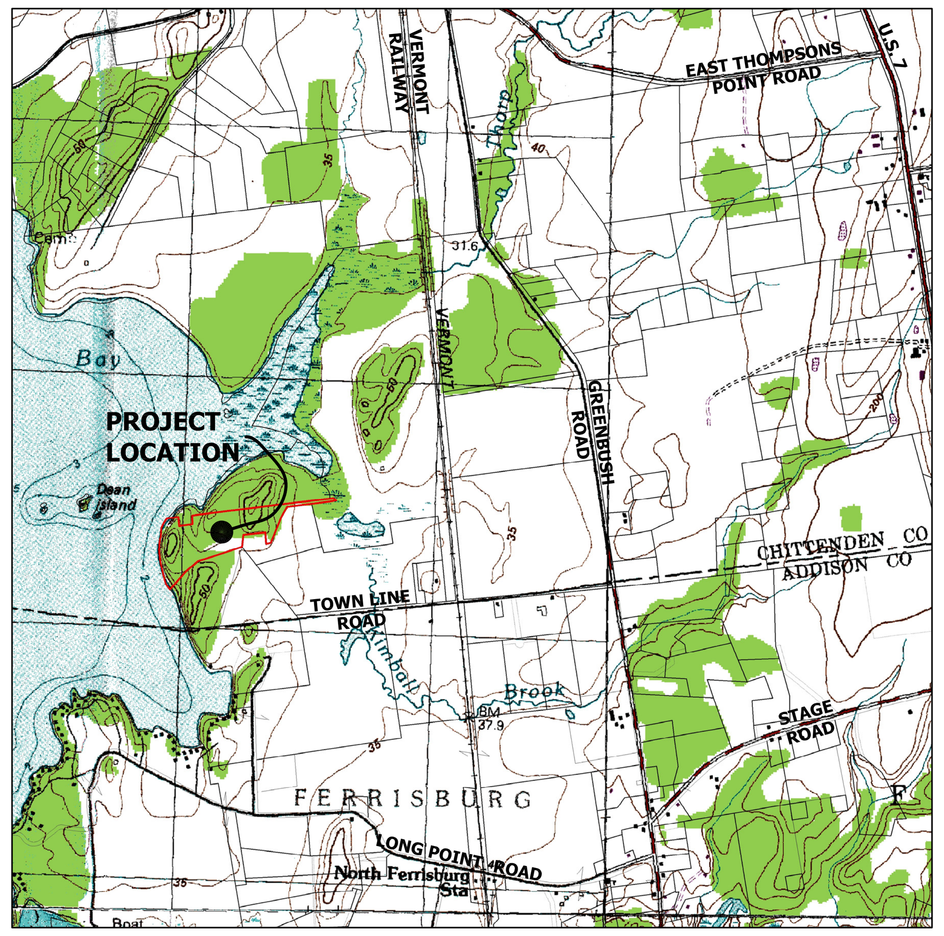


LOCATION MAP
1"=2,000'

SOIL PROFILES & PERCOLATION TESTING RESULTS

The following test pits were excavated by John Scott Excavation and the soil profiles were logged by Craig Heindel, CPG and David W. Fuqua, Licensed Designer with Heindel and Noyes, on June 7, 2010. Also present for the soils investigation were Story Jenks, Realtor and Spencer Harris with the Town of Charlotte.

SHWT = Seasonal high water table, NGWTD = No groundwater to depth, NBRTD = No bedrock to depth

Test Pit No. H-1 — June 7, 2010
0" – 8" Woods duff/clayey topsoil
8" – 48" Dense gray moist clay
SHWT = 8" NGWTD, NBRTD

Test Pit No. H-2
0" – 6" Woods duff/topsoil
6" – 15" Friable brown sandy loam, roots throughout
15" – 43" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 15", NGWTD, NBRTD

Test Pit No. H-3
0" – 6" Woods duff/topsoil
6" – 12" Friable gray silty clay, moist, mottled
12" – 46" Dense gray clay, mottled
SHWT = 6", NGWTD, NBRTD

