BIOFILTER TANK	GROUND ELEV.	TOP OF STRUCTURE ELEV.	INLET ELEV.	OUTLET ELEV.
TRASH TANK	105.00	104.70	104.32	104.27
AERATION TANK	105.00	104.59	104.24	103.99
SEPTIC TANK #1	104.95	104.31	103.96 (G) 103.96 (F)	103.71
SEPTIC TANK #2	104.90	104.03	103.68	103.43
SEPTIC TANK #3	104.90	103.75	103.40 (G) 103.40 (F)	103.15
BALANCE TANK #1	104.90	103.50	103.12 (G) 103.12 (F)	101.21
BALANCE TANK #2	104.85	103.50	102.74	101.21 (G) 103.12 (F)
CLOSED LOOP (BULK FILLED) BIOFILTER TANK	104.85	104.50	104.53	102.77
NITRIFYING BIOFILTER TANK #4	105.40	105.10	105.13	102.31
NITRIFYING BIOFILTER TANK #3	105.40	105.07	102.28 (G) 105.10 (F)	102.28
NITRIFYING BIOFILTER TANK #2	105.35	105.04	102.25 (G) 105.07 (F)	102.25
NITRIFYING BIOFILTER TANK #1	105.50	105.01	102.22 (G) 105.04 (F)	104.66
WATERNOx BIOFILTER TANK	105.60	104.95	104.60	104.60
POLISHING BIOFILTER TANK #2	105.75	104.95	104.98	102.09
POLISHING BIOFILTER TANK #1	105.25	104.92	102.06 (G) 104.95 (F)	104.57

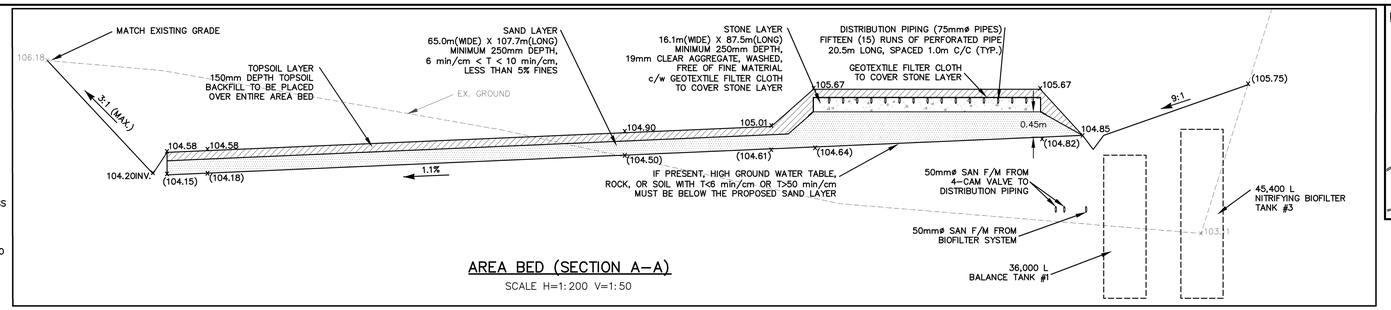
NOTES:

IF TANK HAS MULTIPLE INLETS AND/OR OUTLETS, ASSUME ALL INLETS ARE AT THE SAME ELEVATION AND ALL OUTLETS ARE AT THE SAME ELEVATION UNLESS OTHERWISE INDICATED.

(G) = GRAVITY SEWER
(F) = FORCEMAIN

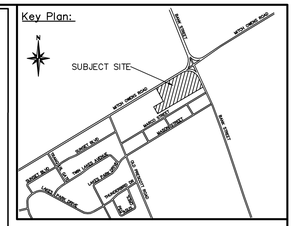
NOTES:

