areas. Access to the construction site is to be limited to construction personnel only.

Schedule and Approvals

The campground owner would like to begin the installation works for Phase 1, shortly after receipt of an Environment Act Licence. Additional phases would be constructed/installed over the next five years, based on available funding. No additional approvals, licences or permits are expected for the works, beyond the Environment Act Licence from Manitoba Sustainable Development.

1.0 INTRODUCTION AND BACKGROUND

The development described herein is for a wastewater treatment and disposal system to service the Wild Oaks Campground, in the RM of Ste. Anne, Manitoba.

1.1 Introduction

The proponent (Wild Oaks Campground) is proposing to replace an existing wastewater treatment facility at the Wild Oaks Campground. Replacement of the existing wastewater treatment system is required to accommodate the future proposed growth of the campground. An Environment Act Licence is required from Manitoba Sustainable Development for the construction and operation of the proposed wastewater treatment system. JR Cousin Consultants Ltd. (JRCC) was retained for the related engineering services.

1.2 Contact Information

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1.3 Background Information

The Wild Oaks Campground is located at NE 20-8-8 EPM, approximately 2 km north of Richer, Manitoba in the RM of Ste. Anne (see Plan 1 in Appendix C). The campground is accessed from PR 302, which runs along the east border of the property. The campground is seasonal, and is operated between May 1 and October 15 each year. The campground is divided into seasonal and transient overnight sites for motor homes. There are 90 seasonal sites serviced by water and sewer, and 27 transient sites which are not directly serviced. Currently wastewater disposal throughout the campground occurs via holding tanks with trucking, or by peat filtration beds. There is also a grey water pit and trailer dumping station at the campground. The campground also has an office, residence, outdoor pool, hot tub, and two public washroom and shower facilities.

The campground wastewater treatment and disposal system is currently not being operated under an Environment Act Licence due to flows at the campground, which are less than 10,000 L/day. However, as the proponent is proposing an expansion to the campground, hydraulic flows are expected to be greater than 10,000 L/day, and therefore a new wastewater treatment and disposal system will be constructed.

An Environmental Act Licence will be required for the construction and operation of the new wastewater treatment and disposal system.

1.4 Description of Previous Studies

A 2014 assessment report was completed by JRCC, which discussed the existing wastewater treatment and disposal system and presented options for replacement of the system. As the effluent in the existing peat filtration beds could not be sampled, the following recommendations were presented:

- Upgrading the existing peat filtration beds would include installing a means of sampling the effluent after the peat treatment and prior to release. In addition, a properly designed disposal field would need to be constructed for the final effluent disposal after the peat filtration.
- Decommissioning and replacing the existing peat filtration beds with an alternative peat treatment system approved by Manitoba Sustainable Development.
- Decommissioning the existing peat filtration beds and installing an alternative wastewater treatment system approved by Manitoba Sustainable Development.
- Decommissioning the existing peat filtration beds and utilizing holding tanks and truck hauling for the entire campground.

1.5 Project Description

The Wild Oaks Campground is in need of a new wastewater treatment and disposal system to accommodate the future expansion of the campground. The new wastewater treatment and disposal system is to consist of a series of Enviro-Septic pipes, over a disposal bed. The wastewater treatment and disposal system is to be constructed in phases over several years, depending on the availability of funding.

2.0 DESCRIPTION OF THE DEVELOPMENT

For each heading there is an information request from the Environment Act Proposal Form. These requests are repeated herein in italics followed by the pertaining response.

2.1 Land Title/Location

Certificate of Title showing the owner(s) and legal description of the land upon which the development will be constructed; or, in the case of highways, rail lines, electrical transmission lines, or pipelines, a map or maps at a scale no less than 1:50,000 showing the location of the proposed development:

The Wild Oaks Campground is located on NE 20-8-8 EPM, in the RM of Ste. Anne. The proposed new wastewater treatment and disposal system is to be located adjacent to the existing peat filtration bed within the campground. Wild Oak Campground currently owns the property. A copy of the current Status of Title (No. 2516092/1) for the land of the campground is attached in Appendix A. The location of the campground and proposed wastewater treatment and disposal system layout is included in Plan 3 of Appendix C.

2.2 Owner of Land and Mineral Rights

Owner of land upon which the development is intended to be constructed, and of mineral rights beneath the land, if different from surface owner:

Based upon the certificate of title for the campground property, the surface is owned by Wild Oaks Campground. The Crown Lands & Property Agency (CLPA) was contacted to provide comments regarding the ownership of the mines and minerals on the property. Based on information provided by CLPA, the mines and minerals are owned by the Crown (i.e. Province of Manitoba). Refer to the CLPA email correspondence in Appendix A.

2.3 Existing Land Use

Existing land use on the site and on land adjoining it, as well as changes that will be made in such land use for the purposes of the development:

The location of the existing and proposed wastewater treatment and disposal bed is native forest land to the north of the main washroom and shower facility. The campground is surrounded to the north by an aggregate quarry and native forest, while the surrounding lands to the west, south and east are native forest with trails running through them. The campground is bordered to the east by PR 302 and the property to the northeast, across the highway, is another campground facility.

2.4 Land Use Designation/Zoning Designation

Land use designation for the site and adjoining land as identified in a development plan adopted under The Planning Act or The City of Winnipeg Act, and the zoning designation as identified in a zoning by-law, if applicable:

The campground property is zoned as CR (Commercial Recreational), based on zoning designations in the RM of Ste. Anne. This zoning permits a wide range of commercial recreational resort uses, including transient accommodation.

2.5 Description of Development

Description of proposed development and schedule for stages of the development, including proposed dates for planning, design, construction, commissioning, operation, and decommissioning and/or termination of operation (if known), identifying major components and activities of the development as applicable (e.g. access road, airstrip, processing facility, waste disposal area, etc.).

2.5.1 Project Schedule

The proponent would like to complete the first phase of development in 2017, upon receipt of an Environment Act Licence. Commissioning and operation of the wastewater treatment and disposal system is proposed to begin upon completion of construction and after approval for use is obtained from Manitoba Sustainable Development. The existing peat filtration beds would be decommissioned upon commissioning of the new system.

2.5.2 Basis for Proposed Wastewater Treatment System Location

The proposed location for the wastewater treatment and disposal system was reviewed and chosen based on proximity to adjacent property boundaries, existing piping infrastructure, campground facilities, water wells and campsites. To reduce costs, priority was given to sites adjacent to the existing piping infrastructure, which is adjacent to the peat filtration beds. The effluent disposal bed will be located below the Enviro-Septic pipes. The proposed location for the treatment and disposal system will allow for the following minimum setback distances:

- Residence/campsite – 15 m
- Potable water well – 30 m
- Body of surface water – 115 m.

2.5.3 Population Contributing Effluent

A review of the population (occupancy) was conducted to assess the peak daily volumes of wastewater produced. As stated above, the operating season is estimated to be from May 1 to October 15 of each year. Population data for the campground was obtained from the site owner.

2.5.3.1 Seasonal Campground Population

There are 90 seasonal sites on the campground (44 on the newer east half of the site and 46 on the original western half of the site). There is a maximum of six people permitted per campsite, however during a peak weekend the site owner noted that there are typically three people per campsite, and the average occupancy of the seasonal sites is approximately 85%. Based on the typical capacity of three people/campsite/day, the peak day occupancy of the seasonal sites during the operating season would be 230 people.

2.5.3.2 Transient Campground Population

There are 27 transient overnight sites on the campground. According to information provided by the site owner, there is a maximum of six people permitted per campsite, however during a peak weekend there are typically three people/campsite. On average, the transient campsites will be full on a peak weekend, therefore based on the typical capacity of three people/campsite/day, the peak day occupancy of the overnight sites during the operating season would be 81 people.

2.5.3.3 Non-Operating Season

From discussions with the site owner, the campground is closed during the non-operating season (October 15 to May 1), with no occupancy other than the campground office/owner's personal residence, which has an average occupancy of 4 people.

2.5.3.4 Projected Growth

The campground owner is anticipating an expansion of the campground within 5 years, to include approximately 40 new seasonal sites. The campground expansion is expected to be located to the west of the existing camp sites and pond.

2.5.4 Wastewater Production

The hydraulic loading throughout the campground was reviewed, based on septic hauling records provided by the campground owner. Typical wastewater flows found in the *US EPA Onsite Wastewater Treatment Systems Manual* (2002), and the *Ministry of Environment Design Guidelines for Drinking Water Systems* (2008), for campgrounds and resorts was also reviewed. The hauling records were utilized to estimate the per capita wastewater production for the campground, as the campground does not record daily water consumption from the water wells; therefore accurate records of volumes of effluent currently being produced were not available. With the holding tank pump out records being the most reliable source of wastewater generation from the campground, the typical hydraulic loading values were estimated based on these records.

The current sources of wastewater include:

- the 90 seasonal campsites connected to wastewater collection systems
- the campground washroom buildings (two buildings)
    - the central washroom building (five toilets, one urinal and four showers)
    - the smaller washroom building (one toilet and one shower)
- campground office/owner's residence
- campground Laundromat – one washing machine
- trailer dumping station.

The collection system consists of holding tanks which are pumped out regularly and pressure sewer tanks that pump directly to the wastewater treatment and disposal system. The wastewater treatment and disposal system will be sized large enough to handle the effluent currently being stored in holding tanks, which may be piped to the treatment system in a future phase of development. The wastewater treatment and disposal system will be sized to service the projected population after expansion of the campground, as described above.

2.5.4.1 Septic Hauling Records

Septic hauling records from Rene's Septic Tank Cleaning Service were reviewed to estimate actual wastewater production within the campground. These records were based on the weekly hauling events by the septic hauler throughout the operating season. The hauling records recorded pump outs from holding tanks and septic tanks throughout the campground, along with a description of which tanks were pumped out during each weekly event. The hauling truck used for the campground on a weekly basis had a storage capacity of 9,000 L.

2.5.4.2 Wastewater Production from the Campground Residents

The peak daily wastewater production for the campground residents was determined from a review of the septic hauling records during peak times in the operating season. The volumes of wastewater from holding tank pump outs at the seasonal sites were utilized to determine peak hydraulic loading. The peak hydraulic loading from a seasonal resident was estimated to be 588 L/week or 84 L/day/seasonal campsite. As discussed above, this assumes that the seasonal campsites are at 85% occupancy.

Utilizing this per capita wastewater production rate, the potential maximum daily hydraulic loading from all residents in the campground (assuming 100% occupancy), would currently be 9,828 L/day (84 L/day/campsite x 117 campsites). Utilizing a 100% occupancy rate is preferred as this incorporates a greater safety factor into the future design. This assumes that all campsites would be producing wastewater at the same rate as the peak seasonal sites recorded. This however, does not take into consideration the future planned expansion of the campground.

The estimated loading of 84 L/day/campsite is considered to be significantly lower than the estimates provided by Ontario MOE guidelines (2008) or the US EPA guidelines (2002) which state an average hydraulic loading of 470 L/day/trailer. It is recommended that the campground per capita hydraulic loading estimate of 84 L/day/campsite be increased to 100 L/day/campsite to include a safety factor of approximately 20% for potential increases in per capita water usage. Considering this increase in hydraulic loading from the campsites, the total hydraulic loading would be 11,700 L/day (100 L/day x 117 campsites).

With the addition of 40 new seasonal campsites, and an increased hydraulic loading rate of 100 L/day/campsite, the additional loading from the proposed expansion would be 4,000 L/day (100 L/day x 40 campsites).

The total peak daily hydraulic load to the campground from current and projected residents is estimated to be 15,700 L/day (11,700 L/day + 4,000 L/day). This estimate does not include additional campground facilities such as the office and Laundromat (discussed below).

2.5.4.3 Wastewater Production from the Campground Office/Residence

The residence located at the campground office is estimated to have the same hydraulic loading rate as a typical residence in a Manitoba community, which from past experience, is in range of 275 to 325 L/person/day. A hydraulic loading rate of 300 L/person/day was utilized for the residence. With an average occupancy of four people, the peak daily wastewater production rate would be 1,200 L/day.

2.5.4.4 Wastewater Production from the Trailer Dumping Station

Additional wastewater loading at the site from the trailer dumping station was not included in the total wastewater production, as the trailer dumping station is only utilized by RVs camped in the overnight (transient) sites. This hydraulic loading is accounted for in the estimates included in Section 2.5.4.2 above.

2.5.4.5 Wastewater Production from the Laundromat

The Laundromat currently has one washing machine. A typical hydraulic loading value for a load of laundry is 190 L/load (US EPA, 2002), and from discussions with the owner, there are approximately two loads of laundry done per day during a typical peak day (380 L/day). However, with an expansion in the campground it is estimated that three loads would constitute a peak hydraulic loading rate of 570 L/day, for sizing purposes. This loading would be considered additional to the daily loading from the overnight and seasonal campground residents.

2.5.4.6 Pool and Hot Tub

The pool and hot tub at the campground currently discharge used water via surface discharge seasonally or when required. Therefore, this volume of wastewater was not included in the total hydraulic loading to the wastewater treatment system.