Test Pit No. H-4
0" – 6" Woods duff/topsoil
6" – 15" Friable brown sandy loam, roots throughout
15" – 36" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 15", NGWTD, NBRTD

Test Pit No. H-5
0" – 6" Woods duff/topsoil
6" – 14" Friable brown sandy loam, roots throughout
14" – 46" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 14", NGWTD, NBRTD

Test Pit No. H-6
0" – 6" Woods duff/topsoil
6" – 12" Friable brown sandy loam, roots throughout
12" – 37" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 12", NGWTD, NBRTD

Test Pit No. H-7
0" – 8" Woods duff/topsoil
8" – 12" Friable brown sandy loam, roots throughout, some mottling
12" – 40" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 8", NGWTD, NBRTD

The following test pits were excavated by John Scott Excavation and the soil profiles were logged by David W. Fuqua, Licensed Designer with Heindel and Noyes, on June 14, 2010. Also present for the soils investigation were Story Jenks, Realtor and Spencer Harris with the Town of Charlotte.

Test Pit No. H-8 — June 14, 2010
0" – 6" Woods duff/topsoil
6" – 20" Friable brown sandy loam, mottling @14"
20" – 43" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 14", NGWTD, NBRTD

Test Pit No. H-9
0" – 6" Woods duff/topsoil
6" – 16" Friable brown sandy loam, no apparent mottling
16" – 48" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 16", NGWTD, NBRTD

Test Pit No. H-10
0" – 8" Woods duff/topsoil
6" – 18" Friable brown sandy loam, no apparent mottling
18" – 48" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 18", NGWTD, NBRTD

Test Pit No. H-11
0" – 6" Woods duff/topsoil, heavy
6" – 18" Friable brown sandy loam, mottled
16" – 48" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 6", NGWTD, NBRTD

Test Pit No. H-12
0" – 6" Woods duff/topsoil
6" – 16" Friable brown sandy loam, no apparent mottling
16" – 24" Friable stony brown sandy loam, no apparent mottling
24" – 34" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 24", NGWTD, NBRTD

Test Pit No. H-13
0" – 6" Woods duff/topsoil
6" – 18" Friable stony brown sandy loam, no apparent mottling
18" Bedrock
SHWT = 18", NGWTD

Test Pit No. H-14
0" – 6" Woods duff/topsoil
6" – 18" Friable stony brown sandy loam, no apparent mottling
18" Bedrock
SHWT = 18", NGWTD

Test Pit No. H-15
0" – 6" Woods duff/topsoil
6" – 30" Friable brown sandy loam, few stones, no apparent mottling
30" – 43" Dense tan-gray loamy fine sandy clay, blocky, mottled
SHWT = 30", NGWTD, NBRTD

The following shallow holes were hand excavated; the soil profiles were logged; and percolation testing was performed by David W. Fuqua, Licensed Designer with Heindel and Noyes, on July 16, 2010.

Shallow Hole No. A-1
0" – 6" Woods duff/topsoil
6" – 16" Friable brown sandy loam, roots throughout
16" – 25" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 16", NGWTD, NBRTD
Percolation Rate = 33 minutes per inch

Note: Probed for bedrock to depth of 36", no bedrock to depth.

Shallow Hole No. A-2
0" – 6" Woods duff/topsoil
6" – 15" Friable brown sandy loam, roots throughout, some mottling
15" – 19" Dense tan-gray loamy fine sand, blocky, mottled
SHWT = 8", NGWTD, NBRTD

Note: Probed for bedrock to depth of 40", no bedrock to depth.

Shallow Hole No. A-3
0" – 6" Woods duff/topsoil
6" – 16" Friable brown sandy loam, no apparent mottling
16" – 25" Friable stony brown sandy loam, no apparent mottling
25" Bedrock
SHWT = 24", NGWTD
Percolation Rate = 17 minutes per inch

Note: Percolation test performed at depth of 24" in adjacent hole.