1. BIOFILTER AND AREA BED DESIGN PROVIDED BY WATERLOO BIOFILTER SYSTEMS INC.
2. REFER TO SHOP DRAWINGS PROVIDED BY WATERLOO BIOFILTER SYSTEMS INC. FOR ALL TANK INTERIOR COMPONENTS AND DETAILS.
3. REFER TO BIO 2 AND BIO 3 DRAWINGS FOR TYPICAL BIOFILTER TANK CROSS SECTIONS AND INTERIOR COMPONENTS.
4. WATERLOO BIOFILTER SYSTEMS INC. TO PROVIDE INSPECTION DURING CONSTRUCTION OF ALL BOIFILTER SYSTEM AND AREA BED.
5. ALL CONCRETE TANKS ARE TO BE INSULATED WITH STYROFOAM HIGHLOAD 40 INSULATION (BY OTHERS). STYROFOAM TO BE EXTENDED 1.0m BEYOND THE PERIMETER OF THE TANK AND EXTENDED 0.6m BELOW BOTTOM ON THE TANK. (REFER TO DETAIL ON BIO 2 DRAWING)
6. PROVIDE A MINIMUM OF 0.3m OF COVER OVER ALL BIOFILTER STRUCTURES.
7. ALL STRUCTURES THAT CONTAIN FILTERS, SCREENS, PUMPS, ETC. REQUIRE 0.75x0.75m ALUMINUM ACCESS HATCHES. ALL OTHER STRUCTURE REQUIRE A 0.6m MAINTENANCE HOLE ACCESS LID.
8. ALL GRAVITY SEWER TO BE 100mmø and 150mmø PVC SDR 28 SEWER PIPE AND ALL FORCEMAIN TO BE 50mmø (2.0ins) HDPE DR11 SANITARY PIPE (OR APPROVED EQUIVALENT) C/W CAUTION TAPE PLACED 300mm ABOVE THE PIPE FOR ALL BIOFILTER SERVICING. REFER TO TANK CROSS SECTION ON BIO 3 FOR PIPE SIZING.
9. ALL BIOFILTER STRUCTURES (TANKS) TO BE NEWMARKET PRE-CAST CONCRETE PRODUCTS OR APPROVED EQUIVALENT. REFER TO BIO 2 & 3 FOR ADDITIONAL DETAILS.
10. FORCEMAIN TO BE PLACED AT A CONSTANT GRADE IN ONE DIRECTION (I.E. MINIMIZE UP/DOWN BENDS WHERE POSSIBLE) TO REDUCE THE POSSIBILITY OF AIR-LOCKING THE SYSTEM.
11. ALL SANITARY SEWER SHALL HAVE 1.2m OF COVER MINIMUM. WHERE 1.2m OF COVER CAN'T BE OBTAINED, SANITARY SEWER SHALL BE INSULATED AS PER DETAIL ON DS1.
12. ALL TANK PLUMBING (I.E. PUMPS, VALVES, FILTERS, AND SCREENS) TO BE ACCESSIBLE AT GRADE.

