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July 26, 2021,

Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Director

SUBJECT: **Environmental Act Proposal**
Private Lagoon Construction, Onsite Wastewater Management,
Abas Girls Inc & Abas Girls Ranch, SW 26-12-2E, RM of Rosser

Dear Director,

Please find attached Wastewater Facility Classification and Environmental Act Proposal applications for constructing a private lagoon for Abas Girls Inc and Abas Girls Ranch in the Rural Municipality of Rosser.

The proposed on-site wastewater facility will be receiving the wastewater from the existing and planned commercial facilities plus a residential dwelling. The owner intends to develop a private lagoon in order to treat the sewage load. The proposed wastewater treatment facility has or will have sufficient hydraulic and organic capacity to accommodate this wastewater.

The capacity and construction details of the lagoon are in the attached engineering report.

We are looking forward to further correspondence and acceptance of the enclosed proposal.

Respectfully,

Jessica Manness, P.Eng
Principal, JME World Consultants

[redacted]

Private Lagoon Design Brief

Onsite Wastewater Management

In the Rural Municipality of Rosser, Manitoba

Prepared: July 20, 2021

Project Location: 50°02'24.0"N 97°13'18.3"W
SW-26-12-2 EPM
Rural Municipality of Rosser, Manitoba

Applicant: Abas Girls Inc. and Abas Girls Ranch
Box 1 Group 242 RR2
Winnipeg, MB, R3C 2E6

Contact: David Abas
[redacted]

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1 Introduction

The report summarizes the design basis for building and operating a private wastewater treatment lagoon system to manage the sewage waste produced from the commercial facilities at 50°02'05.5"N 97°13'43.4"W and a rural residence at 50°02'02.6"N 97°13'26.9"W in the Rural Municipality of Rosser, Manitoba. The proponent requires an affordable, long-term, and reliable wastewater management strategy to address the wastewater produced from the noted facilities. As this report demonstrates, a private wastewater sewage lagoon system is the most effective treatment procedure that can alleviate public health risks, minimize the risk of odours, and provide the required treatment for wastewater.

There are four buildings which will be serviced by the proposed lagoon. This includes (a) the gas station, convenience store and restaurant, (b) the proposed car wash, (c) the auto shop, and (d) a residence. The buildings are on separate lots, all lots are owned by the same party. The wastewater from the gas station, convenience store, shop, and restaurant will be plumbed to a septic tank and wastewater from the car wash will be plumbed to a holding tank. The wastewater from the residence will also be plumbed to a septic tank. A low-pressure sewer system will deliver the effluent from the pump chambers of the septic tanks and holding tank to the lagoon.

2 Background

The owner of the facilities would like to provide a wastewater management service to existing and planned commercial facilities plus a residential dwelling. Currently, the wastewater from the existing facilities are treated through an onsite wastewater management system that includes a conventional septic tank with a septic field. The owner intends to develop a private lagoon in order to treat the sewage load.

3 Proposed Location

The proposed location of the lagoon is approximate 800 m northeast of the existing commercial facilities (Abas Esso). The existing commercial facilities are located on the east corner of PTH 7 and north of municipal Road 70N. The proposed lagoon will be located at 50°02'24.0"N 97°13'18.3"W in the Rural Municipality of Rosser, Manitoba. The detailed plan view depicting the proposed lagoon location is attached in Appendix A while a simple sketch is shown below in Figure 1.

As proof of ownership of the location containing the lagoon must be included with the application, the “Certificate of Land Title” is attached in Appendix B.

The lagoon site was selected by following the Sustainable Development Manitoba Guidelines for the location of a wastewater treatment lagoon (Design Objectives for Standard Sewage Lagoons, Province of Manitoba, Environmental Management, July 1985).

Figure 1: Site Map- Proposed commercial facilities and lagoon location

4 Geotechnical Data

Site specific soils testing has not yet been conducted as part of this study. GWDrill logs indicate that the upper soil media from 0 to 14 ft is typically clay or silty clay with a deep depth to the groundwater

elevation. The Provincial reconnaissance soil survey report for the region indicates the soil is Lakeland Series soil type which is an imperfectly drained Gleyed Rego Black carbonated loamy lacustrine clay. Lacustrine clay of this type has a high level of impermeability and has a low risk of erosion, making the soil perfectly suited for lagoon construction materials and also a preferred site with a natural impermeable liner.

