

6	CLARIFICATION	2023 08 10
7	ALTERATIONS	2023 07 18
8	ENVIRONMENTAL ACT SUBMISSION	2023 04 17
REVISION	ISSUED FOR	DATE

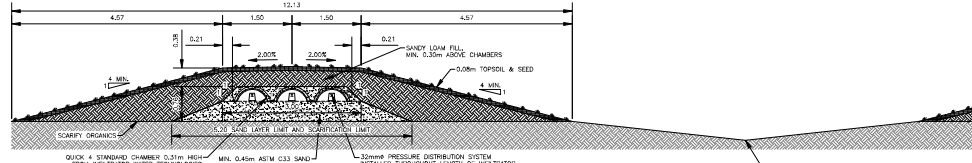
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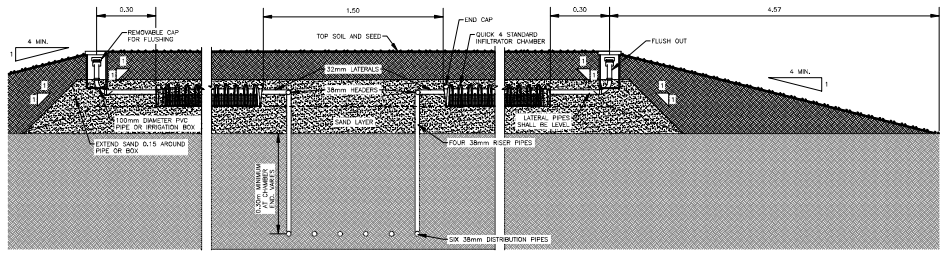
**REGISTRATION**  
 Certificate of Authorization  
 STECKLEY Consulting Engineers Inc.  
 No. 1432 Date: 2024.04.30

CLIENT STEPHENFIELD LAKE RESORT SEPTIC SYSTEM MODIFICATIONS			
TITLE SEPTIC SYSTEM PLAN, KEY PLAN & LOCATION PLAN			
FIELD BOOK	N/A	DATE	2022 09 30
DESIGN	K.B.S.	CHECKED	K.B.S.
DRAWN	W.M.	SHEET	1 OF 3
DWG. NO.	22E12-P1R		



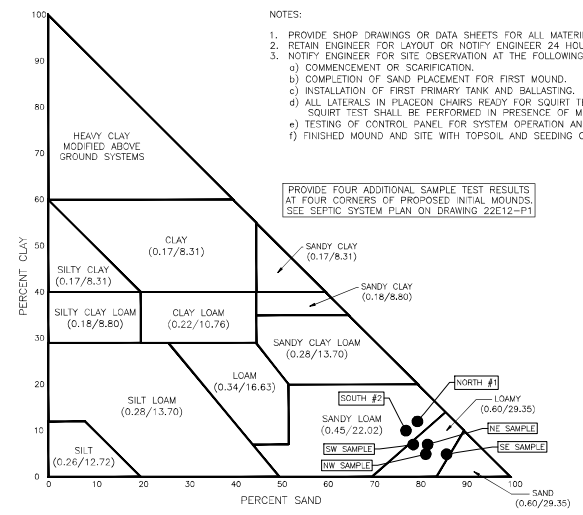
**1** TYPICAL MOUND CROSS-SECTION  
SCALE: 1/50

- NOTES:
1. SCURRY TO A DEPTH OF 0.18m TO 0.20m
  2. ALL PIPES SHALL BE PVC 40, PVC 10R #1, PE DR17, OR HDPE DR17



**2** CHAMBER CLEANOUT DETAIL  
SCALE: NTS

- NOTES:
1. PROVIDE SHOP DRAWINGS OR DATA SHEETS FOR ALL MATERIALS FOR REVIEW BY ENGINEER.
  2. RETAIN ENGINEER FOR LAYOUT OR NOTIFY ENGINEER 24 HOURS PRIOR TO LAYOUT FOR SITE OBSERVATION.
  3. NOTIFY ENGINEER FOR SITE OBSERVATION AT THE FOLLOWING STAGES:
    - a) COMMENCEMENT OR SCARIFICATION.
    - b) COMPLETION OF SAND PLACEMENT FOR FIRST MOUND.
    - c) INSTALLATION OF FIRST PRIMARY TANK AND BALLASTING.
    - d) ALL LATERALS IN PLACE ON CHAIRS READY FOR SQUIRT TEST OF EACH PORTION OF BOTH MOUNDS. SQUIRT TEST SHALL BE PERFORMED IN PRESENCE OF MB CONSERVATION OFFICER.
    - e) TESTING OF CONTROL PANEL FOR SYSTEM OPERATION AND RECORDING OF DATA.
    - f) FINISHED MOUND AND SITE WITH TOPSOIL AND SEEDING COMPLETED.