2.5.4.7 Summary of Peak Total Daily Wastewater Production

Maximum peak populations and loadings were considered when sizing the wastewater treatment and disposal system, as the system needs to be large enough to handle peak surges of wastewater on a daily basis throughout the operating season.

Based on the wastewater loading estimates above, which include the expansion to the campground, the total estimated hydraulic loading from all sources in the campground, for a peak day, would be 17,470 L/day.

2.5.4.8 Organic Loading

The organic loading rate calculated for the campground is based on a typical residential daily BOD_5 concentration of 250 mg BOD_5/L, or 0.025 kg BOD_5/campsite/day. The additional organic loading contribution from the Laundromat is based on a typical residential wastewater BOD concentration of 298 mg/L, which would result in a BOD loading of 0.06 kg BOD_5/load. Therefore the total peak daily organic loading rate is currently estimated to be 6.97 kg BOD_5/day for all of the above sources at the campground. After the proposed expansion of the campground the total peak daily organic loading rate is estimated to be 10.03 kg BOD_5/day. Table 1 in Appendix B, shows the current and projected organic loadings from the campground.

2.5.5 Geotechnical Review

2.5.5.1 Background Geotechnical Information

Based on Canada-Manitoba Soil Survey (Report D49) mapping for the area, the campground is located within the Leary Series, which consists of well drained, Orthic Dark Gray soils developed on strongly calcareous, coarse, sandy, gravel skeletal beach and outwash deposits. Surface textures consist of loamy fine sand. The topography is typically very gently sloping and surface runoff is moderate, with rapid to very rapid permeability.

The Leary Series soils at the campground have been classified with an agricultural capability of 5M, with moisture limitations (soils with low water-holding capacity). These soils would be categorized in Nutrient Management Zone N3, which would have no limitations for application of nutrients into the soil from a wastewater treatment and disposal system at this location, in accordance with Nutrient Management Regulation 62/2008.

Driller well log reports for the area indicate that the dominant surficial soils consist of surficial gravelly till, with mixed gravelly clay down to approximately 16 m to 27 m, followed by a layer of clay approximately 4.5 m thick, followed by limestone bedrock. The limestone bedrock was recorded at depths of 41 m to 50 m below the surface. The depth of groundwater was recorded at depths of 4.3 m to 9.1 m below the surface. The driller well log reports for the area of the campground were obtained from the Manitoba Water Stewardship database and are included in Appendix B.

2.5.5.2 Site Investigation and Topography

JRCC conducted a site and topographic investigation of the campground area on October 10, 2013. From the site survey, the topography across the campground is gently undulating with a general slope down towards the north and west. There were two low lying ponded areas within the campground used for swimming, which were former borrow pits.

From the site investigation, it was noted that the property to the north of the campground is an active gravel quarry site. The majority of the forest vegetation on the campground is aspen, with some oak scattered throughout. From observations of an excavated area near the existing peat filtration beds, the soil profile consisted of topsoil and forest litter, followed by course grained sand and stone to approximately 1.0 m below the surface.

2.5.6 Regulatory Requirements and Guidelines

The wastewater treatment system for Wild Oaks Campground would be required to adhere to the Environment Act Licence provided by Manitoba Sustainable Development. The *Onsite Wastewater Management Systems Regulation* (83/2003) and amendments only apply to septic treatment systems with a combined sewage or grey water flow of less than 10,000 L/day, therefore they would not directly apply the Wild Oaks Campground system, due to projected flows of over 10,000 L/day. However, aspects of this regulation and the Manitoba *Nutrient Management Regulation* (62/2008) were considered in the design of the new wastewater treatment and disposal system at the campground. The above regulations specify the following design characteristics:

Location Requirements

A disposal field shall be located in relatively undisturbed soils that have not been used as a roadway or for other purposes that would compact the soil. Once constructed, the field shall be protected from future vehicular traffic or any other loading that would compact the soil. In addition, the following must be considered:

- suitable soil type and permeability
- existing topography and vegetation (i.e. high ground, well drained area, not near tree roots)
- space for expansion
- suitable depth to groundwater.

Groundwater Distance Requirements

The field shall be located on relatively high ground and not in a depressed area that characteristically collects water during rains or spring melt conditions. A one metre vertical separation between the bottom of the septic field and high groundwater or high bedrock is a minimum requirement. From topographic survey measurements taken at the site, the existing

ground at the proposed wastewater treatment and disposal system location was approximately 1.5 m to 2.0 m above the water level in the nearby swimming areas.

Nutrient Management Zones

Part 4 of the Nutrient Management Regulation prohibits the siting of new structures such as wastewater treatment lagoons or septic fields on land in nutrient management zone N4 or in a nutrient buffer zone. Nutrient management zone N4 is defined as land belonging to soil class 6 or 7, or land comprised of unimproved organic soils. Nutrient Buffer Zone consists of land within a groundwater feature or adjacent to a surface water body. The table below describes the designated setback distance requirements from a surface water body as defined in the *Nutrient Management Regulation*:

Water Body	Setback Distance (if area is covered with permanent vegetation)	Setback Distance (if area is not covered with permanent vegetation)
A groundwater feature	15 m	20 m
A lake or reservoir designated as vulnerable	30 m	35 m
A lake or reservoir not designated as vulnerable; or a river, creek or stream designated as vulnerable	15 m	20 m
A river, creek or stream not designated as vulnerable or an order 3, 4, 5 or 6 drain; or a major wetland, bog, marsh, or swamp; or a constructed storm water retention pond	3 m	8 m

Distance Requirements

The disposal field and treatment unit shall be located, subject to the following setback requirements as outlined in the Regulation 83/2003:

Object	Minimum Setback Distance (m)	
	Disposal Field	Septic Tank/Aerated Treatment Unit
Building – no basement or cellar	6	1
Building – with basement or cellar	11	1
Watercourse, excluding a ditch	30	15
Cut or embankment	15	8
Swimming pool	8	3
Water service pipes	8	-

Object	Minimum Setback Distance (m)	
	Disposal Field	Septic Tank/Aerated Treatment Unit
Other wells or springs	15	8
Property boundary	8	3
Cistern	-	3

2.5.7 Proposed Wastewater Treatment and Disposal System

The Wild Oaks Campground is proposing the installation of an Enviro-Septic wastewater treatment and disposal system. The treatment system consists of several lengths of corrugated, perforated plastic piping with layers of polypropylene fibre mat and non-woven geo-textile fabric wrapped around, which act as media for bacterial growth. Effluent slowly seeps out of the perforations in the bottom of the piping and into the surrounding sand.

Venting in the pipes allow for passive air circulation to provide oxygen required in the biological treatment. A sampling piezometer is to be located at the end of a representative pipe length for sampling treated effluent. Each row of piping is to have a piezometer for checking the depth of liquid in the pipes.

The piping is to be surrounded with suitable sand bedding, with a minimum thickness of 0.6 m below the piping and 0.1 m above the piping. The piping area would be covered with topsoil and seeded with grass to allow for evapotranspiration. The treatment system requires no electrical power or mechanical components, however the existing septic tanks will still require pumps to send the effluent into the treatment system.

The existing infrastructure on the campground would continue to be utilized, which includes forcemain and service piping, along with the septic tanks and pumps.

2.5.7.1 Proposed Treatment and Disposal System Phasing

The proposed Enviro-Septic wastewater treatment system is to be installed in three phases, based on the description below:

- Phase 1 - Is to include approximately 146 m of piping installed over a dispersal bed with an area of 88 m^2. This system is to service the existing seasonal sites currently piped to the peat filtration bed A. This phase of the system is expected to receive a hydraulic loading rate of approximately 4,400 L/day and an organic loading rate of 1.1 kg BOD_5/day.
- Phase 2 - Is to include approximately 64 m of piping installed over a dispersal bed with an area of 36 m^2. This system is to service the main washroom and shower facility, currently piped to the peat filtration bed B. This phase of the system is expected to receive a hydraulic loading rate of approximately 1,800 L/day and an organic loading rate of 0.45 kg BOD_5/day.

- Phase 3 - Is to include approximately 165 m of piping installed over a dispersal bed with an area of 98 m^2. This system is to service the smaller washroom and shower facility currently piped to the peat filtration bed C, and the proposed expansion of the campground. This phase of the system is expected to receive a hydraulic loading rate of approximately 4,900 L/day and an organic loading rate of 1.23 kg BOD_5/day.

2.5.8 Effluent Quality

From discussions with Manitoba Sustainable Development, the requirements for wastewater effluent discharge to surface waters, from the Manitoba Water Quality Standards, Objectives and Guidelines would not apply to the Wild Oaks Campground system, as the effluent would be contained to subsurface discharge only. There are no specific provincial guidelines for effluent quality in subsurface discharges. Based on information from the supplier of the Enviro-Septic Treatment system, and surface water discharge guidelines from Manitoba Sustainable Development, the effluent would be expected to reduce BOD and TSS to the following levels:

- BOD – 25 mg/L or less
- TSS – 25 mg/L or less.

Based on supplier information, the Fecal Coliforms would also be treated to 50,000 cfu/100 ml or less.

There is typically a start-up period of several weeks, when the system is first turned on, at which time bacteria are becoming established. This also typically occurs to a lesser extent during the annual spring start up. During this start up period it is expected that the system will not be treating wastewater to optimal levels. Regular testing of the effluent during the operating season would follow the requirements of the Environment Act Licence.

2.5.9 Existing Holding Tank System

The campground currently utilizes holding tanks for 46 seasonal campsites. At the hydraulic loading rate of 100 L/campsite, the peak daily hydraulic loading rate would be 4,600 L/day. This holding tank wastewater will continue to be pumped out regularly and hauled to a licensed wastewater treatment facility.

2.5.10 Existing Wastewater Collection System

The wastewater collection piping throughout the campground varies between 75 mm to 100 mm in diameter and varies from ABS to PVC type. The trailer connection piping at each serviced campsite on the east half of the campground is 75 mm PVC piping, while the main lines through the east half of the campground are 100 mm PVC piping. This mainline piping is a gravity system that discharges into septic tanks at the end of each row of campsites. There is approximately 550 m of mainline piping through this half of the campground. The effluent from these septic tanks is then pumped to a final septic tank from which the effluent is currently pumped into the peat filtration bed A, through a 50 mm polyethylene piping.

The trailer connection piping at each serviced campsite on the west half of the campground is 75 mm ABS piping, while the mainlines are 100 mm ABS piping. This mainline piping discharges into holding tanks adjacent to each bay of campsites, via gravity. The effluent from these holding tanks is then pumped out when necessary by a local septic hauler.

Filtration Beds B and C also receive effluent from septic tanks through 50 mm polyethylene piping. These septic tanks are located adjacent to the washroom and shower buildings and are fed by gravity piping directly from the buildings.

The campground office and residence utilizes a separate holding tank for wastewater disposal, and the effluent from these tanks is pumped out and hauled off site.

The septic and holding tanks vary in size from 1,800 L to 6,300 L, and are constructed of fibreglass or polyethylene.

2.5.11 Access Road

The campground has an all weather access road which runs throughout the campground from the campground entrance. This road would be used to access the proposed wastewater treatment and disposal system, for construction and maintenance purposes. This campground access road consists of compacted granular material and would not require upgrading prior to construction and operation of the system.

2.5.12 Design Considerations

The treatment system piping would be installed over the dispersal bed, which is to consist of a minimum of 0.6 m of sand, and covered with approximately 0.1 m of sand and 0.2 m of topsoil. The dispersal bed sand is to meet the ASTM C33 standards. The topsoil is to be approximately 0.2 m thick and is to be seeded with grass. The topsoil will not be compacted and vehicle access onto the dispersal bed will be prevented with the use of perimeter fencing.

The ventilation system is to consist of one main entry vent pipe with a minimum height of 1.2 m above the surface, and one main exit vent pipe with a minimum height of 3 m higher than the entry level pipe. A sampling collection system and port is to be installed on each separate phase of the treatment system. Plans of the treatment system layout, as provided by the supplier, have been attached in Appendix D.

2.5.13 Summary of Selected Design and Construction Criteria

A list of design parameters pertinent to the Wild Oaks Campground wastewater treatment system is provided below:

- A total of 157 seasonal and transient campsites
- A total of 84 seasonal campsites on the piped collection system
- A central washroom building, a smaller washroom building, an office building, a

Laundromat, and a trailer dumping station

- A total projected organic loading rate of 10.03 kg BOD_5/day
- A total projected hydraulic loading rate of 17,470 L/day
- An Enviro-Septic wastewater treatment system for the piped collection system and
- Three phases of treatment system installation over six years:
  - Phase 1:
    - 146 m of piping over an area of 88 m^2
    - Hydraulic loading rate of 4,400 L/day
    - Organic loading rate of 1.1 kg BOD_5/day
  - Phase 2:
    - 64 m of piping over an area of 36 m^2
    - Hydraulic loading rate of 1,800 L/day
    - Organic loading rate of 0.45 kg BOD_5/day
  - Phase 3:
    - 165 m of piping over an area of 98 m^2
    - Hydraulic loading rate of 4,900 L/day
    - Organic loading rate of 1.23 kg BOD_5/day
- Continued use of wastewater holding tanks for 46 seasonal campsites
- Installation of wastewater treatment system piping over a sand dispersal bed
- Subsurface dispersal of treated effluent into the surrounding land
- Installation of a perimeter fence.