Soil characteristics, groundwater elevation, and surface flow characteristics are key elements of the lagoon construction. On-site geotechnical tests will be conducted to confirm that the existing soil conditions demonstrate the required characteristics for a clay-lined lagoon system. If the in-situ soil does not demonstrate a high plastic clay content and does not meet the maximum permeability criteria, that is, the soil is too gravelly or too permeable to provide an adequate seal, an alternative lagoon design will be considered.

As part of the design process, groundwater flow tests may be conducted to further assess the site for suitability of the proposed location for lagoon construction.

If required, the groundwater monitoring may be conducted at the post development stage to ensure that there is no seepage of effluent from the lagoon to the groundwater.

5 Design and Construction Standards

The following design and construction specifications shall be applied for the proposed onsite wastewater management system.

- The minimum lifetime of the lagoon is twenty years and considers present day and estimated future organic and hydraulic loading from all sources.
- The maximum projected population serviced is 165 persons per day for gas station, convenience store, restaurant, and auto shop (total of employees and customers), 3 bedroom house, and a car wash. As noted, most of the wastewater system users will be customers.
- The estimated hydraulic loading is 9.9 m^3 per day from the combined sources.
- The estimated organic loading rate is 2.4 kg BOD^5 per day for 9.9 m^3 of wastewater.
- The minimum total hydraulic storage capacity in the lagoon cells must be 3614 m^3.
- The design size is based on a hydraulic storage period of 365 days.
- The design maximum and design minimum operating depth of liquid in the primary cell is 1.2 m and 0.3 m.
- The design height of the freeboard is 1 m.
- The low-pressure sewer system will deliver the wastewater from septic tanks and a holding tank to the lagoon using individual low pressure sewer pumps.
- The interconnection inlet pipe invert shall be 0.3 m above the primary cell floor elevation. The secondary cell discharge pipe inlet shall be 0.3 m above the secondary cell floor elevation.
- A riprap splash pad will be installed around the downstream end of all discharge pipes.
- The slope of the inner wall of the dike is 1:4 and outer wall of the dike is 1:3.
- A 1.2 m high barbed wire and wooden post fence with lockable gate will be installed around the perimeter of the lagoon.
- A minimum setback between the outside toe of the embankment and the fence line is 30 m.

- Additional land is available for future expansion.
- The compacted clay liner requires a hydraulic conductivity of 1 x 10^{-7} cm/sec or less.
- Site markers, warning signs, and valve markers will be installed.

6 Wastewater Management System Design

The following sections describe the design plan for the onsite wastewater management system.

Please note, where gallons are indicated, these are imperial gallons.

6.1 Wastewater Characterization

6.1.1 Wastewater Generation

The wastewater generation is closely linked to the water demand of the facilities which are being serviced. The water demand was calculated in the report "Abas Esso Water Servicing Design Brief" January 2019 prepared by JME World Consultants. It is noted that the proposed lagoon will only collect the effluent from the gas station, convenience store, restaurant, car wash and one residence.

The table below provides the estimated water demand that was calculated for the existing and proposed development which are to be serviced by the lagoon system.

At the proposed service sites, the water demand is noted in the table below:

Property	Existing and Proposed Commercial Development	Daily water demand for the facilities (l/day)	Assumption (the commercial facilities will be operated maximum 10 hrs per day)
1.	Gas Station, Convenience Store, Restaurant, Shop		
	Toilets	1600	16 l/day/person and total 100 persons; 25 persons for each toilet
	Sinks in washrooms (4 standard basin)	400	4 l/day/person and total 100 persons; 25 persons for each toilet
	Sink in kitchen (one large sink)	1440	4 l/min and total use 6 hrs per day
	Dishwasher	160	40 l/cycle and 4 cycles/day
	Subtotal	3600	
2.	Car Wash	4800	60 l/car and total 80 cars per day
3.	Residential Dwelling	1500	3-bedroom home
	Grand Total	9900	

6.1.2 Effluent Quality Design

The effluent from the proposed lagoon will meet the following requirements:

- $CBOD^5$: not excess of 25 mg/l

- TSS (Total Suspended Solids): not excess of 25 mg/l
- E. Coli content (Fecal Coliform): not excess of 200/100ml
- Un-ionized ammonia content: not excess of 1.25mg/l;
- Total phosphorus: not excess of 1mg/l

6.2 Wastewater Collection System

6.2.1 Gas Station, Convenience Store, and Restaurant

The wastewater from gas station, convenience store and restaurant buildings will be plumbed to the existing two-tank septic system. The system is currently used in conjunction with a field that will be decommissioned in accordance with Provincial Regulations.