Shallow Hole No. A-4
0" – 6" Woods duff/topsoil
6" – 18" Friable stony brown sandy loam, no apparent mottling
18" Bedrock
SHWT = 18", NGWTD

Shallow Hole No. A-5
0" – 6" Woods duff/topsoil
6" – 20" Friable stony brown sandy loam, no apparent mottling
20" Bedrock
SHWT = 20", NGWTD

NOTICE TO PROPERTY OWNER

1. **Project Description -** This proposal is for the demolition of the existing two bedroom primitive cabin and the existing three bedroom house currently served by an on-site mound wastewater disposal system and existing drilled bedrock well. A new two bedroom **CABIN** will be constructed in the same general area of the existing cabin and will be connected to the existing drilled bedrock well and existing mound wastewater disposal system. A future four bedroom **HOUSE** is proposed in the same general area of the existing house. The HOUSE will be served by a filtrate disposal system that discharges to two new mound wastewater disposal areas. At the time of the HOUSE construction; a new drilled well will be constructed for the CABIN and the HOUSE will be connected to the existing drilled well.

2. The information shown on these plans and details represent the results of a field survey and testing program intended to produce a system design in accordance with state guidelines.

3. Prior to engaging a contractor or commencing construction, the owner is encouraged to study this information and/or solicit information from the Designer. The proper functioning of the completed system is dependent upon careful attention to the details and notes provided. Modifications to the design and specifications or omissions of construction procedures may lead to premature failure and render the system uncertifiable, in either case the Designer cannot be held responsible for subsequent problems.

4. The owner is encouraged to seek professional assistance in monitoring and certifying compliance with the approved plans. As specified in the above construction notes, the owner or contractor is responsible for coordinating the schedule of construction and construction supervision.

5. The owner/contractor is responsible for assuring proper certification testing and inspections are carried out in accordance with the notes and details provided on these drawings.

6. Before commencing construction, all applicable state and local permits must be secured by the owner. This is the responsibility of the owner not the Designer.

7. This office will not certify any construction of systems depicted on these drawings unless:

   A. Prior to all construction arrangements are made with this office to provide such certification services;

   B. Construction is completed in strict adherence with the approved project plans;

   C. All changes to these plans, whether or not independently observable by the Designer, are to be reported to the Designer by the Contractor for a suitability determination; and

   D. All changes to the approved project plans have been authorized by this office and approved by all appropriate reviewing agencies.

8. Wastewater Disposal System Maintenance Schedule:

   Use of the Advantex™ AX20-RT Treatment system will require the owner(s) to maintain a valid maintenance contract as per the State of Vermont Innovative/Alternative System Approval #2001-01-R3 (2009 Renewal). A copy of this approval has been attached to the permit application and additional copies may be found at the following internet address:

   http://www.anr.state.vt.us/dec/ww/Innovative.htm

   The following maintenance schedule was copied from the Vermont Wastewater System and Potable Water Supply Rules, Chapter 1, Appendix 3-A. This schedule should be followed to insure proper operation of the sewage disposal system:

   3-A-01 Septic Tank Specifications & Maintenance

   (b) Maintenance

   (1) At least once a year, the depth of sludge and scum in the septic tank should be measured*. The tank should be pumped tank should be pumped if:

   (A) The sludge is closer than twelve inches to the outlet baffle, or

   (B) The scum layer is closer than three inches to the septic tank outlet baffle.