2.5.14 Decommissioning

The existing peat filtration beds are to be decommissioned upon completion and commissioning of the Enviro-Septic treatment and disposal system. The peat medium in these beds would have to be removed and hauled to a licenced waste disposal ground. The containers housing the peat would be disassembled and the area of the filtration bed would be covered with topsoil and re-seeded with grass.

2.5.15 Maintenance

Maintenance of the treatment system is to include:

- Maintaining grass cover on top of the treatment system
- Inspecting site regularly for ponding on the surface and any odours
- Sampling effluent regularly, in accordance with the licence requirements
- Maintaining records of effluent quality testing.

3.0 POTENTIAL ENVIRONMENTAL IMPACTS

The biophysical and socioeconomic environment as related to the development, and potential impacts of the development on the environment.

3.1 Releases to Air, Water, Land

3.1.1 Air

Nuisance odours are not expected from the operation of the proposed wastewater treatment system, as the piping and disposal bed will be buried below grade. The venting in the system provides aeration for aerobic digestion, which also reduces the potential for odours.

There is a potential for greenhouse gas emissions and dust generation during construction works from heavy equipment and transport vehicles.

3.1.2 Water

Surface Water

As the proposed wastewater treatment and disposal system will be buried below grade, it is unlikely that surface waters would be impacted by pollutants from the treatment system. There is a potential to impact surface waters via sedimentation or equipment leaks/spills during construction works. The nearest body of surface water is a low lying pond area used for swimming and is located approximately 115 m from the proposed wastewater treatment and disposal system. Pollutants that have a potential to be released into the surface or ground water during the construction activities, include petroleum hydrocarbons (PHCs) from heavy equipment and sediments from soil erosion.

Groundwater

There is a potential for groundwater impacts if untreated wastewater leaks/seeps through the collection piping, or from the wastewater treatment system, into the groundwater below. Pollutants that may be released into the groundwater during the operation of the treatment system include: coliforms, organic wastes, suspended solids, and nutrients. Pollutants in the wastewater produced by the service population are expected to be residential in nature.

There is also a potential for groundwater impacts from equipment leaks or fuel spills during construction.

3.1.3 Land

The landscape would be altered by the installation of the new wastewater treatment and disposal system. Some clearing of forest land would be required. Fencing would be installed around the perimeter of the proposed system. Any disturbed areas can be impacted through soil erosion if not covered or re-vegetated.

Pollutants that may be released to the land during construction activities are predominantly petroleum hydrocarbons (PHCs) from equipment leaks, or re-fuelling incidences.

3.2 Wildlife

The proposed lagoon expansion site is located in the "Lake Manitoba Plain" Ecoregion of Canada. Characteristic wildlife includes white-tailed deer, coyote, rabbit and ground squirrel. Bird species include waterfowl.

The typical concern on any construction project is that wildlife species would be displaced through the construction works. However from observations made during the site investigation, it is unlikely that the construction works will have any significant impact on wildlife in the area, since the site is surrounded by campground activities. In addition, Manitoba Sustainable Development – Wildlife and Fisheries Branch was contacted regarding the potential for species at risk at the campground, and they indicated that there were no occurrences of species at risk at the site in the provincial database (see July 15, 2016 email correspondence, attached in Appendix B).

3.3 Fisheries

The typical concerns for impacts to fish and fish habitat are from sediments released during construction and from untreated wastewater effluent discharges into a body of surface water utilized by fish species. These impacts could include the reduction of water quality or physical disturbances that would create an unfavourable environment for fish or fish eggs.

However, as the construction works will be conducted a considerable distance from the nearest water body, and discharge of effluent is below ground, no impacts to fish species are expected.

3.4 Forestry

There will be some clearing of trees required for the construction works, however as the area is not utilized for commercial forestry, no potential impacts to forestry are expected.

3.5 Vegetation

Characteristic vegetation in the Lake Manitoba Plain Ecoregion is classified as being transitional between areas of boreal forest and aspen parkland, with a mosaic of trembling aspen/oak groves and rough fescue grasslands. The native landscape is characterized by trembling aspen, bur oak and shrubs. Low lying areas with standing water would contain sedges, willow, black spruce and tamarack. The climate permits the growth of corn, spring wheat, cereal grains, oilseeds, hay and native pastureland.

Some trees are expected to be removed from the site during the construction phase, however the construction area is to be clearly marked to avoid unnecessary tree removal. Manitoba Sustainable Development - Wildlife and Ecosystem Protection Branch were contacted regarding occurrences of rare or endangered species in their database at the campground. The Branch indicated that there were no occurrences of any species at risk at the site in the database (see July 15, 2016 email correspondence, attached in Appendix B).

3.6 Noise Impacts

There is a potential for noise impacts in the immediate area of construction, due to the heavy equipment utilized during construction. Other than maintenance vehicles (for effluent sampling or mowing grass), the operation of the wastewater treatment and disposal system itself will not have a potential for noise impacts.

3.7 Health and Safety

There is a potential for impacts to the health and safety of workers and the public during the construction and installation works, as heavy equipment will be utilized on site.

3.8 Heritage Resources

The land owner was not aware of any historic or heritage resources located at the proposed development site. The Manitoba Historic Resources Branch was contacted regarding the campground area and indicated that they have no concerns for the project at this time, as the potential to impact significant heritage resources is low in the area (see Memorandum attached in Appendix B).

3.9 Socio-Economic Implications

The system installation is not expected to have adverse socio-economic impacts on the campground, as the majority of the works would occur in the fall, outside of the peak campground occupancy. In fact, the new wastewater treatment and disposal system will encourage continued growth in the campground and likely increase the value of the property for resale.

3.10 Aesthetics

The installation of the new wastewater treatment and disposal system is not expected to have adverse impacts on the general aesthetics of the area, as the new system would be buried below grade and would be covered with grass, to provide a natural look. In addition, the existing, above grade peat filtration system would be removed from the site.

4.0 MANAGEMENT PRACTICE

Proposed environmental management practices to be employed to prevent or mitigate adverse implications from the impacts identified above.

4.1 Mitigation of Impacts to Air

To reduce the potential for odour nuisance to nearby campground residents, the treatment and disposal system is to be sized for the projected loadings from the campground. Therefore, nuisance odours as a result of organic or hydraulic over-loading are not expected.

Emissions from construction equipment and transport vehicles is to be controlled through regular vehicle maintenance by the contractor, and is to meet all provincial and local standards. Dust suppression methods (i.e. water spraying) are to be utilized at the development site if dry conditions and wind create excessive dust through construction activities and transport, which becomes a nuisance to nearby campground residents.

4.2 Mitigation of Impacts to Water

Surface Water

Impacts to surface water from the wastewater treatment system are not expected, as the effluent would be treated and discharged below the surface.

To minimize impacts from construction equipment on surface waters, the contractor would be aware of the requirements for handling and storage of fuels and hazardous materials during construction, as per federal and provincial guidelines/regulations. These guidelines/regulations would include:

- Diesel or gasoline should be stored in double walled tanks or have containment dikes around fuel containers for volumes greater than 68.2 L (15 gallons) or in compliance with provincial regulations
- Clean up material should be available at the site, consisting of a minimum of 25 kg of suitable commercial sorbent, 30 m^2 of 6 mil PVC, and an empty fuel barrel for spill collection and disposal
- Fuel storage and hazardous material areas established for project construction should be located a minimum of 100 m from a water body, and comply with provincial regulations
- Waste hazardous materials from construction activities and equipment must be properly collected and disposed of in compliance with provincial regulations
- Hazardous material handling and storage are to follow all provincial and federal regulations including WHMIS and spill containment requirements
- In the event of spills or leaks of fuels and hazardous materials, the contractor or operator should notify the project engineer and provincial authorities.

When or if working near water with construction equipment:

- Construction equipment is to be properly maintained to prevent leaks and spills of fuels, lubricants, hydraulic fluids or coolants
- There can be no re-fueling or servicing of construction equipment within 100 m of a water body.

Groundwater

Seepage of untreated effluent from the wastewater treatment and disposal system is unlikely as the effluent is to be tested regularly and the system is expected to treat wastewater effectively prior to releasing into the ground. Any leaks from the forcemain or service piping would be detected by effluent pooling on the ground surface, at which point the pipe would be exposed and repaired.

Mitigation of potential impacts to groundwater during the installation activities from fuel handling, equipment leaks or fuel spills, would follow the same procedures as described above for surface waters.

4.3 Mitigation of Impacts to Land

To minimize the potential for the release of PHCs into the soil, the mitigation measures described in Section 4.2 above outlining fuel-handling procedures should be followed.

To minimize the potential for soil erosion after installation works are complete, any disturbed ground surface would be seeded with grass.

4.4 Mitigation of Noise Impacts

To minimize the potential for noise impacts, construction equipment and transport vehicles should have mufflers working properly, and construction activities should be limited to daylight hours only. In addition, the area to be utilized for construction will be surrounded by forest, which will minimize noise to campground residents.

4.5 Mitigation of Impacts to Health and Safety

To minimize impacts to health and safety of workers and the public, the construction contractor is to have a safety program in place, in accordance with all federal and provincial health and safety regulations. During construction, site access is to be limited to the construction crew only. Personal protective equipment is to be worn in accordance with the contractor's safety program. The site excavation is to be fenced off when unsupervised.

4.6 Mitigation of Impacts to Heritage Resources

If any significant historic or heritage resources are discovered in the course of excavation or construction, the works are to temporarily cease and an investigation of the site is to be conducted by the land owner, Manitoba Historic Resources Branch and any other provincial and federal authority, as may be required.

5.0 RESIDUAL AND CUMULATIVE EFFECTS

Residual environmental effects remaining after the application of mitigation measures, to the extent possible expressed in quantitative terms relative to baseline conditions

No negative residual effects are anticipated through the installation and operation of the Enviro-Septic wastewater treatment and disposal system, due to the mitigation measures described above. Positive residual effects are expected from the properly sized wastewater treatment system that will allow for expansion of the campground in the future.

6.0 MONITORING AND FOLLOW-UP

Proposed follow-up activities that will be required at any stage of development (eg. Monitoring, inspection, surveillance, audit, etc.)

Monitoring of the collection and treatment system is to be conducted by campground staff, who are to ensure the system is operated under the requirements of the Environment Act licence. The monitoring is to include:

- Maintaining grass cover on top of the treatment system
- Inspecting site regularly for ponding on the surface and any odours
- Sampling effluent regularly, in accordance with the licence requirements
- Maintaining records of effluent quality testing
- Ensuring the septic tanks and holding tanks are pumped out regularly.

If there are any concerns with the operation of the treatment system, the proponent is to contact the system supplier or local environment officer to discuss options.

7.0 FUNDING AND APPROVALS

Name and address of any Government Agency or program (federal, provincial or otherwise) from which a grant or loan of capital funds have been requested (where applicable). Other federal, provincial or municipal approvals, licences, permits, authorizations, etc. known to be required for the proposed development, and the status of the project's application or approval.

The project is being funded privately by the campground owner. No additional approvals, licences or permits are required for the wastewater treatment and disposal system installation/construction and operation.

8.0 PUBLIC CONSULTATION

Results of any public consultations undertaken or to be undertaken in conjunction with project planning.

Public consultation by the campground owner has not been conducted to date for the proposed system. The campground residents are to be made aware of the project works prior to construction. Public comments will be received by Manitoba Sustainable Development through the public registry during the Environmental Act Proposal review period.

9.0 CONCLUSION

Based on the design of the project and the implementation of the mitigation measures, identified in Section 4.0 above, no significant negative environmental impacts are anticipated.

The proponent would like to complete the requirements of the Environment Act Proposal as soon as possible so that the system installation/construction can begin in a timely fashion.

JR Cousin Consultants Ltd. requests that a draft copy of the Environment Act Licence be forwarded for review prior to the issue of the final licence.