If the existing tanks are inadequate, a new tank will be installed according to the following:

The septic tanks for commercial facilities are to be sized according to the Provincial Regulation for on-site septic systems. That is, the first septic tank (considered as sedimentation chamber) will have the capacity for 140% of the daily wastewater flows and the second septic tank (considered as control chamber) will have the capacity for 20% of the daily wastewater flows.

Septic tank calculations for gas station, convenience store, and restaurant:

For minimum 1-day storage volume = 3600 L/day x 1 day = 3,600 litre

Volume of the sedimentation tank = 3600 x 1.4 = 5040 Litre = 1334 gallons

The recommended size of the sediment chamber is 1500 gallons

Minimum volume of the control chamber = 3600 x 0.2 = 720 Litre = 190 gallons

The recommended size of the control chamber is 500 gallons

The recommended total tank size is 2000 gallons.

For simplifying calculations of the lagoon sizing, the wastewater generation of the auto shop is included in the above numbers. The auto shop will have a minimum septic tank size of 1000 gallons.

6.2.2 Car Wash

The car wash will have no source of black water; that is, the wastewater stream will exclusively be wash water. Moreover, 70% of the wash water will be reused, resulting in a waste of 60L/car. In accordance with good plumbing practices, the wash water drain will include an oil separation and sediment basin. The oil and sediment will be removed manually. The wash water will flow to a single compartment holding tank. The holding tank will be sized for 140% of the daily flows. The wastewater from the control chamber will be directly discharged to the low-pressure sewer.

The minimum storage volume of the holding tank= 4800 l/day x 1.4 = 6720 litres

The recommended holding tank size is a minimum of 1500 gallons

6.2.3 Residential Dwelling

The wastewater from the dwelling will be plumbed to a septic tank that is outfit with a baffled divider. That is, the tank will have the capacity for 140% of the daily wastewater flows in the sedimentation compartment and 20% of the daily flows in the control chamber. From the Onsite Wastewater Management System Information Package, Sustainable Development, 2010, the expected effluent flow is 1500 L/d for a 3-bedroom residential dwelling.

The minimum sediment chamber volume = 1500 litre x 140% = 2100 litre (461 gallons) is a minimum of 500 gallons

Minimum volume of the control chamber = 1500 x 20% = 300 litre (66 gallons) is a minimum of 75 gallons

However, the minimum permitted tank size is 750 gallons, therefore the requirement for a 750 gallon tank prevails.

6.3 Effluent Transport (Mechanical Transport-Pipe and Pumping)

It is intended that the effluent from the control chamber of the gas station facility and the wastewater stream from the car wash holding tank will be pumped to the low-pressure sewer. The lagoon will be located approximately 900 m (3000 ft) away from the gas station. The elevation decreases from the gas station to the lagoon by 2 m (7 ft), as measured from the ground surface to the base of the lagoon.

Based on the distance and head, it is recommended that:

- 100 mm (4”) HDPE DR 18 pipes be used as a low-pressure sewer main pipe,
- 38 mm (1.5”) HDPE pipe SDR 41 be used for service pipes,
- Liberty ½ hp effluent pumps be used in the tanks, and
- A backwater valve be installed inline following the in-tank pumps.

6.4 Lagoon Cells Sizing

A two-cell facultative lagoon system is designed to treat an average daily sewage flow of 9,900 l/day. The pond discharge will be released once in a year, typically in the fall season. The primary cell is a rectangle shape and the secondary cell is a square shape. Both have rounded corners to prevent accumulation of floating materials. The primary cell serves as a settling chamber to clarify the effluent and allow solids and floating debris to settle. The clarified effluent then discharges to secondary cell for further treatment by detention and to await release.

As per Sustainable Development, Manitoba requirements, the primary cell is designed with a flat bottom. In this case, the required area is 34 m x 48 m and the secondary cell is designed with a flat bottom area of 27 m x 27 m. The maximum design operating level of the primary cell is 1.2 m. The capacity of the primary cell is 2410 m^3 and the secondary cell is 1205 m^3.