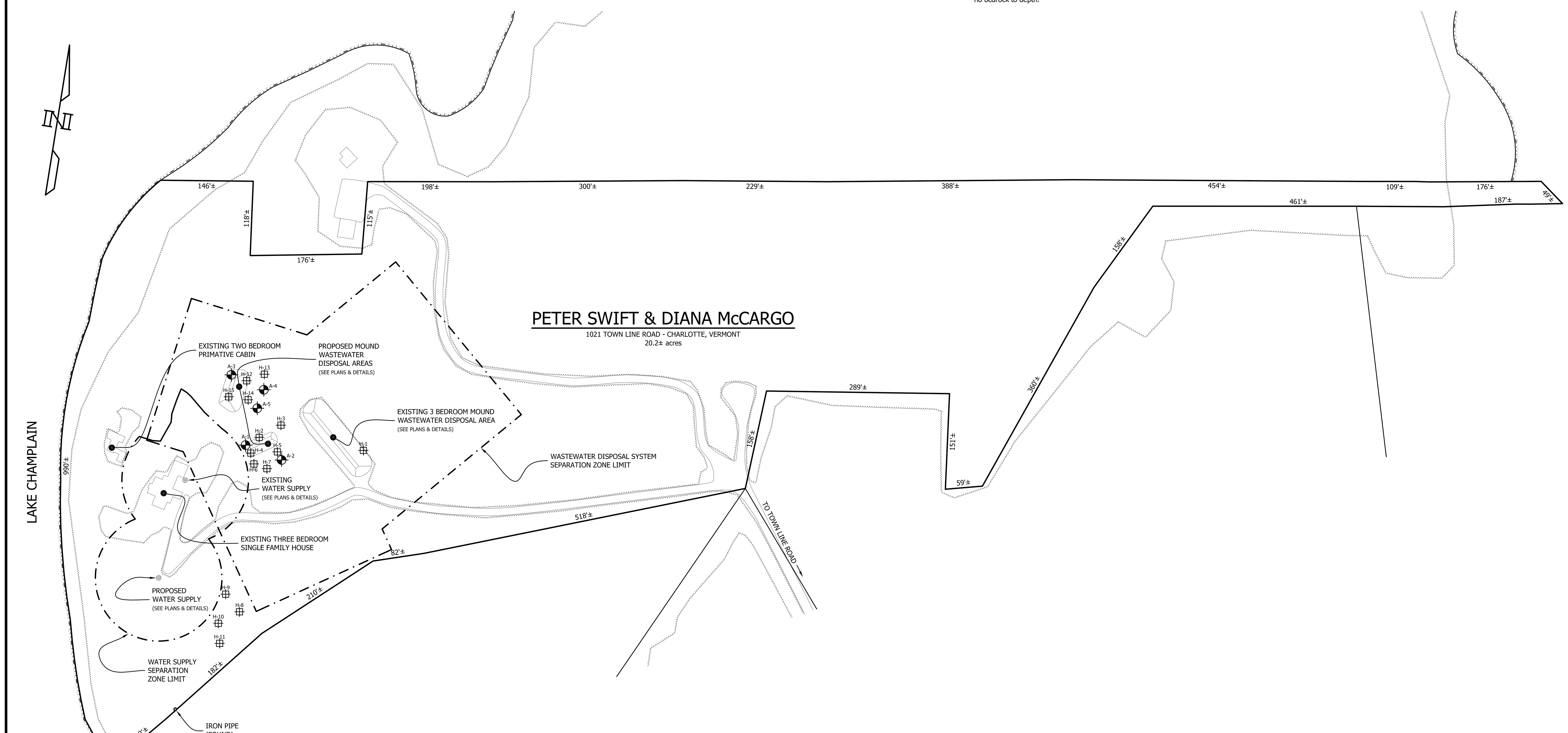
   (C) Following septic tank cleaning in units over 5,000 gallons, all interior surfaces of the tank should be inspected for leaks and cracks.

   (2) At least once a year, dosing tanks and distribution boxes should be opened and settled solids removed as necessary and the dosing tank or distribution box checked for levelness.

   (3) Toxic or hazardous substances should in general not be disposed of in septic systems. These substances may pass through the system in an unaltered state and contaminate groundwater or remain in the septage and subsequently contaminate the soil or crops at the site of ultimate disposal.

   If your system has a pump station or dosing siphon, it should also be checked once a year. There should not be any scum or solids present. Have station/siphon cleaned out if scum and/or solids are found. Inspect the station/siphon for cracks or groundwater infiltration. Repair any cracks found.