APPENDIX

Appendix A

Status of Title

Crown Lands & Property Agency - Lands Branch, October 18, 2016 Email Correspondence

Appendix B

Table 1: Peak Capacity – Wild Oaks Campground - Population, Hydraulic and Organic Loading Projections

Manitoba Sustainable Development - Wildlife and Fisheries Branch, July 15, 2016 Email Correspondence

Manitoba Sport, Culture and Heritage – Historic Resources Branch, August 2, 2016 Memorandum

Driller Well Log Reports

Appendix C

Title Page

Plan 1: Campground Location Plan

Plan 2: Existing Campground Layout Plan

Plan 3: Proposed Campground Layout Plan

Plan 4: Fence Details

Wastewater Treatment System Conceptual Design (from Supplier)

Appendix A

Status of Title

Crown Lands & Property Agency - Lands Branch, October 18, 2016 Email Correspondence

Status of Title

STATUS OF TITLE

Title Number **2516092/1**
Title Status **Accepted**
Client File robyn

The Property Registry
A Service Provider for the Province of Manitoba

1. REGISTERED OWNERS, TENANCY AND LAND DESCRIPTION

RAYMOND PHILIPPE TURENNE AND GISELE LAURETTE MARIE TURENNE
BOTH OF RICHER, MANITOBA

ARE REGISTERED OWNERS AS JOINT TENANTS SUBJECT TO SUCH ENTRIES RECORDED HEREON IN THE FOLLOWING DESCRIBED LAND:

LOT 2 PLAN 51104 WLTO
SUBJECT TO THE SPECIAL RESERVATIONS CONTAINED IN THE GRANT FROM THE CROWN
IN NE 1/4 20-8-8 EPM

The land in this title is, unless the contrary is expressly declared, deemed to be subject to the reservations and restrictions set out in section 58 of *The Real Property Act.*

2. ACTIVE INSTRUMENTS

Instrument Type:	**Caveat**
Registration Number:	**255329/1**
Instrument Status:	**Accepted**
Registration Date:	1978-09-06
From/By:	MANITOBA TELEPHONE SYSTEM
To:	
Amount:	
Notes:	AFF; ELY 65 FT PERP
Description:	No description

Instrument Type: **Mortgage**
Registration Number: **3702668/1**
Instrument Status: **Accepted**

Registration Date: 2008-11-12
From/By: RAYMOND PHILIPPE TURENNE AND GISELE LAURETTE M. TURENNE
To: COMMUNITY CREDIT UNION LIMITED

Amount: $300,000.00
Notes: No notes
Description: No description

INSTRUMENTS THAT AFFECT THIS INSTRUMENT

Registration Number	Instrument Type	Status
4407134/1	Amending Agreement	Accepted

Instrument Type: **Caveat**
Registration Number: **4092013/1**
Instrument Status: **Accepted**

Registration Date: 2011-07-05
From/By: THE MANITOBA HYDRO-ELECTRIC BOARD
To:

Amount:
Notes: AFF WTN LTS ROW PL 51582
Description: EASEMENT

Instrument Type: **Amending Agreement**
Registration Number: **4407134/1**
Instrument Status: **Accepted**

Registration Date: 2013-09-23
From/By: ACCESS CREDIT UNION LIMITED
To: RAYMOND PHILIPPE TURENNE AND GISELE LAURETTE M. TURENNE

Amount:
Notes: No notes
Description: No description

---

3. ADDRESSES FOR SERVICE

RAYMOND PHILIPPE TURENNE
BOX 17, R.R. #1
RICHER MB
R0E 1S0

GISELE LAURETTE MARIE TURENNE
BOX 17, R.R. #1
RICHER MB
R0E 1S0

4. TITLE NOTES

No title notes

5. LAND TITLES DISTRICT

Winnipeg

6. DUPLICATE TITLE INFORMATION

Duplicate not produced

7. FROM TITLE NUMBERS

2118522/1 Partial

8. REAL PROPERTY APPLICATION / CROWN GRANT NUMBERS

No real property application or grant information

9. ORIGINATING INSTRUMENTS

Instrument Type:	**Request To Issue Title**
Registration Number:	**4048575/1**
Registration Date:	2011-03-16
From/By:	RAYMOND PHILIPPE TURENNE AND GISELE L. MARIE TURENNE
To:	
Amount:	

10. LAND INDEX

Lot 2 Plan 51104
EXC RES

CERTIFIED TRUE EXTRACT PRODUCED FROM THE LAND TITLES DATA STORAGE SYSTEM OF TITLE NUMBER 2516092/1

Crown Lands & Property Agency - Lands Branch, October 18, 2016 Email Correspondence

Oswald Wohlgemut

From: McCartney, Erin (CLPA) [Erin.McCartney@gov.mb.ca]
Sent: Tuesday, October 18, 2016 12:40 PM
To: 'Oswald Wohlgemut'
Subject: RE: Wild Oaks Campground - Mines and Mineral Rights

Good Afternoon, please be advised that according to our records the land was granted in 1917 reserving the Mines & Minerals to the Crown.

Should your require anything further, please feel free to contact me.

Erin

Erin McCartney
Acting Supervisor Crown Lands Registry

Crown Lands and Property Agency
308 - 25 Tupper Street North
Portage la Prairie MB R1N 3K1
P 204-239-3814 F 204-239-3560
Toll Free 1-866-210-9589
www.clp.gov.mb.ca

From: Oswald Wohlgemut [mailto:owohlgemut@jrcc.ca]
Sent: October-17-16 4:47 PM
To: McCartney, Erin (CLPA)
Subject: Wild Oaks Campground - Mines and Mineral Rights

Hello Erin,

JR Cousin Consultants Ltd. is submitting an Environmental Act Proposal on behalf of the Wild Oaks Campground for the installation of a wastewater treatment system, at NE 20-8-8 EPM. We have attached a copy of the status of title provided by the property registry for the parcel of land proposed in the development. Could you confirm the ownership of the mineral rights?

Let me know if you have any questions.

Regards,

Oswald Wohlgemut, M.Sc.
Environmental Scientist

J.R. Cousin Consultants Ltd.
Phone: (204) 489-0474
Fax: (204) 489-0487
www.jrcc.ca

Appendix B

Table 1: Peak Capacity – Wild Oaks Campground - Population, Hydraulic and Organic Loading Projections

Manitoba Sustainable Development - Wildlife and Fisheries Branch, July 15, 2016 Email Correspondence

Manitoba Sport, Culture and Heritage – Historic Resources Branch, August 2, 2016 Memorandum

Driller Well Log Reports

Table 1: Peak Capacity – Wild Oaks Campground - Population, Hydraulic and Organic Loading Projections

F:\GOD\678 Wild Oaks Campground\678.02 Wastewater Treatment System EAP\02 Reports\Appendix\Table 1.xlsx

TABLE 1
PEAK CAPACITY
WILD OAKS CAMPGROUND
POPULATION, HYDRAULIC, AND ORGANIC LOADING PROJECTIONS

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12	Column 13	Column 14	Column 15	Column 16	Column 17	Column 18
TIMELINE		POPULATION						ORGANIC LOADING			HYDRAULIC LOADING						
CALENDAR YEAR	DESIGN YEAR	Campground Existing Seasonal Sites # of Sites	Campground Office and Residence # of People	Campground Existing Seasonal Sites # of Sites	Campground Existing Overnight Sites # of Sites	Future Campground Development Proposed Seasonal Sites # of Sites	Campground Laundromat Loads/day # of Loads/day	DAILY PER CAPITA BOD Campground, Residence, Office (kg)	DAILY BOD LOADING Laundromat (kg/load)	TOTAL DAILY BOD PRODUCTION All Sources (kg)	WASTEWATER PRODUCTION Campground - Seasional and Overnight Sites L/site/day	WASTEWATER PRODUCTION Campground, Office, Residence L/person/day	WASTEWATER PRODUCTION Laundromat L/load	TOTAL DAILY WASTEWATER VOLUME Phase 1 L/day	TOTAL DAILY WASTEWATER VOLUME Phase 2 L/day	TOTAL DAILY WASTEWATER VOLUME Phase 3 L/day	TOTAL DAILY WASTEWATER VOLUME All Sources (cu. m.)
2016	0	44	4	46	27	0	2	0.025	0.06	6.97	100	300	190	4,400	1,800	900	13.28
2022	6	44	4	46	27	40	3	0.025	0.06	10.03	100	300	190	4,400	1,800	4,900	17.47

Manitoba Sustainable Development - Wildlife and Fisheries Branch, July 15, 2016 Email Correspondence

Oswald Wohlgemut

From: Friesen, Chris (SD) [Chris.Friesen@gov.mb.ca]
Sent: Friday, July 15, 2016 11:00 AM
To: 'Oswald Wohlgemut'
Subject: RE: Wild Oaks Campground - Species at Risk

Oswald

Thank you for your information request. I completed a search of the Manitoba Conservation Data Centre's rare species database and found no occurrences at this time for your area of interest.

The information provided in this letter is based on existing data known to the Manitoba Conservation Data Centre at the time of the request. These data are dependent on the research and observations of CDC staff and others who have shared their data, and reflect our current state of knowledge. **An absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present**; in many areas, comprehensive surveys have never been completed. Therefore, this information should be regarded neither as a final statement on the occurrence of any species of concern, nor as a substitute for on-site surveys for species as part of environmental assessments.

Because the Manitoba CDC's Biotics database is continually updated and because information requests are evaluated by type of action, any given response is only appropriate for its respective request. Please contact the Manitoba CDC for an update on this natural heritage information if more than six months pass before it is utilized.

Third party requests for products wholly or partially derived from Biotics must be approved by the Manitoba CDC before information is released. Once approved, the primary user will identify the Manitoba CDC as data contributors on any map or publication using Biotics data, as follows as: Data developed by the Manitoba Conservation Data Centre; Wildlife & Fisheries Branch, Manitoba Conservation and Water Stewardship.

This letter is for information purposes only - it does not constitute consent or approval of the proposed project or activity, nor does it negate the need for any permits or approvals required by the Province of Manitoba.

We would be interested in receiving a copy of the results of any field surveys that you may undertake, to update our database with the most current knowledge of the area.

If you have any questions or require further information please contact me directly at (204) 945-7747.

Chris Friesen
Coordinator
Manitoba Conservation Data Centre
204-945-7747
chris.friesen@gov.mb.ca
http://www.manitoba.ca/conservation/cdc/

From: Oswald Wohlgemut [mailto:owohlgemut@jrcc.ca]
Sent: July-12-16 4:14 PM
To: Friesen, Chris (SD)
Subject: Wild Oaks Campground - Species at Risk

Hello Chris,

J.R. Cousin Consultants is conducting an Environment Act Proposal on behalf of the Wild Oaks Campground for the installation of a new wastewater treatment system and dispersal bed. The construction works will occur on NE 20-8-8 EPM, (see attached plan) in the RM of St. Anne. The site is forested land, therefore tree removal will be required for the construction works. The site is also surrounded by forest and quarry operations. Works will include clearing of trees in the area of the treatment system, excavation of treatment area in three phases of development, and fence installation.

Please provide information on any at risk wildlife and plant species that are known to exist in the location outlined above, as well as any registered habitat areas, or known migrating bird species as we would like to include that information in the EAP.

Please let us know if you have any questions.

Regards,

Oswald Wohlgemut, M.Sc.
Environmental Scientist

J.R. Cousin Consultants Ltd.
Phone: (204) 489-0474
Fax: (204) 489-0487
www.jrcc.ca

Manitoba Sport, Culture and Heritage – Historic Resources Branch, August 2, 2016 Memorandum

Manitoba
Sport, Culture and Heritage

Memorandum

DATE: 2016-08-02

TO: **Oswalt WOHLGEMUT**
Environmental Scientist
JR. Cousin Consultants Ltd.
91A Scurfield Boulevard
Winnipeg, MB, R3Y 1G4

FROM: **Suyoko TSUKAMOTO**
Impact Assessment Archaeologist
Historic Resources Branch
Main Floor – 213 Notre Dame Avenue
Winnipeg, Manitoba
R3B 1N3

PHONE NO: (204) 945-3893
FAX: (204) 948-2384
E-MAIL: Suyoko.Tsukamoto@gov.mb.ca

SUBJECT: **Wild Oaks Camp Ground – Heritage Resources**
HRB File #: AAS-16-10759

No concerns at this time.

Further to your general inquiry regarding the above noted wastewater treatment system at Wild Oaks Campground, the Historic Resources Branch has examined the location in conjunction with Branch records for areas of potential concern. The potential to impact significant heritage resources has been deemed low in this area, therefore, the Historic Resources Branch has no immediate concerns with the project.

If at any time, however, heritage resources are encountered in association with these lands during testing and development, the Historic Resources Branch must be immediately contacted if an archaeological site is encountered during development. The Historic Resources Branch may require that an acceptable heritage resource management strategy be implemented by the developer to mitigate the effects of development on the heritage resources.

Although heritage resources have been deemed low in the immediate vicinity of the development, EAPs pertaining to this proposal must have a provision concerning the possibility of encountering heritage sites, the plan should contain an outline of the appropriate measures to mitigate those impacts upon such an encounter.

If you have any questions or comments, please feel free to contact me as above.