The sketches of the lagoon cells are attached in Appendix “B”.

The calculation of the cell dimensions is in Appendix “C”.

6.5 Discharge Point

The lagoon effluent will be discharged into an existing drain along south toe of the berm of the Provincial Drain. The existing drain flows westward.

7 Operation and Maintenance

The periodic maintenance to be followed to ensure the proper functioning of lagoon cells.

7.1 Operation:

The operation of the lagoon will be per Manitoba Regulation and the lagoon licence. The following steps will be followed to discharge the effluent to ditch:

- The valve which connects the primary and secondary cells must be closed prior the sample collection.
- Two samples will be taken from the secondary cell two weeks later after closing the valve and will be tested at an accredited laboratory for BOD^5, total suspended solids (TSS), fecal coliform and total coliform. The test result will be submitted to Sustainable Development Manitoba for discharge approval.
- If the effluent test results are within the limits, the secondary cell may be discharged.
- After discharging the effluent from the secondary cell, the valve linking the primary and secondary cell will be opened to equalize the water level.

Under normal operating condition, JME recommends the discharge during the fall season, as the effluent at this time of the year will have received a high degree of treatment.

The following information will be recorded by the lagoon operator:

- Dates of discharge;
- Amount of time that was required to discharge;
- Colour of wastewater in each cell prior to discharging;
- Odour;
- Dates of collecting and submitting samples to an analytical laboratory;
- Specific locations of the collected samples; and
- Cell levels before and after discharge.

7.2 Maintenance

The following maintenance procedures are recommended for the operation of the facilities.

Rodent Control: To eliminate the dyke damage by rodent or muskrats, a periodic check should be made and repair the damaged dyke after controlling the rodents.

Seepage and Erosion Control:

Frequent checking is required around the toe to determine if seepage is occurring. Erosion can take place on the either inner or outer side slopes due to wave and surface runoff. Proper grading is required to provide the adequate stability of the sloping surface.

Piping and Valves Maintenance:

Frequent checking is required in and around the inlet and discharge pipes as well as the valves to determine if any damages are occurring.

Removal of Sludge Mounds:

During the winter, sludge may build up around the inlet and should be dispersed to avoid blockage of the inlet.

Vegetation Control:

Grass and other plant growth are required to cut on the dike. Eliminate any vegetation growing at the water edge.

Odor Control:

Odor problems created by anaerobic conditions may be controlled by increasing the water level, adding sodium nitrate as a source of oxygen, or adding oxygen to the cells by mechanical methods such as using an aerator.

Removal of Floating Debris:

Plants with floating leaves and scum formation on the water surface reduce the amount of sunlight thereby impacting the ability of the lagoon to function; therefore, the removal of floating debris is a critical requirement in regular operation.

Maintenance of Overflow:

To mitigate against the overtopping of the dyke due to a blocked valve, the overflow between the primary and secondary cells should be monitored and well maintained.

Monitoring and Follow-Up:

The lagoon operator will monitor the lagoon periodically to ensure that the lagoon is functioning according to the requirements of the permit.

8 Safety

The lagoon must be treated with care from a safety and public health point of view. Only the certified persons are permitted to enter in the lagoon area. The operator must be equipped with personal protection equipment (PPE) while working in and around the lagoon.

A suitable fence with a gate will be installed to exclude livestock, wildlife and discourage trespassing. The gate will be locked to prevent trespassing and keep out of livestock.

To designate the nature of the facility and advise against trespassing, appropriate “No Trespassing” signs should be posted along the fence around the lagoon.

9 Environmental Impact

9.1 Location

The proposed lagoon location is in an open space approximately 900 meters from the gas bar and 350 meters from the nearest dwelling. There is land available for future expansion. The planned lagoon and potential expansion will not result in an increased amount of runoff. The lagoon is not subject to flood water. There is adequate wind sweep.

9.2 Site Selection

The lagoon site is also selected based on the water body setback requirements specified in Nutrient Management Regulation 62/2008. The proposed lagoon is 12.5 km from the Red River.

9.3 Lagoon Effluent Discharge

The effluent from the lagoon does not pose a risk to surface water because of its low BOD^5 and fecal/total coliform populations. The wastewater quality will be tested before discharged in accordance with Sustainable Development Manitoba guidelines.