   ***Garbage grinders and water softeners/filtration equipment are not recommended for use with septic tank systems and may void warranty of advance treatment systems. If garbage grinders are connected to the septic tank, the frequency of septic/effluent filter inspections should be increased to quarterly. Discharge of water softeners/filtration equipment to dry wells, floor drains or to exterior ground surface will require additional permitting. Please contact your State Regional Office for assistance.**



SITE PLAN
1" = 100'

LEGEND

- EXISTING GROUND CONTOUR (Minor/Major)
- FINISH GRADE CONTOUR
- SHALLOW HOLE LOCATION
- TEST PIT LOCATION
- WATER/WASTEWATER SEPARATION ZONE

STATE OF VERMONT — DAVID W. FUQUA — NO. 230-B — CLASS B — LICENSED DESIGNER

SITE PLAN

SWIFT & McCARGO

1021 TOWN LINE ROAD
CHARLOTTE, VERMONT

Heindel & Noyes, Inc.
• Hydrogeology • Ecology •
• Environmental Engineering •
CONSULTING SCIENTISTS AND ENGINEERS
434 Shelburne Road - P.O. Box 4503
Burlington, Vermont 05406 (802) 658-0820

SCALE: NOTED	DATE: 09-10-2010
DRAWN BY: DWF	PROJECT NO.: 2010055
PROJECT MANAGER: CDH	APPROVED BY: DWF
FILE: Plan.dwg	☐ DRAFT ☒ FINAL
SHEET 1	OF 6

WATER SUPPLY & WASTEWATER DISPOSAL DESIGN:

(FOR CABIN)

1. Design Flow for Residential Units:

    The design flow for single-family residential units shall be calculated on the following requirements:

    A. The design flow for each person shall be 70 gallons per person per day;

    B. The first three bedrooms shall be assumed to have two persons per bedroom;

    C. Each additional bedroom may be assumed to one person per bedroom. When a building will be subject to rental use or when it is likely there will be extended or frequent high occupancy use, the system should be sized for at least 2 persons per bedroom.

    D. The design flow for a single-family residence on its own individual lot shall be based on a minimum of three bedrooms.

    Therefore, for a 2 bedroom single-family residence, the design flow is 280 gal./day.

2. Water Supply:

    The existing bedrock drilled well (Tag #348) was constructed in June 1985 to a depth of 250 feet below ground surface; bedrock began at 4 feet below ground surface. The well has a reported Well Driller's yield of 5 gallons per minute. The well casing extends from just above ground surface to a depth of 35 feet. Prior to connecting the CABIN to the existing well the well casing shall be extended to a minimum of 18" above ground surface.

    A. During construction of the HOUSE, a new drilled well will be constructed and connected to the CABIN. The existing well will then be connected to the HOUSE. The existing drilled well is as shown on the plan. Locations for drilled wells on any lots created in the future must meet the requirements of the Vermont Environmental Protection Rules, (Vermont Water Supply Rule - Chapter 21, Appendix A, Part 11.4), including the following minimum isolation distances:

Source of Contamination:	Isolation Distance:
Septic Tanks & Pump Stations:	50 feet
Sewer lines & Force Mains:	50 feet
Buildings:	10 feet
Drives:	15 feet

    B. Maintain a 25-foot minimum isolation distance between water service lines and subsurface wastewater piping and related tanks.

    C. Well Yield:

    The Average Day Demand, (ADD), for the CABIN is 280 gal./day. The Maximum Day Demand, (MDD) is calculated by dividing the ADD by not more than 720 minutes. The resulting flow rate is expressed in gallons per minute and equals the minimum well yield allowed without required storage. The MDD is:

    (280 gal./day) / (720 minutes) = 0.39 gallons per minute.

    D. However, wells that have yields less than the Instantaneous Peak Demand of 5 gallons per minute may require some type of storage.

    E. Conventional water saving plumbing fixtures including, but not limited to, maximum 3 ½ gallons per flush toilets, maximum 2 g.p.m. low flow showerheads and faucet aerators shall be installed in the CABIN.

    F. The Owner is responsible for assuring the CABIN well provides adequate quality and quantity before it is deemed ready for use. By this plan the Designer makes no guarantee as to well yield or quality.