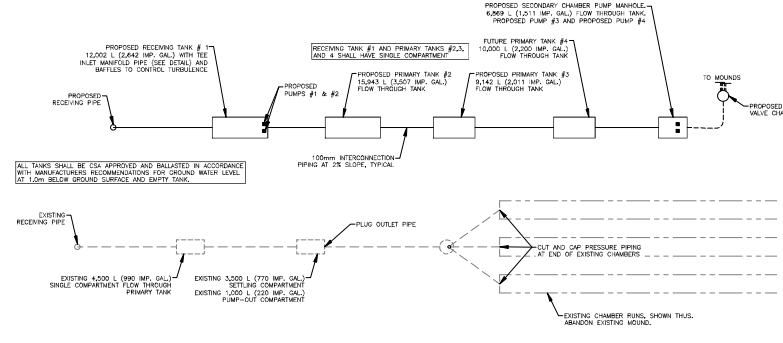


**SIEVE TESTS**  
SCALE: NTS

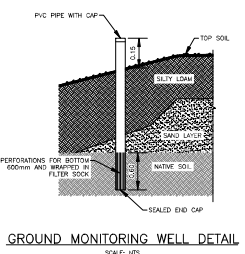
**GROUND SITE PREPARATION AND INSTALLATION**

1. CHECK THE MOISTURE CONTENT OF THE SOIL AT 0.20m DEPTH. IF IT IS TOO WET, SMEARING AND COMPACTION WILL RESULT, REDUCING THE INFILTRATION CAPACITY OF THE SOIL. SOIL MOISTURE CAN BE DETERMINED BY ROLLING A SOIL SAMPLE BETWEEN THE HANDS. IF IT ROLLS INTO A WIRE, THE SITE IS TOO WET TO PREPARE. IF IT CRUMBLES, SITE PREPARATION CAN PROCEED.
2. STAKE OUT THE MOUND AREA ON THE SITE ACCORDING TO THE SYSTEM DESIGN. REFERENCE STAKE OFFSET FROM THE CORNER STAKES ARE RECOMMENDED IN USE CORNER STAKES ARE DISTRIBUTED DURING CONSTRUCTION.
3. MEASURE THE AVERAGE GROUND ELEVATION ALONG THE HIGHER EDGE OF THE BED AND REFERENCE THIS TO A BENCHMARK FOR FUTURE USE. THIS IS USED TO DETERMINE THE BOTTOM ELEVATION OF THE BED.
4. DETERMINE WHERE THE DISTRIBUTION PIPES FROM THE SWITCHING MANHOLE CONNECT TO THE DISTRIBUTION SYSTEM IN THE FILTER MEDIA FOR EACH OF THE NORTH AND SOUTH PORTION OF MOUNDS.
5. TRENCH AND LAY THE FOREMAN PIPES FROM THE PUMP CHAMBER TO THE SWITCHING MANHOLES AND THE DISTRIBUTION PIPES FROM THE SWITCHING MANHOLE TO INLINE WITH THE CENTRE OF THE HEADER LOCATION FOR EACH MOUND SECTION. CUT AND CAP 0.30m BENEATH THE EXISTING GROUND SURFACE. LAY DISTRIBUTION PIPE AND FOREMAN PIPES SLOPING UNIFORMLY BACK TO THE PUMP MANHOLE AND PUMP CHAMBERS RESPECTIVELY SO THAT THEY DRAIN AFTER COSSING OR CAN BE EASILY BLOWN OUT IN PREPARATION FOR FALL SHUTDOWN.
6. BACKFILL AND COMPACT THE SOIL AROUND THE PIPES TO PREVENT EFFLUENT SEEPING BACK ALONG THE PIPE. BACKFILL AROUND THE PIPES BEFORE FLOWING, TO AVOID COMPACTION AND DISTURBING OF THE GROUND SURFACE.