Suyoko Tsukamoto

Driller Well Log Reports

LOCATION: NE20-8-8E

Well_PID: 117591
Owner: 3229468 MANITOBA LTD.
Driller: Perimeter Drilling Ltd.
Well Name:
Well Use: PRODUCTION
Water Use: Domestic
UTMX: 683032.739
UTMY: 5505456.37
Accuracy XY:
UTMZ:
Accuracy Z:
Date Completed: 1999 Mar 15

WELL LOG

From (ft.)	To (ft.)	Log
0	15.0	GRAVELLY TILL
15.0	50.0	PEAS SHUT GRAVEL
50.0	55.0	BOULDER
55.0	75.0	GREY TILL
75.0	90.0	BLUE CLAY
90.0	105.0	BLUE CLAY AND STONE
105.0	115.0	LAYER OF LIMESTONE AND TILL
115.0	130.0	TILL AND LIMESTONE
130.0	170.0	BROKEN LIMESTONE
170.0	198.0	GRAVEL
198.0	202.0	LIMESTONE
202.0	204.0	GRAVEL

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	199.0	CASING	5.00			INSERT	PVC
199.0	202.0	OPEN HOLE	4.80				

Top of Casing: 2.0 ft. above ground

PUMPING TEST

Date: 1999 Mar 15
Rate: 90.000 Imp. gallons/minute
Water level before pumping: 30.0 ft. below ground
Pumping level at end of test: 30.0 ft. below ground
Test duration: ??? hours, ?? minutes
Water temperature: ?? degrees F

LOCATION: NE20-8-8E

Well_PID: 117602
Owner: 3229468 MANITOBA LTD.
Driller: Perimeter Drilling Ltd.
Well Name:
Well Use: PRODUCTION
Water Use:
UTMX: 683032.739
UTMY: 5505456.37
Accuracy XY:
UTMZ:
Accuracy Z:
Date Completed: 1999 Mar 15

WELL LOG

From (ft.)	To (ft.)	Log
0	4.0	BACK FILL
4.0	8.0	BOULDER AND CLAY GRAVEL
8.0	15.0	CLAY
15.0	90.0	TILL AND CLAY
90.0	95.0	BLUE CLAY
95.0	100.0	GRAVEL
100.0	118.0	BOULDER AND TILL
118.0	120.0	TILL
120.0	135.0	GRAVEL TILL
135.0	155.0	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	145.0	CASING	5.00			INSERT	PVC

Top of Casing: 2.0 ft. above ground

PUMPING TEST

Date: 1999 Mar 15
Pumping Rate: 70.0 Imp. gallons/minute
Water level before pumping: 25.0 ft. below ground
Pumping level at end of test: 25.0 ft. below ground
Test duration: ??? hours, ?? minutes
Water temperature: ?? degrees F

LOCATION: NE20-8-8E

Well_PID: 30927
Owner: C D SMITH
Driller: mondor drillers

Well Name:
Well Use: PRODUCTION
Water Use: Domestic,Livestock
UTMX: 683032.739
UTMY: 5505456.37
Accuracy XY: UNKNOWN
UTMZ:
Accuracy Z:
Date Completed: 1977 Feb 10

WELL LOG

From (ft.)	To (ft.)	Log
0	6.0	FINE BROWN SAND
6.0	23.0	MIX SAND
23.0	54.0	BLUE SAND
54.0	85.9	BLUE CLAY
85.9	111.9	HARDPAN
111.9	139.9	SILT
139.9	147.9	GRAVEL
147.9	149.9	GRAVEL
149.9	168.9	HARD GREY LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	149.9	casing	4.00			T & C	GALVANIZED
149.9	168.9	open hole					

Top of Casing: ft. below ground

PUMPING TEST

Date:
Pumping Rate: 9.0 Imp. gallons/minute
Water level before pumping: 30.0 ft. below ground
Pumping level at end of test: ?? ft. below ground
Test duration: hours, minutes
Water temperature: ?? degrees F

LOCATION: NE20-8-8E

Well_PID: 81156
Owner: R TURENNE
Driller: Echo Drilling Ltd.
Well Name:
Well Use: PRODUCTION
Water Use: Domestic

UTMX: 683032.739
UTMY: 5505456.37
Accuracy XY: UNKNOWN
UTMZ:
Accuracy Z: UNKNOWN
Date Completed: 1995 Jul 18

WELL LOG

From (ft.)	To (ft.)	Log
0	16.0	GRAVEL
16.0	50.0	SANDY TILL
50.0	163.9	GREY TILL
163.9	177.9	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	166.9	casing	5.00			INSERT	PVC
166.9	177.9	open hole	4.00				
0	166.9	casing grout					casing

Top of Casing: 2.0 ft. above ground

PUMPING TEST

Date:
Pumping Rate: 35.0 Imp. gallons/minute
Water level before pumping: 14.0 ft. below ground
Pumping level at end of test: 20.0 ft. below ground
Test duration: hours, minutes
Water temperature: ?? degrees F

Appendix C

Title Page

Plan 1: Campground Location Plan

Plan 2: Existing Campground Layout Plan

Plan 3: Location of Campground Phases of Upgrade

Plan 4: Fence Details

Wastewater Treatment System Conceptual Design (from Supplier)

WILD OAKS CAMPGROUND

WASTEWATER TREATMENT

SYSTEM - EAP

PRELIMINARY
NOT FOR CONSTRUCTION

REDUCED DRAWING SET
DO NOT SCALE

PLAN INDEX

JR Cousin Consultants Ltd.
91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca
ENGINEERING EXCELLENCE SINCE 1981

SCALE BAR
(IN METRES)

160 0 80 160 320 480 640 800

1:8000

No.	REVISIONS	DATE	INITIALS
			B.M. EL.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL

PRELIMINARY

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p. (204) 489-0474
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www.jrcc.ca
ENGINEERING CONSULTANTS
ENGINEERING EXCELLENCE SINCE 1981

CODE:	W-678.02
DESIGNED BY:	OW
DRAWN BY:	RH
REVIEWED BY:	JC

PROJECT: WILD OAKS CAMPGROUND
WASTEWATER TREATMENT SYSTEM – EAP

TITLE: CAMPGROUND LOCATION PLAN

SCALE:	DATE:	PLAN:	SHEET:
1:8000	16/11/10	1	1 of 4

Dec 23, 2016 - 8:52am P:\400\678 Wild Oaks Campground\678.02 Wastewater Treatment System EAP\04 Drawings\Dwg\WOP\Plan 1.dwg

N

LEGEND:

- - - - - - - -	WASTERWATER PIPING
TANK	TANK
●	WELL

SCALE BAR
(IN METRES)
15 0 7.5 15 30 45 60 75
1:750

No.	REVISIONS	DATE	INITIALS

B.M. EL.

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www.jrcc.ca
ENGINEERING EXCELLENCE SINCE 1981

CODE: W-678.02
DESIGNED BY: OW
DRAWN BY: RH
REVIEWED BY: JC

PROJECT:
WILD OAKS CAMPGROUND
WASTEWATER TREATMENT SYSTEM – EAP

TITLE:
EXISTING CAMPGROUND LAYOUT PLAN

SCALE: 1:750
DATE: 16/11/10
PLAN: 2
SHEET: 2 of 4

N

LEGEND:

WASTERWATER PIPING

TANK

TANK

WELL

SCALE BAR
(IN METRES)

15 0 7.5 15 30 45 60 75

1:750

No.	REVISIONS	DATE	INITIALS

B.M. EL.

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ENGINEERING EXCELLENCE SINCE 1981

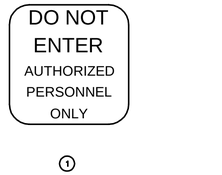
CODE:	W-678.02
DESIGNED BY:	OW
DRAWN BY:	RH
REVIEWED BY:	JC

PROJECT: WILD OAKS CAMPGROUND
WASTEWATER TREATMENT SYSTEM – EAP

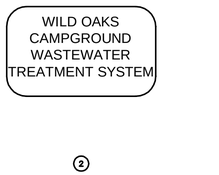
TITLE: LOCATION OF CAMPGROUND PHASES OF UPGRADE

SCALE:	DATE:	PLAN:	SHEET:
1:750	16/11/10	3	3 of 4

Dec 23, 2016 - 8:53am F:\WORK\678 Wild Oaks Campground\678.02 Wastewater Treatment System EAP\04 Drawings\Dwg\EAP-Plan 3.dwg



1 W1 D2 SIGN



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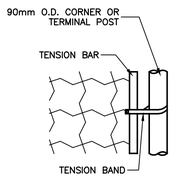

3 D2 TENSION BAR
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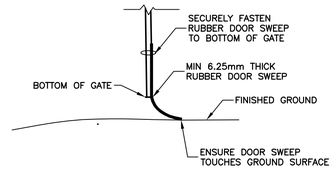

4 D2 DOOR SWEEP DETAIL
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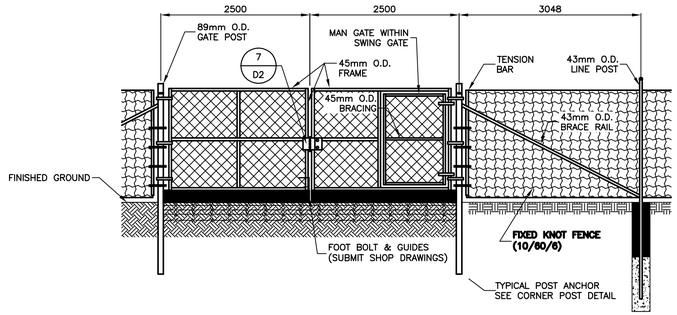

5 W1 D2 GATE AND FENCE DETAIL
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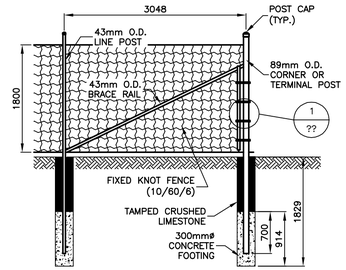

6 W1 D2 CORNER POST
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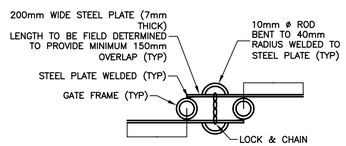

7 D2 LOCK DETAIL
Scale = 1:10

No.	REVISIONS	DATE	INITIALS

B.M. EL.

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www.jrcc.ca
ENGINEERING CONSULTANTS
ENGINEERING EXCELLENCE SINCE 1981

CODE: W-678.02
DESIGNED BY: OW
DRAWN BY: RH
REVIEWED BY: JC

PROJECT: WILD OAKS CAMPGROUND WASTEWATER TREATMENT SYSTEM – EAP
TITLE: FENCE AND SIGN DETAILS

SCALE:	DATE:	PLAN:	SHEET:
AS NOTED	16/11/10	4	4 of 4

Wastewater Treatment System Conceptual Design (from Supplier)

ENVIRO-SEPTIC : ADVANCED SECONDARY TREATMENT WITH LEACHING FIELD :

Seepage Bed
Campground - Phase 1
Flow : 4400 L/d

DISCLAIMER:

Warning regarding the use of the basic templates for Enviro-Septic Systems
The basic templates for Enviro-Septic systems are intended for septic system designers.

IMPORTANT: Please note that the septic system designer is responsible for ensuring that his drawings and recommendations are fully compliant with the regulations in force. The Enviro-Septic systems templates must at all times be used in accordance with this regulation. They must also be adapted by the designer according to site constraints.

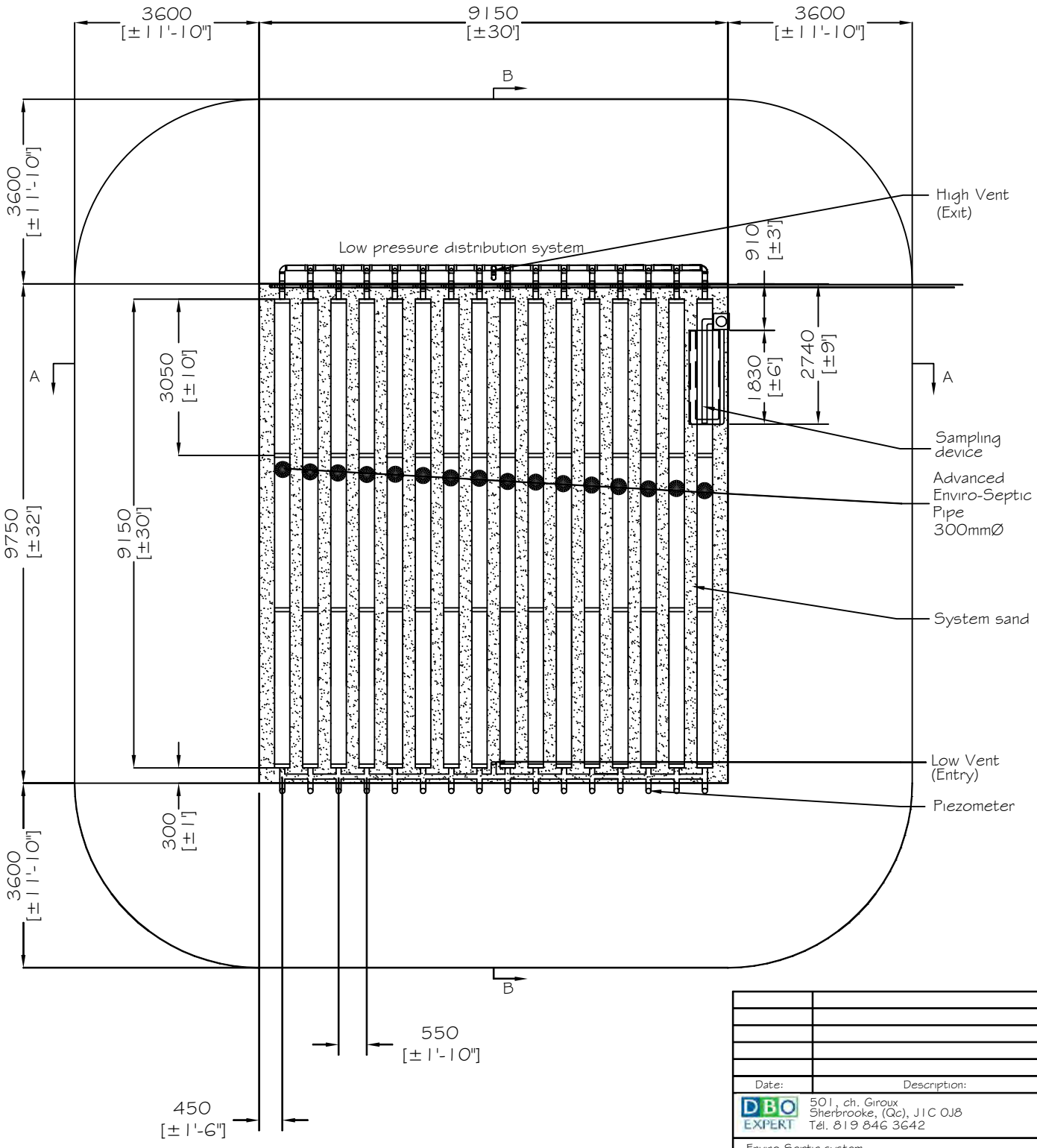
DBO Expert inc. is not responsible for the design and installation of Enviro-Septic Systems. The Enviro-Septic systems templates are simply a tool to facilitate the work of the septic system designer. These templates cannot be used directly for construction.
When using the Enviro-Septic System templates, you acknowledge having read and understood the terms of this disclaimer and you agree to comply fully with all regulations in force for septic systems.