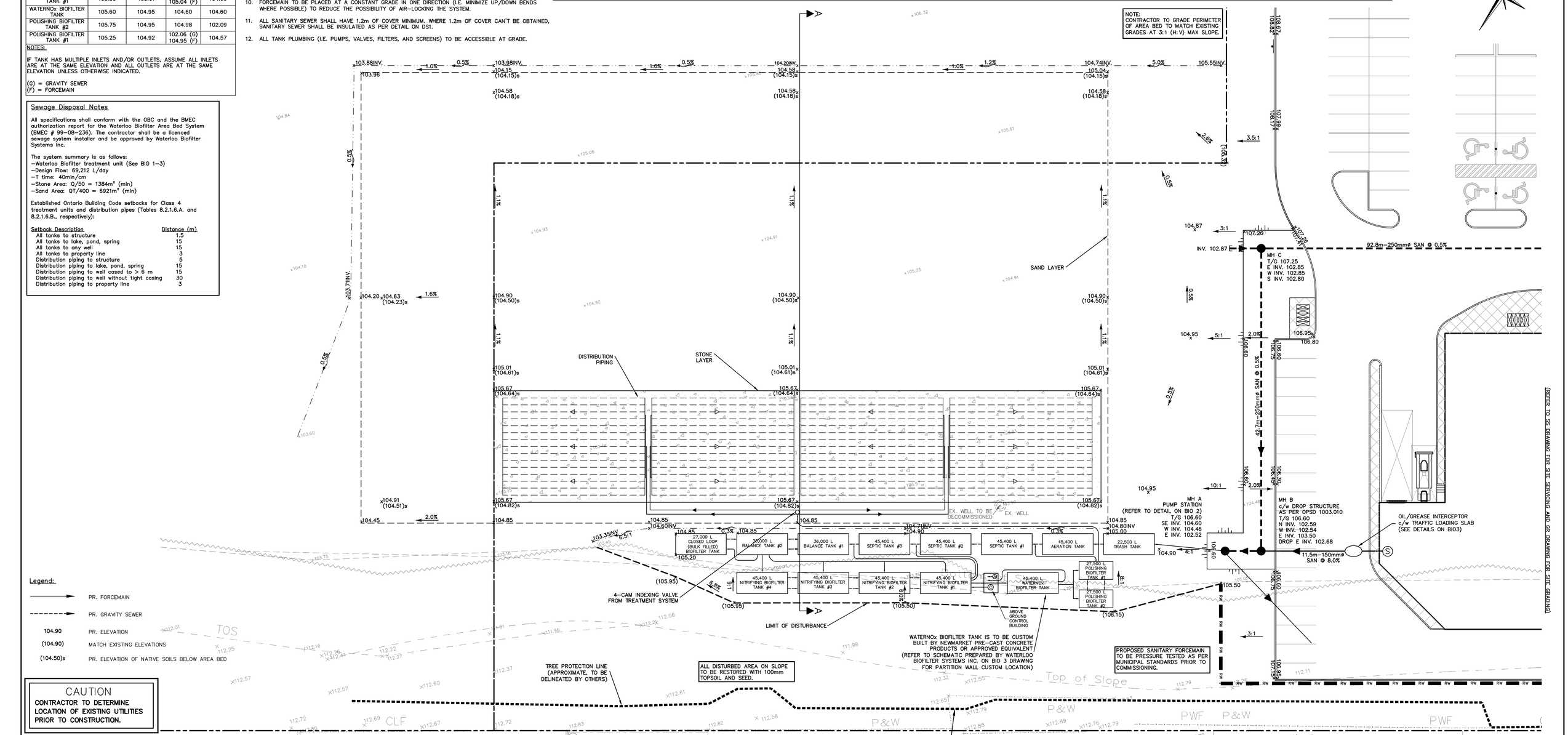


AREA BED (SECTION A-A)

SCALE H=1:200 V=1:50



NOTE:
CONTRACTOR TO GRADE PERIMETER OF AREA BED TO MATCH EXISTING GRADES AT 3:1 (H:V) MAX SLOPE.



Legend:

- PR. FORCEMAIN
- PR. GRAVITY SEWER
- 104.90 PR. ELEVATION
- (104.90) MATCH EXISTING ELEVATIONS
- (104.50)s PR. ELEVATION OF NATIVE SOILS BELOW AREA BED

CAUTION
CONTRACTOR TO DETERMINE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

Sewage Disposal Notes

All specifications shall conform with the OBC and the BMEC authorization report for the Waterloo Biofilter Area Bed System (BMEC # 99-08-236). The contractor shall be a licenced sewage system installer and be approved by Waterloo Biofilter Systems Inc.

The system summary is as follows:
- Waterloo Biofilter treatment unit (See BIO 1-3)
- Design Flow: 69,212 L/day
- T time: 40min/cm
- Stone Area: Q/50 = 1384m² (min)
- Sand Area: QT/400 = 6921m² (min)

Established Ontario Building Code setbacks for Class 4 treatment units and distribution pipes (Tables 8.2.1.6.A. and 8.2.1.6.B., respectively):

Setback Description	Distance (m)
All tanks to structure	1.5
All tanks to lake, pond, spring	15
All tanks to any well	15
All tanks to property line	3
Distribution piping to structure	5
Distribution piping to lake, pond, spring	15
Distribution piping to well cased to > 6 m	15
Distribution piping to well without tight casing	30
Distribution piping to property line	3

Notes:

1. Unless noted otherwise, the measurements and distances shown on this drawing are shown in meters.
2. Do not scale drawings.
3. It is the contractor's responsibility to verify all dimensions, levels and datums on site and report any discrepancies or omissions to WMI & Associates Ltd. prior to construction.
4. This drawing is to be read and understood in conjunction with all other relevant documents applicable to this project.
5. This drawing is the exclusive property of WMI & Associates Ltd. and the reproduction of any part of this document without prior written consent is strictly prohibited.

Benchmark: 113.99

#3 CONCRETE MONUMENT (001196530377). NORTH SIDE OF MITCH OWENS ROAD APPROXIMATELY 250m WEST OF THE INTERSECTION OF MITCH OWENS ROAD AND BANK STREET.

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
J.W.LIGHTHEART
100140403
May 22, 2015

No.	Issue / Revision	Date
1	1st Submisson	Feb. 4, 2014
2	2nd Submisson	May 22, 2015

Greely Commercial Center

BIOFILTER &
AREA BED PLAN

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Drawn By	Checked By	Drawing No.
TG	JWL	BIO 1
Scale 1:250	Project No. 11-183	