9.4 Odour

The environmental effect of the proposed lagoon is positive because the effluent from the proposed lagoon will meet the Provincial wastewater discharge requirements.

Organic Loading:

The average organic treatment capacity of 56 kg BOD^5 /ha/day at a depth of 0.75 m has been utilized for calculating the design organic loading in the primary cell. However, the estimated organic loading in the primary cell is 10 kg /ha/day in the primary cell. The calculation is in Appendix “D”. The estimated organic load is less than the design load, which provides a design buffer.

9.5 Aquifer Protection

The construction of the clay liner will be monitored and tested to confirm the hydraulic conductivity is less than 1×10^{-7} cm/sec. The proposed lagoon will not impact the groundwater.

10 Cost Estimate

The following items are considered to estimate the proposed lagoon construction cost:

- Mobilization and Demobilization
- Site preparation
- Material supply and install
- Contingency

11 Schedule

Construction Schedule: September – October 2021

12 Recommendation

JME World Consultants recommends a two cell facultative lagoon system to treat 9.9 m^3 (9,900 litres) wastewater per day. The wastewater will be generated from the commercial sites and a residential dwelling. It is anticipated that the system would be the most viable and simplest of wastewater treatment for its better effluent quality with very minimum long-term maintenance and operational cost. The system was designed by adopting the Provincial wastewater management design objectives.

13 References

- Manitoba's Information Bulletin - Design Objectives for Wastewater Treatment Lagoons; October 2017, Sustainable Development Manitoba
- On-site wastewater management systems - Sustainable Development Manitoba
  Source: https://www.gov.mb.ca/sd/waste_management/index.html
- "Abas Esso Water Servicing Design Brief"; October 2018, prepared by JME World Consultants
- "Lagoon Investigation - Background Study Report" June 2019, prepared by JME World Consultants
- "Proposed Two-Cell Wastewater Treatment Lagoon for Rock Lake Holding Ltd. (SE 1-13-1 WPM) – Environment Act Proposal", prepared by DGH Engineering Ltd.
- Manitoba Water Services Board Standard Construction Specifications for wastewater, Section-025940, September 2013, Stabilization Pond

14 Appendices

Appendix "A"

The site plan of the proposed lagoon

The "Certificate of Land Title" is attached.

Appendix "B"

Sketches of the lagoon cells

Appendix "C"

Lagoon cells dimension calculation

Assume,
Volume of wastewater: 9,900 l/d
Total volume of wastewater for 365 days = 3.614 cu m
Retention Time : 1yr (discharge in fall)
Depth : 1.2 m without freeboard
Primary Cell : Rectangular shape
Secondary Cell : Square Shape
Freeboard : 1 m
Inner embankment slope : 1:4
Outer embankment slope : 1:3

Total Volume = 9,900 L/d x 365-day = 3,614,000 litre = 3,614,000 litre x 0.001 cu m = 3,614 cu m

(1litre= 0.001 cu m)

Design of Primary Cell

Volume of wastewater in primary cell = 2/3 of total volume = 2/3 x 3614= 2410 m^3

Volume of wastewater in secondary cell = 1/3 of total volume=1/3x3614=1,205 m^3

Average area, $(A_1 + A_2)/2$ = 2410 m^3 /1.2 m= 2009 m^2

Say, $A_1 = L_1 \times B_1$
$A_2 = L_2 \times B_2$
$B_2 = B_1 + 2(4 \times 1.2) = B_1 + 9.6$
$L_2 = L_1 + 2(4 \times 1.2) = L_1 + 9.6$

Bottom length of Cell = L_1
Bottom width of Cell = B_1

Top length of cell, $L_2 = L_1 + 9.6$
Top width of Cell = $B_2 = B_1 + 9.6$

Assume, 1: 4 slope and Rectangular pond $L_1 = 1.5\ B_1$
$(A_1 + A_2)/2$ = 2009 $m^2 = (B_1 \times L_1 + B_2 \times L_2)/2$