EXCLUSION DE RESPONSABILITÉ
Mise en garde quant à l'utilisation des Modèles de base pour Système Enviro-Septic
Les modèles de base pour système Enviro-Septic sont destinés au concepteur d'installation septique.

IMPORTANT : Prenez note que le concepteur d'installation septique est responsable de s'assurer que ses plans et devis sont en tout point conformes à la réglementation en vigueur. Les modèles de base pour système Enviro-Septic doivent, en tout temps, être utilisés en conformité avec cette réglementation. Ils doivent aussi être adaptés en fonction des conditions du site à desservir.

DBO Expert inc. n'est pas responsable de la conception et de l'installation de système Enviro-Septic. Les modèles de base pour système Enviro-Septic constituent simplement un outil destiné à faciliter le travail du concepteur d'installation septique. Ces plans ne peuvent être utilisés directement pour la construction.

En utilisant les modèles de base pour système Enviro-Septic, vous reconnaissez avoir pris connaissance et compris les termes de la présente mise en garde et vous engagez à respecter en tout point l'ensemble de la réglementation en vigueur en matière d'installation septique.

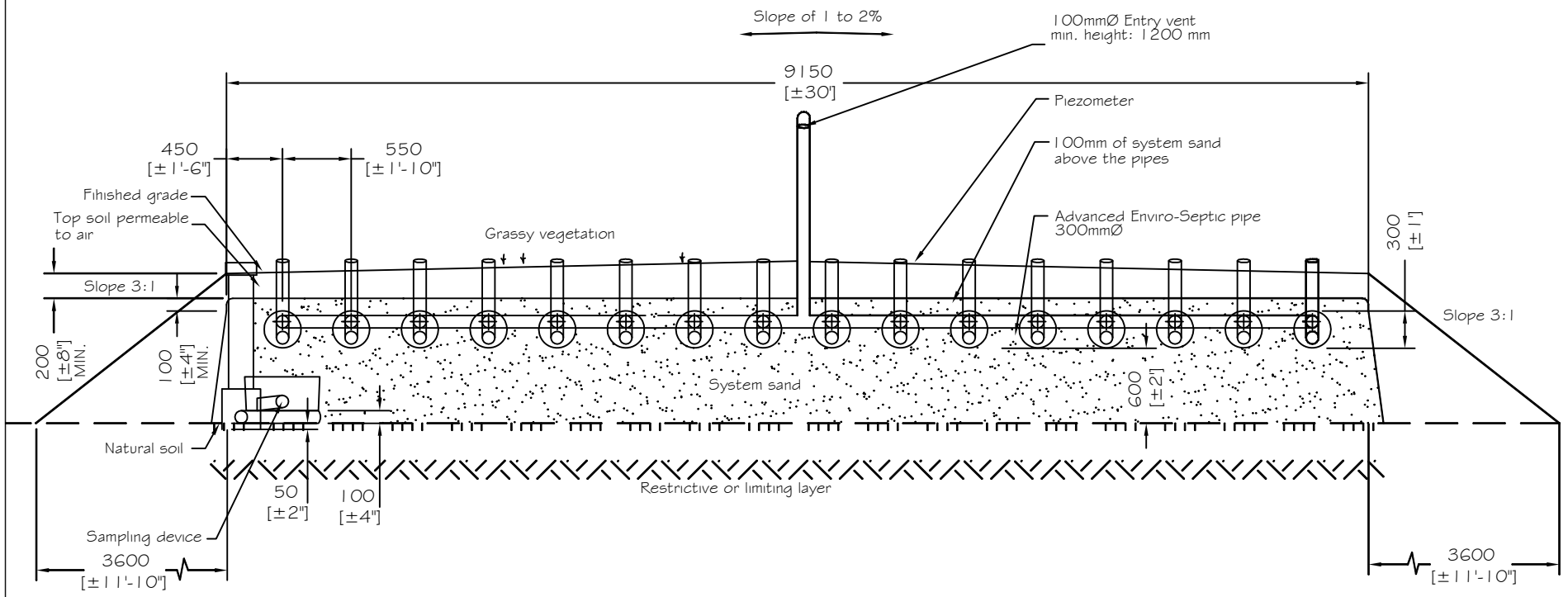


Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4400 L/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 1	
Units: mm	Scale : 1:110	Sheet : 2/4



Cross-section view A-A

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

A) The entry vent must be at least 3m lower than the exit vent.

B) On systems that use a pumping station or low-pressure distribution, special considerations need to be taken to ensure that the air flow efficiently through the system:

- Install a shunt pipe between the treatment system and the pumping station or
- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

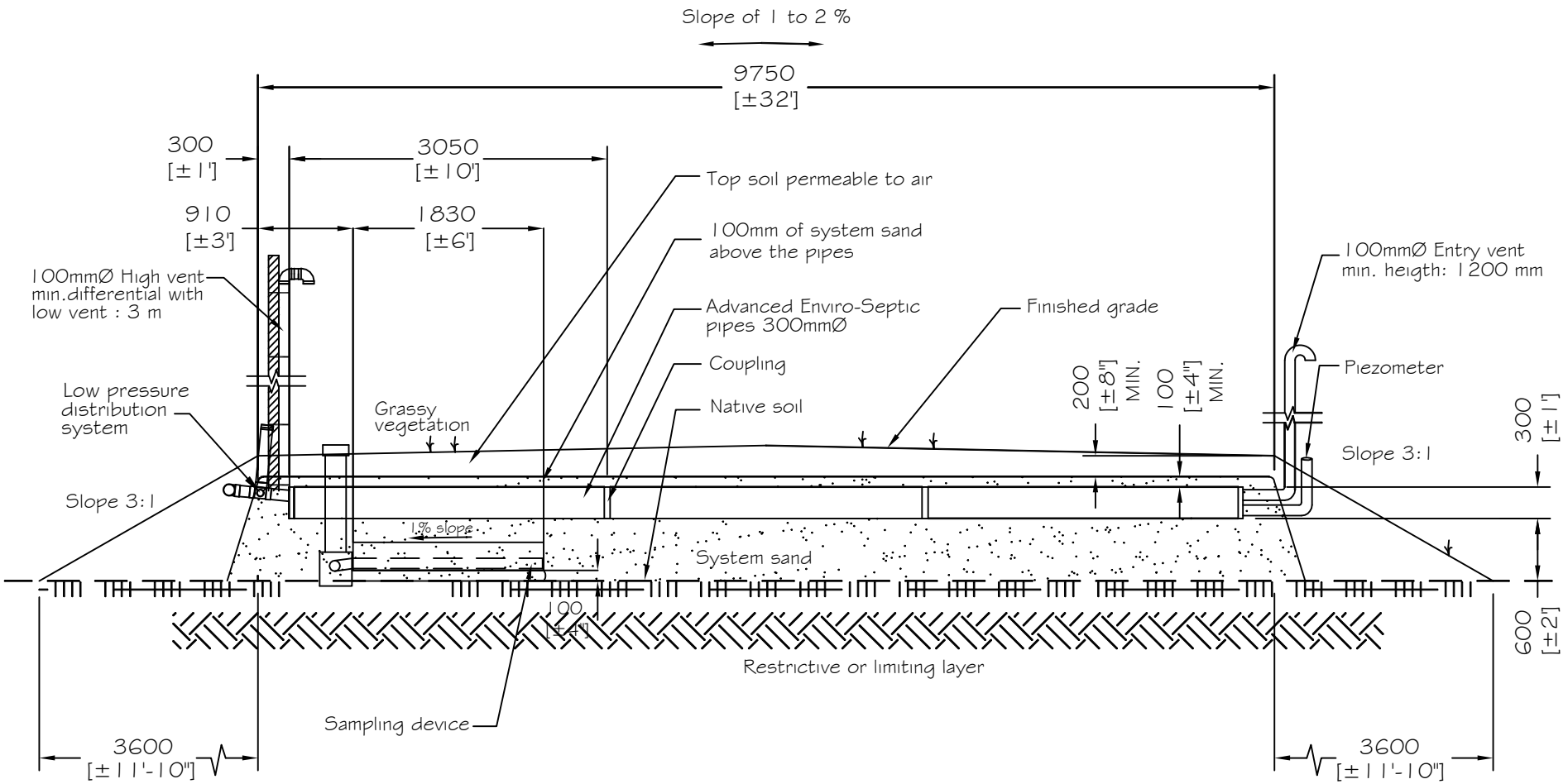
IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4400 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 1	
Units: mm	Scale : 1:50	Sheet : 3/4



Side view B-B

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

A) The entry vent must be at least 3m lower than the exit vent.

B) On systems that use a pumping station or low-pressure distribution, special considerations need to be taken to ensure that the air flow efficiently through the system:
- Install a shunt pipe between the treatment system and the pumping station or
- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4400 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 1

Units: mm	Scale : 1:60	Sheet : 4/4

ENVIRO-SEPTIC : ADVANCED SECONDARY TREATMENT WITH LEACHING FIELD :

Seepage Bed
Campground - Phase 2
Flow : 1800 L/d

DISCLAIMER:

Warning regarding the use of the basic templates for Enviro-Septic Systems
The basic templates for Enviro-Septic systems are intended for septic system designers. We remind you that, under the Regulation on wastewater disposal and treatment systems for isolated dwellings (RRQ 1981, c. Q-2, r.22) and the Law on Environmental Quality (RSQ c . Q-2), a septic system must be designed by a person who is a member of a competent professional association for this type of work.

IMPORTANT: Please note that the septic system designer is responsible for ensuring that his drawings and recommendations are fully compliant with the regulations in force. The Enviro-Septic systems templates must at all times be used in accordance with this regulation. They must also be adapted by the designer according to site constraints.