7. PREPARE THE AREA UNDER THE SAND LAYER IN THE EXISTING CULTIVATED FIELD USING A SPRING-LOADED AGRICULTURAL CHISEL. FLOW AND PLOWING PARALLEL TO THE CHAMBER RUNS. IF THERE IS A COMPACTED SOIL LAYER SUCH AS A PLOW PAN, CONSULT ENGINEER AS DEEP PLOWING TO LOOSEN THIS LAYER MAY BE REQUIRED. THE FUNCTION OF THIS PREPARATION IS TO PROVIDE A CLEARED GROUND SURFACE WITH A SERIES OF VERTICAL CHANNELS TO ENHANCE TRANSFER OF MOISTURE FROM THE SAND FILL TO THE ORIGINAL SOIL, WHILE INHIBITING LATERAL MOVEMENT AT THE SAND-SOIL INTERFACE. IN ADDITION, THE VERTICAL FURROWS AID IN STABILIZING THE SAND AT THE SAND-SOIL INTERFACE IN AN INTERLOCKING FASHION. THIS SITE SHOULD BE PLOWED USING A SPRING-LOADED AGRICULTURAL CHISEL. PLOW, OTHER ACCEPTABLE APPARATUS OR METHOD TO PREPARE THE SOIL BEFORE CONSTRUCTING THE MOUND SYSTEM. ROTOTILLING IS NOT AN ACCEPTABLE SUBSTITUTE. DO NOT COMPACT THE INFILTRATIVE AREA. THE IMPORTANT POINT IS THAT A ROUGH, UN-SWEARED SURFACE SHOULD BE LEFT. CAREFUL OBSERVATION IS REQUIRED TO ASSURE THAT THE SOIL MOISTURE CONTENT IS NOT SO HIGH THAT THE SOIL SURFACE IS SMEARED BY THE ACTION OF THE PLOW. PLOWING SHOULD NOT PROCEED UNTIL THE SOIL IS SUFFICIENTLY DRY SO AS NOT TO SMEAR IN THE PLOWING PROCESS. IMMEDIATE CONSTRUCTION AFTER PLOWING IS DESIRABLE. AVOID HITTING AND COMPACTION OF THE PLOWED AREA BY TRAFFIC. IF IT RAINS AFTER THE PLOWING IS COMPLETED, WAIT UNTIL THE SOIL DRIES OUT BEFORE CONTINUING CONSTRUCTION.
8. RESET THE CORNER STAKES, IF NECESSARY, USING THE OFFSET REFERENCE STAKES AND LOCATE THE BED OR TRENCH AREAS BY STAKING THEIR BOUNDARIES.
9. EXTEND THE ENDS OF THE DISTRIBUTION PIPES FROM THE PUMP CHAMBER (WITH THE EXCEPTION OF THE FUTURE MOUND #3 PIPES) WHICH HAD PREVIOUSLY BEEN CUT OFF TO SEVERAL FEET ABOVE THE GROUND SURFACE.