- $\{B_1 \times 1.5B_1 + (B_1 + 9.6)(1.5B_1 + 9.6)\}/2 = 2009\ m^2$
- $\{1.5B_1^{\ 2} + (1.5B_1^{\ 2} + 14.4B_1 + 9.6\ B_1 + 92)\} = 4018\ m^2$
- $3.0B_1^{\ 2} + 24\ B_1 - 3926 = 0$
- $B_1^{\ 2} + 8B_1 - 1309 = 0$
- $B_1 = [-8 \pm \{\sqrt{(8)^2} - 4x\ 1x\ (-1309)\}] / 2 \times 1$
- $B_1 = 33$
- $B_1 = 33$ m

equation b= [-b ± {√(b)^2 – 4ac}] / 2 x a

- B_1 = 32 m (105ft)
- L_1 = 1.5 B_1 = 1.5x 32 = 48 m (157ft)
- B_2 = B_1 + 9.6 = 42 m (136ft)
- L_2 = L_1 + 9.6 = 57 m (187 ft)

Top length and width with freeboard

B_3 = B_1 + 2(4 x 2.2) = 50m (163 ft)

L_3 = L_1 + 2(4x2.2) = 66 m (216 ft)

Design of Secondary Cell:

Assume 1/3 of the total volume

Volume of wastewater in secondary cell=1/3 of total volume=1/3 x 3614=1,205 m^3

Average Area = 1,205 /1.2 = 1,004m^2

(A_1 + A_2) /2 = 1,004 m^2 = (B_1 x L_1 + B_2 x L_2)/2

Assume, 1: 4 slope and a square pond L_1= B_1

Bottom area = A_1 = B_1x B_1
Top area = A_2 = (B_1 + 9.6) x (B_1 + 9.6)

(A_1 + A_2) /2 = 1,004 m^2 =(B_1 x L_1 + B_2 x L_2)/2
{B_1 x B_1 + (B_1 + 9.6) (B_1 +9.6)}/2 = 1,004 m^2
{B_1^2 + B_1^2 + 9.6B_1 +9.6B_1 + 92)} = 2,008 m^2
2.0 B_1^2 + 19.2 B_1 – 1916 = 0
B_1^2 + 9.6 B_1 – 958 =0
B_1= [-9.6 ± {√ (9.6)^2 – 4x 1x (- 958)}]/2.1
B_1 = 27 m

equation , b=[-b ± {√(b)^2 – 4ac} / 2.a]

B_1 = 27 m (88 ft)

L_1 = B_1 = 27 m (88 ft)

$B_2 = 27 + 2(4 \times 1.2) = 36m$ (118 ft)

$L_2 = L_1 + 2(4x1.2) = 36$ m (118 ft)

Top length and width with freeboard
$B_3 = B_1 + 2(4 \times 2.2) = 44$ m (144 ft)

$L_3 = L_1 + 2(4 \times 2.2) = 44$ m (144 ft)

SUMMARY:

Primary Cell

Bottom width	: B_1 = 32 m (108ft)
Bottom length	: L_1 = 48 m (157 ft)
Top width without freeboard	: B_2 = 42 m (136 ft)
Top length without freeboard	: L_2 = 57 m (187 ft)
Top width with freeboard	: B_3 = 50 m (163ft)
Top length with freeboard	: L_3 = 66 m (216 ft)

Secondary Cell

Bottom width	: B_1 = 27 m (88 ft)
Bottom length	: L_1 = 27 m (88 ft)
Top width without freeboard	: B_2 = 36 m (118 ft)
Top length without freeboard	: L_2 = 36 m (118ft)
Top width with freeboard	: B_2 = 44 m (144m)
Top length with freeboard	: L_3 = 44 m (144 m)

Total Volume = 3,614 cu m

Appendix "D"

Daily Organic Loading (BOD^5) Calculation

Area of the primary cell = (32 x 48) + 0.5x 1.2x4 + 0.5x1.2x4 = 2007 m^2 = 0.2 ha
We know,
Volume of wastewater per day = 9900 l/day
For the primary cell, the total volume of wastewater = 9900 x 2/3 = 6600 l/day
Assume BOD^5 in wastewater is 240mg/l
So, BOD^5 from 9900 l/day = 9900x240 = 2.378 kg /day
We know, Maximum Organic Loading (BOD^5 loading)/ha/day is – 56 kg
So, Maximum Organic Loading (BOD^5 loading) for 0.2 ha = 56 kg/ha/day x 0.2 ha = 11.2 kg
Result : Only 2.4kg/ha/day BOD^5 is entering in primary cell which is less than the maximum limit.