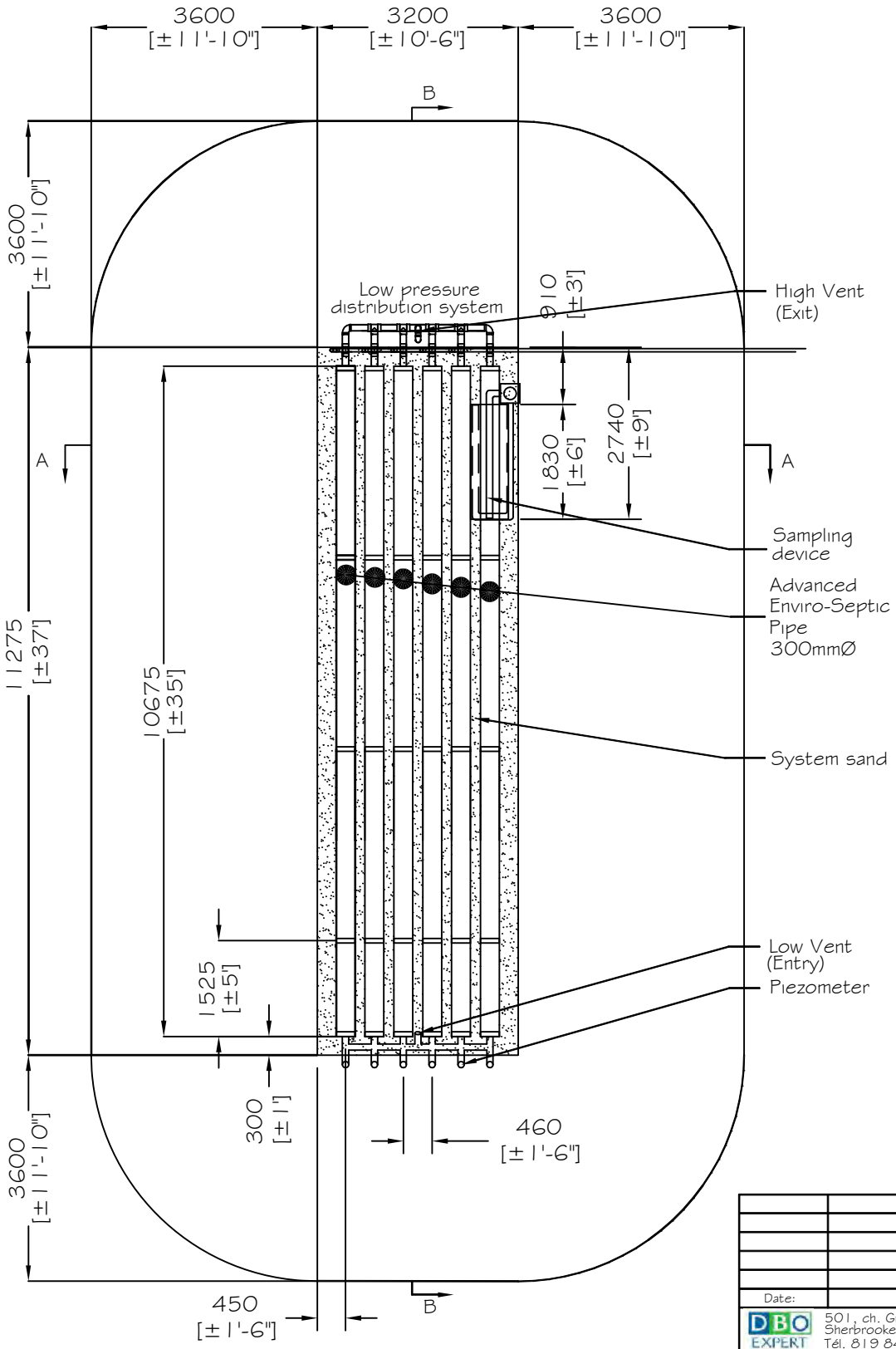
DBO Expert inc. is not responsible for the design and installation of Enviro-Septic Systems. The Enviro-Septic systems templates are simply a tool to facilitate the work of the septic system designer. These templates cannot be used directly for construction.
When using the Enviro-Septic System templates, you acknowledge having read and understood the terms of this disclaimer and you agree to comply fully with all regulations in force for septic systems.

EXCLUSION DE RESPONSABILITÉ
Mise en garde quant à l'utilisation des Modèles de base pour Système Enviro-Septic
Les modèles de base pour système Enviro-Septic sont destinés au concepteur d'installation septique. Nous vous rappelons qu'en vertu du Règlement sur l'évacuation et le traitement des eaux usées des résidences isolées (R.R.Q. 1981, c. Q-2, r.22) et de la Loi sur la qualité de l'environnement (L.R.Q. c. Q-2), une installation septique doit être conçue par une personne qui est membre d'un ordre professionnel compétent en la matière.

IMPORTANT : Prenez note que le concepteur d'installation septique est responsable de s'assurer que ses plans et devis sont en tout point conformes à la réglementation en vigueur. Les modèles de base pour système Enviro-Septic doivent, en tout temps, être utilisés en conformité avec cette réglementation. Ils doivent aussi être adaptés en fonction des conditions du site à desservir.

DBO Expert inc. n'est pas responsable de la conception et de l'installation de système Enviro-Septic. Les modèles de base pour système Enviro-Septic constituent simplement un outil destiné à faciliter le travail du concepteur d'installation septique. Ces plans ne peuvent être utilisés directement pour la construction.

En utilisant les modèles de base pour système Enviro-Septic, vous reconnaissez avoir pris connaissance et compris les termes de la présente mise en garde et vous engagez à respecter en tout point l'ensemble de la réglementation en vigueur en matière d'installation septique.

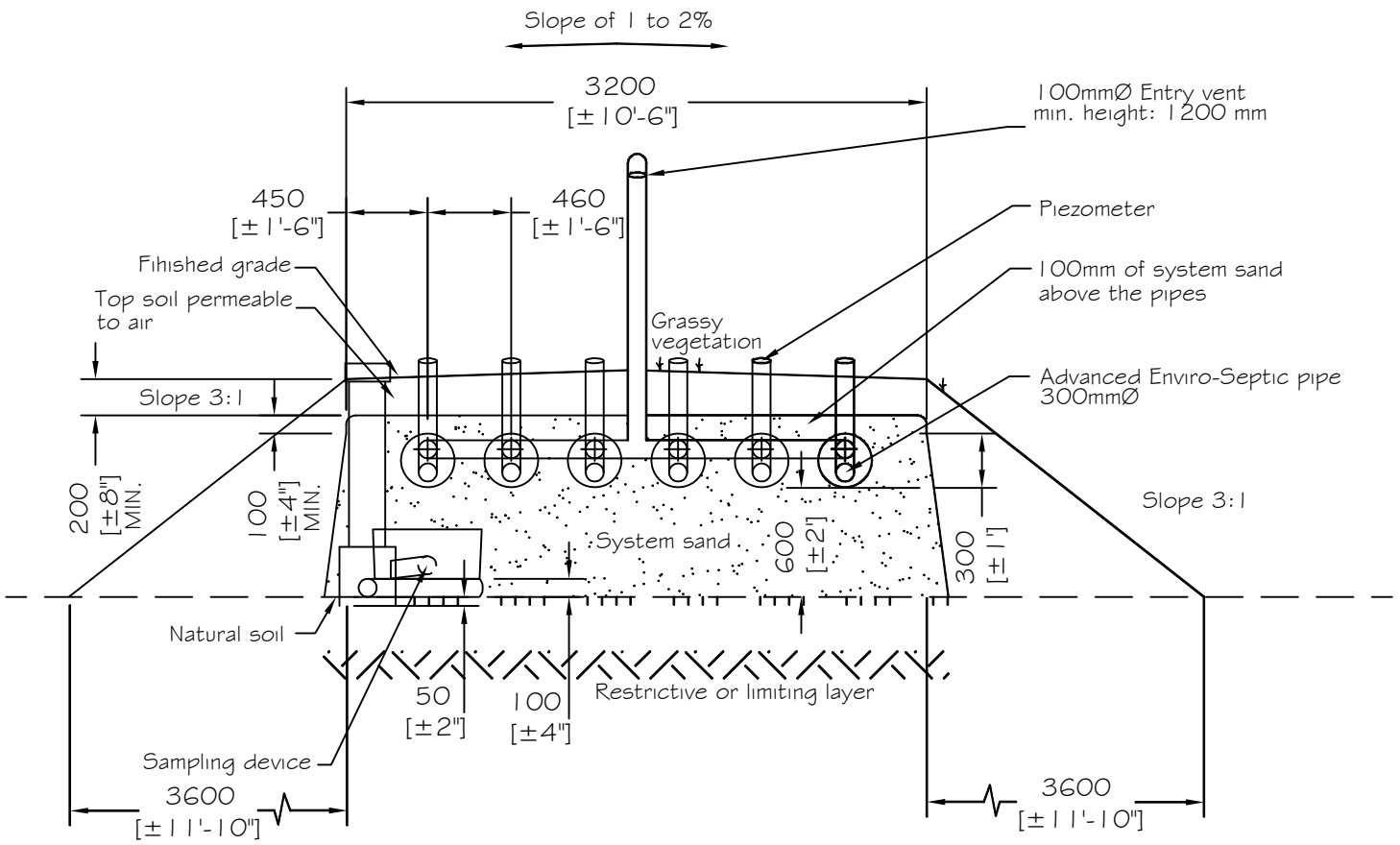


Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 1800 L/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 2	
Units: mm	Scale : 1:100	Sheet : 2/4



Cross-section view A-A

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

A) The entry vent must be at least 3m lower than the exit vent.

B) On systems that use a pumping station or low-pressure distribution, special considerations need to be taken to ensure that the air flow efficiently through the system:

- Install a shunt pipe between the treatment system and the pumping station or
- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

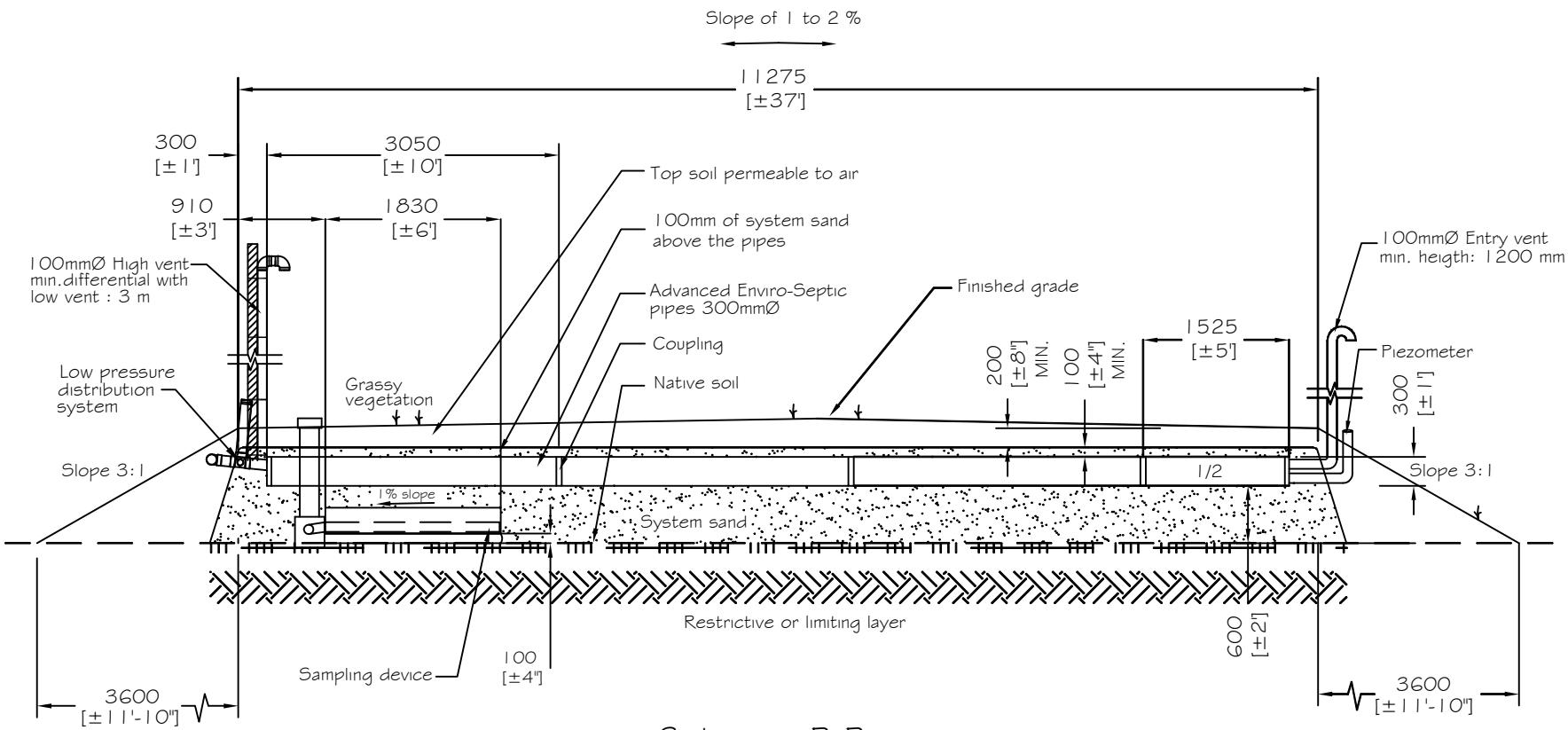
IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 1800 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 2	
Units: mm	Scale : 1:40	Sheet : 3/4



Side view B-B

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

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- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 1800 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 03-06-2015	Campground Phase 2	
Units: mm	Scale : 1:60	Sheet : 4/4

ENVIRO-SEPTIC : ADVANCED SECONDARY TREATMENT WITH LEACHING FIELD :

Seepage Bed
Campground - Phase 3
Flow : 4900 L/d

DISCLAIMER:

Warning regarding the use of the basic templates for Enviro-Septic Systems
The basic templates for Enviro-Septic systems are intended for septic system designers.

IMPORTANT: Please note that the septic system designer is responsible for ensuring that his drawings and recommendations are fully compliant with the regulations in force. The Enviro-Septic systems templates must at all times be used in accordance with this regulation. They must also be adapted by the designer according to site constraints.