10. INSTALL THE TWO MONITORING WELLS. USE REBAR TO STABILIZE THE PIPE. PLACE GRAVEL AROUND THE PERFORATIONS. PLACE MONITORING WELLS WITH THE BOTTOM AT THE ORIGINAL GROUND SURFACE, AT THE TOP EXTENDING ABOVE FINAL GRADE WHERE IT CAN BE FITTED WITH A REMOVABLE CAP. THE MAINTENANCE PROVIDER CAN USE THESE OBSERVE WATER LEVELS.
11. PLACE THE ASTM D33 SAND AROUND THE EDGE OF THE PLOWED AREA. KEEP THE WHEELS OF TRUCKS OFF PLOWED AREAS WHICH ARE UNDER THE AREA TO RECEIVE SAND. MINIMIZE TRAFFIC IN THE BERM AREA OF THE MOUND SYSTEM, WORK FROM THE ENDS OF THE MOUNDS. THIS WILL AVOID COMPACTION THE SOILS IN THE BERM AREAS, WHICH, IF COMPACTED, WOULD AFFECT LATERAL MOVEMENT AWAY FROM THE MOUND AND POSSIBLY CAUSE SURFACE SEPARATE AT THE TOE OF THE MOUND.
12. MOVE THE FILTER MEDIA INTO PLACE USING A SMALL TRACK-TYPE TRACTOR WITH BLADE, AN EXCAVATOR, OR A SINGER. DO NOT USE A TRACTOR/BACKHOE HAVING RUBBER-TIRED WHEELS. ALWAYS KEEP A MINIMUM OF 150mm OF FILTER MEDIA BENEATH TRACKS TO PREVENT COMPACTION OF THE NATURAL SOIL. ENSURE PLACED SAND IS SETTLED TO A UNIFORM DENSITY BUT DO NOT OVER COMPACT THE SAND.
13. PLACE THE FILTER MEDIA TO THE TOP OF THE BED, SHAPE SIDES TO THE REQUIRED SLOPE.
14. WITH THE BLADE OF THE TRACTOR, FORM THE INFILTRATION BED. HAND LEVEL THE SAND WHICH IS AT THE LEVEL OF THE BOTTOM OF THE CHAMBERS TO WITHIN 12mm. FINAL LEVEL IS SET BY THE HIGH END OF THE EXISTING GROUND SURFACE.
15. PLACE THE DISTRIBUTION PIPES ON THE SAND BED AND CONNECT THE NORTH AND SOUTH MANHOLES TO THOSE PREVIOUSLY CAPPED DISTRIBUTION PIPE. PLACE THE HEADER MANHOLE PIPE THROUGH A CHAMBER END CAP AND LAY LATERALS COMPLETE WITH CLEANOUTS LEVEL ON CHAIRS, REMOVING RISERS AND DIPS.
16. PRESSURE TEST THE DISTRIBUTION SYSTEM IN NORTH AND SOUTH PORTIONS OF EACH MOUND FOR UNIFORM SQUIRT OF 1.5m.
17. PLACE SAND FROM 0.30m BEYOND AT THE BASE OF THE CHAMBER SLOPED UP TO 1:1 TO TOP OF CHAMBERS ON SIDES AND ENDS. TOP OF SAND TO BE LEVEL BETWEEN NORTH AND SOUTH PORTIONS OF MOUNDS. BED BOTTOM OF THE CLEAN OUT ELBOW TO 150mm ABOVE AND 150mm BELOW IN SAND, OR TO BOTTOM OF IRRIGATION BOX, IF USED.
18. PLACE THE SOIL FOR THE BERM. THIS SHALL BE SANDY LOAM. PLACE SOIL AT A DEPTH OF 0.30m OVER THE TOP OF THE CHAMBERS IN LINE WITH THE 3.0m WIDE EDGE OF THE SAND LAYER SLOPED UP TO THE CENTRE AT 2% THIS CREATES A SLOPE THAT ASSISTS THE SAND RUN-OFF OF PRECIPITATION. ALSO, THIS LAYER PROVIDES SOME FROST PROTECTION. DO NOT DRIVE OVER THE TOP OF THE BED AS THE DISTRIBUTION SYSTEM MAY BE DAMAGED. USE SANDY LOAM FOR BERM WHICH WILL ENSURE OXYGEN CAN GET IN. FINAL GRADE SLOPE TO A HORIZONTAL TO 1 VERTICAL TO TOE OF BERM TO ENSURE POSITIVE DRAINAGE FROM MOUND SURFACE AND A SLOPE WHICH CAN BE MAINTAINED WHEN CUTTING GRASS COVER.
19. TOPSOIL THE MOUND TO A THICKNESS OF 0.08m AND SEED INCLUDING TO 7.5m BEYOND THE TOE OF EACH MOUND ON ALL SIDES TO ENHANCE EVAPOTRANSPIRATION.
20. PROTECT THE RECEIVING AREA WHICH IS 7.5m FROM THE TOE OF THE MOUNDS AGAINST DISTURBANCE AND COMPACTION.