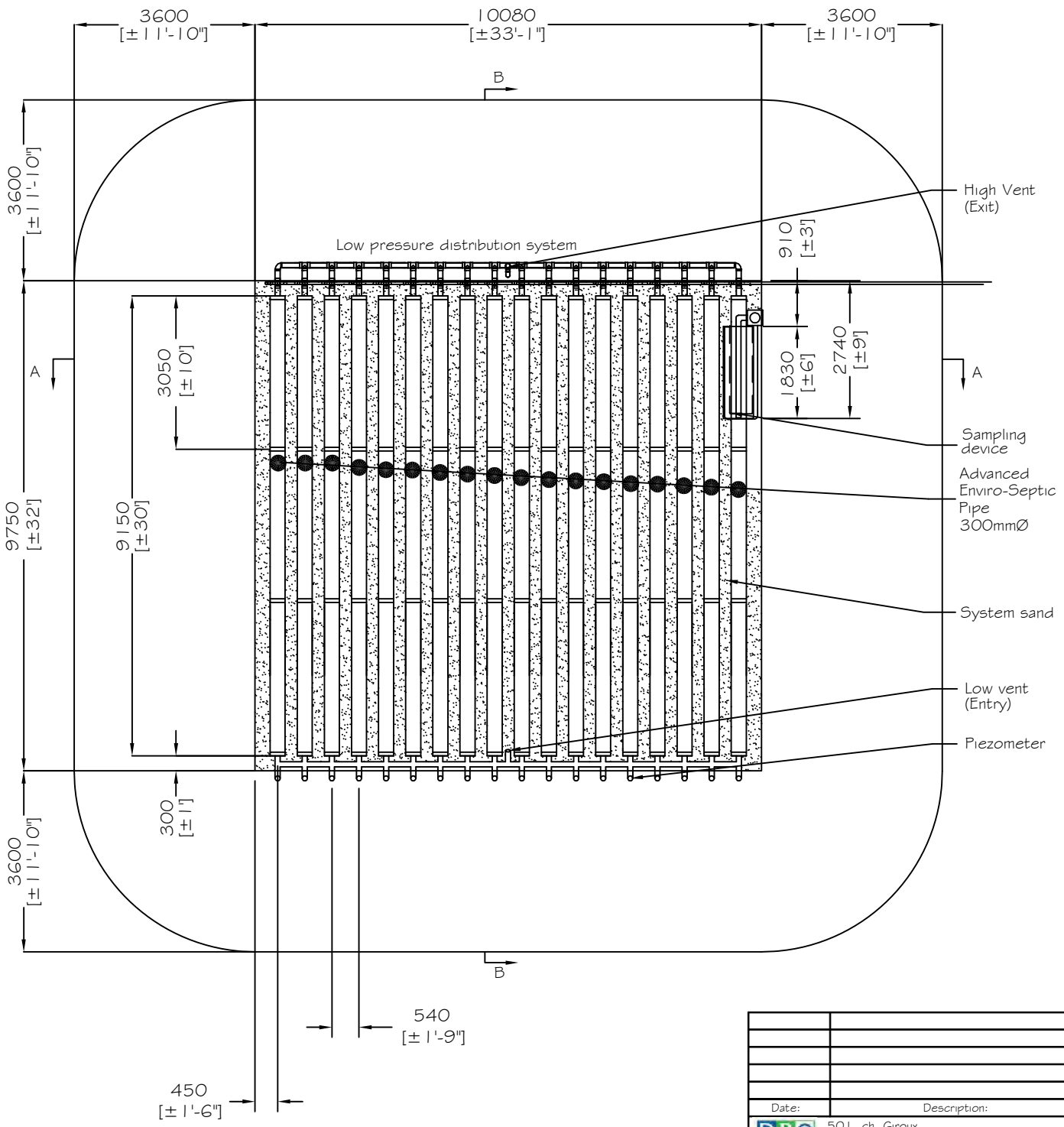
DBO Expert inc. is not responsible for the design and installation of Enviro-Septic Systems. The Enviro-Septic systems templates are simply a tool to facilitate the work of the septic system designer. These templates cannot be used directly for construction.
When using the Enviro-Septic System templates, you acknowledge having read and understood the terms of this disclaimer and you agree to comply fully with all regulations in force for septic systems.

EXCLUSION DE RESPONSABILITÉ
Mise en garde quant à l'utilisation des Modèles de base pour Système Enviro-Septic
Les modèles de base pour système Enviro-Septic sont destinés au concepteur d'installation septique.

IMPORTANT : Prenez note que le concepteur d'installation septique est responsable de s'assurer que ses plans et devis sont en tout point conformes à la réglementation en vigueur. Les modèles de base pour système Enviro-Septic doivent, en tout temps, être utilisés en conformité avec cette réglementation. Ils doivent aussi être adaptés en fonction des conditions du site à desservir.

DBO Expert inc. n'est pas responsable de la conception et de l'installation de système Enviro-Septic. Les modèles de base pour système Enviro-Septic constituent simplement un outil destiné à faciliter le travail du concepteur d'installation septique. Ces plans ne peuvent être utilisés directement pour la construction.

En utilisant les modèles de base pour système Enviro-Septic, vous reconnaissez avoir pris connaissance et compris les termes de la présente mise en garde et vous engagez à respecter en tout point l'ensemble de la réglementation en vigueur en matière d'installation septique.

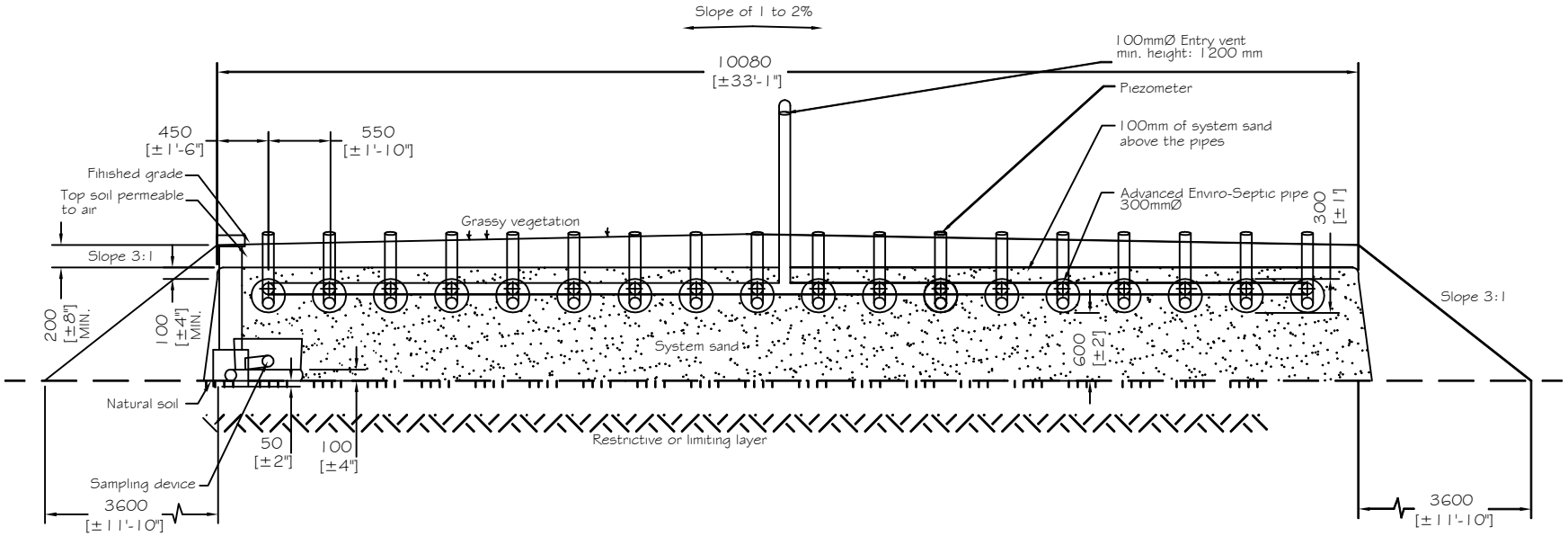


Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4900 L/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 04-06-2015	Campground Phase 3	
Units: mm	Scale : 1:115	Sheet : 2/4



Cross-section view A-A

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

A) The entry vent must be at least 3m lower than the exit vent.

B) On systems that use a pumping station or low-pressure distribution, special considerations need to be taken to ensure that the air flow efficiently through the system:

- Install a shunt pipe between the treatment system and the pumping station or
- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

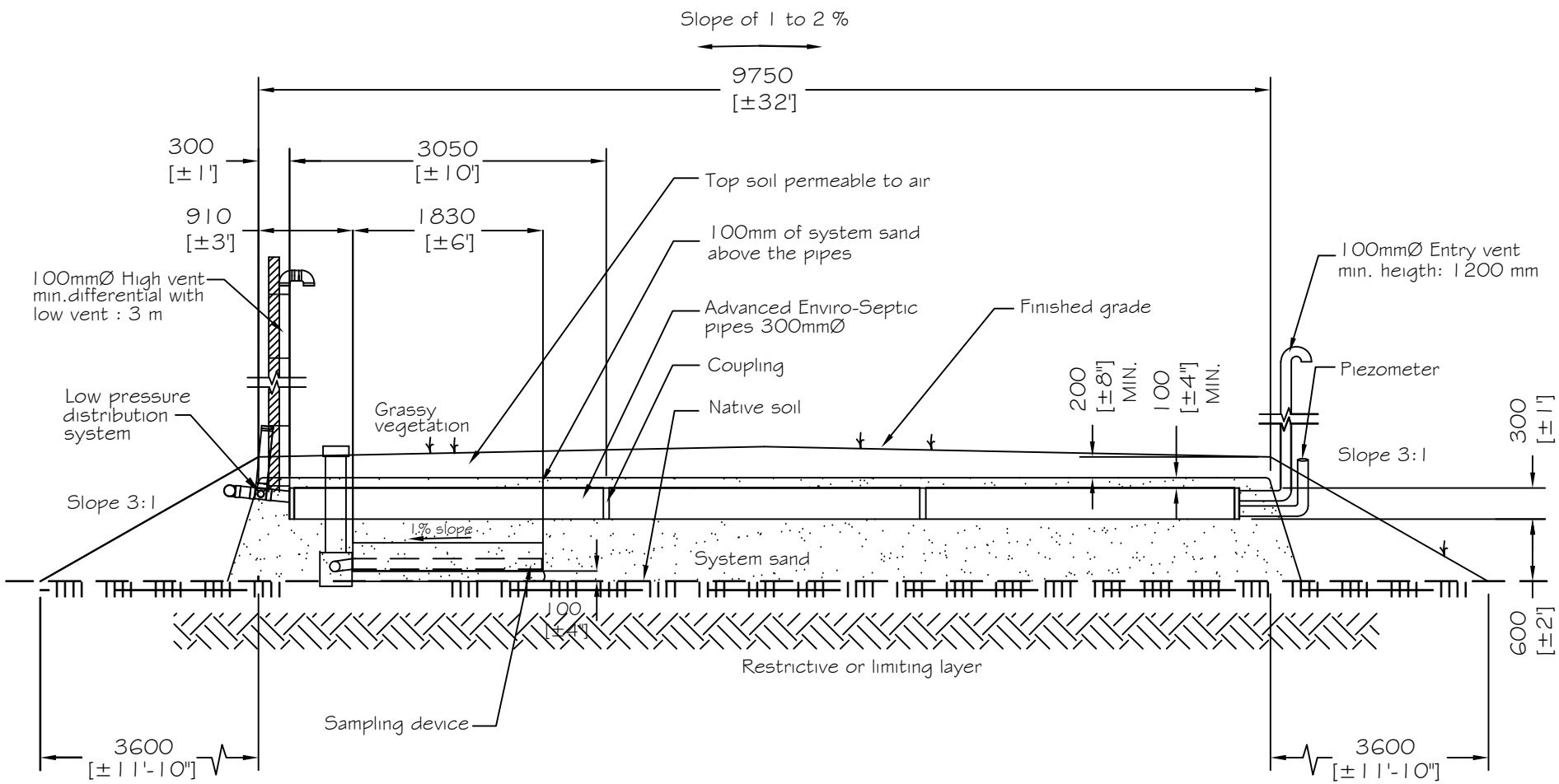
IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4900 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 04-06-2015	Campground Phase 3	
Units: mm	Scale : 1:40	Sheet : 3/4



Side view B-B

Venting requirements : Entry and exit vent pipes are required to allow air passage through the Advanced Enviro-Septic pipes. Locate vent openings to ensure air is drawn completely through each row or section of Advanced Enviro-Septic pipe.

A) The entry vent must be at least 3m lower than the exit vent.

B) On systems that use a pumping station or low-pressure distribution, special considerations need to be taken to ensure that the air flow efficiently through the system:
- Install a shunt pipe between the treatment system and the pumping station or
- Install an extra vent pipe near the distribution box

The system sand must be conform to the Enviro-Septic specifications.

IMPORTANT : The designer of a septic installation is responsible to make sure that his drawings and recommendations conform to the regulation in place. The Enviro-Septic system templates are provided only as a tool to help designer in their wastewater treatment and evacuation projects. These templates cannot be used directly as drawings for construction. They must be adapted by the designer according to site constraints.

Date:	Description:

DBO EXPERT
501, ch. Giroux
Sherbrooke, (Qc), J1C 0J8
Tél. 819 846 3642

- Enviro-Septic system
- Flow : 4900 l/d
- Leaching field : Seepage bed
- Installation mode : Above-Ground
- Soil Type : to be confirmed

Date: 04-06-2015	Campground Phase 3

Units: mm	Scale : 1:60	Sheet : 4/4