**SEPTIC SYSTEM SCHEMATIC PLAN**  
SCALE: NTS



**GROUND MONITORING WELL DETAIL**  
SCALE: NTS

**RECEIVING TANK #1 AND PRIMARY TANK #2 INLET TEE MANIFOLD**  
SCALE: NTS

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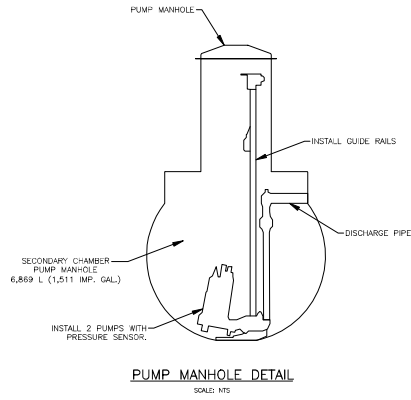
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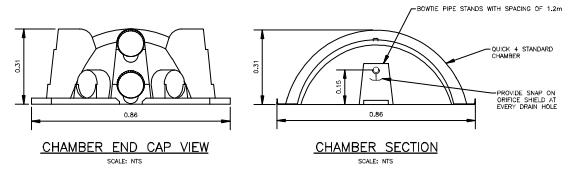
CLIENT: **STEPHENFIELD LAKE RESORT**  
SEPTIC FIELD MODIFICATIONS

TITLE	<b>SEPTIC SYSTEM SCHEMATIC PLAN, DETAILS &amp; NOTES</b>		
FIELD BOOK	N/A	DATE	2022 09 30
DESIGN	K.B.S.	CHECKED	K.B.S.
DRAWN	W.M.	SHEET	2 OF 3
DRG. NO.	<b>22E12-P2R</b>		

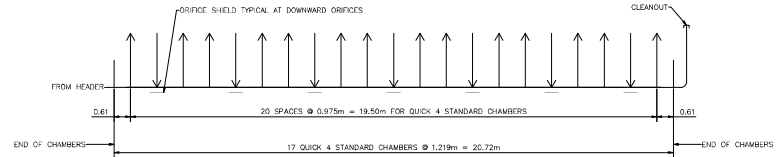


**DRAWING NOTES:**

1. UNIONS TO BE ACCESSIBLE FROM TOP OF MANHOLE.
2. PUMPED SANITARY LINES TO SEPTIC FIELD. REFER TO ALL PLANS. PROVIDE 3M COVER ON PIPES.
3. VALVE TO BE INSIDE MANHOLE.

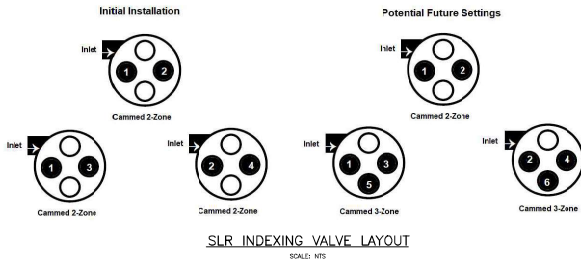
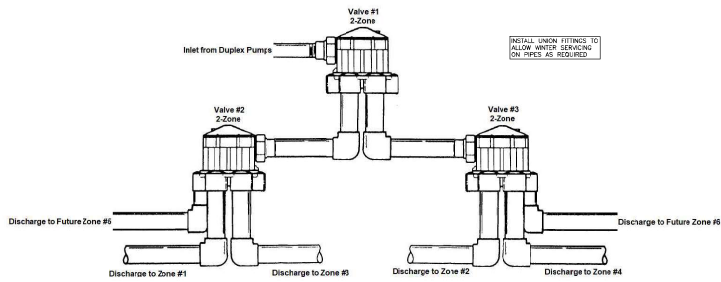


**QUICK 4 STANDARD CHAMBER**



NOTE: ALL ORIFICES SHALL BE 5.6mm DIAMETER

**TYPICAL LATERAL ORIFICE SPACING**



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CLIENT: **STEPHENFIELD LAKE RESORT**  
SEPTIC FIELD MODIFICATIONS

TITLE	PUMP MANHOLE, CHAMBER, AND ORIFICE DETAILS		
FIELD BOOK	N/A	DATE	2022 09 30
DESIGN	K.B.S.	CHECKED	K.B.S.
DRAWN	W.M.	DATE	2022 09 30
SHET	3 OF 3	DRG. NO.	22E12-P3R