3. Existing Mound Wastewater Disposal System Design:

    The existing mound wastewater disposal system was designed by Marshfield Engineering Services (MSE) in 1984 and was sized for a three bedroom house with a design flow of 450 gallons per day. The mound wastewater disposal system was inspected on June 7, 2010 and it was determined that the existing mound was operating properly and was acceptable for continued use for the proposed two bedroom CABIN reconstruction. On June 29, 2010, a test of the distribution piping in the mound was conducted and it was found that there was equal distribution along the length of the mound. For this proposal, a new Septic Tank Effluent Pump (STEP) system will be used for the CABIN to replace the existing 1,000 gallon concrete septic tank and pump station. A new 2"Ø force main will be run from the STEP and will tie into the existing 2"Ø force main near the existing tankage. Flushing basins will be installed on the ends of the existing laterals to accommodate testing of the new equipment and for future routine maintenance. Distribution pump sizing for the STEP based on tank location and MSE Mound Wastewater Disposal System Design follows:

    A. Pressure Distribution Design:

    The MSE design utilized eighteen 3/8"Ø orifices, 6' OC on two 2"Ø Sch. 40 PVC laterals.

    To maintain a minimum pressure of 1.3 p.s.i. at the distal 3/8"Ø orifice, the flow through any one orifice is:

    $$\begin{aligned} Q &= CA\sqrt{2gh} \\ &= 0.6\,[\pi(3/8'' \times 1'/12'' \times \tfrac{1}{2})^2]\,\sqrt{2(32.2'/\text{sec.}^2)(3.0')} \\ &= 3.0154 \text{ g.p.m.} \end{aligned}$$

    Use 2" Sch. 40 P.V.C. piping with solvent weld joints.

    Find the head loss along the lateral assuming a central manifold:

Orifice #	Orifice Pressure (ft.)	Orifice Flow (gpm)	Total Lateral Flow (gpm)	Segment headloss (ft.)	Lateral Length (ft.)	Sum of Headloss (ft.)
1	3.0000	3.0154	3.0154	0.0013	6	0.0013
2	3.0013	3.0161	6.0315	0.0048	12	0.0062
3	3.0062	3.0185	9.0499	0.0102	18	0.0164
4	3.0164	3.0236	12.0736	0.0174	24	0.0338
5	3.0338	3.0324	15.1059	0.0264	30	0.0602
6	3.0602	3.0455	18.1514	0.0371	36	0.0973
7	3.0973	3.0639	21.2154	0.0495	42	0.1468
8	3.1468	3.0883	24.3037	0.0636	48	0.2105
9	3.2105	3.1194	27.4230	0.0796	54	0.2900

    B. Pump Sizing:

    Total head losses: (Worst Case for CABIN)

Distribution piping & Residual Head =	9.4'
Pump Station & 490' of 2" P.V.C. @ 54.8 g.p.m.=	27.9'
Elevation =	-5.4'
Total Dynamic Head =	31.9'

    Use an Orenco ½ HP, PI5005 High Head Effluent Pump, single phase, 115 volt, or approved equivalent; Pump to provide 54.8 g.p.m. against 31.9 feet Total Dynamic Head.

4. Boundary and topographic information:

    Topographic information is from a survey conducted by Heindel and Noyes. Boundary information was compiled from Town of Charlotte Tax Maps and information provided by the owner.

WATER SUPPLY & WASTEWATER DISPOSAL DESIGN:

(FOR HOUSE)

1. Design Flow for Residential Units:

    The design flow for single-family residential units shall be calculated on the following requirements:

    A. The design flow for each person shall be 70 gallons per person per day;

    B. The first three bedrooms shall be assumed to have two persons per bedroom;

    C. Each additional bedroom may be assumed to one person per bedroom. When a building will be subject to rental use or when it is likely there will be extended or frequent high occupancy use, the system should be sized for at least 2 persons per bedroom.

    D. The design flow for a single-family residence on its own individual lot shall be based on a minimum of three bedrooms.

    Therefore, for a 4 bedroom single-family residence, the design flow is 490 gal./day.

2. Water Supply:

    A. During construction of the HOUSE, a new drilled well will be constructed and connected to the CABIN. The existing well will then be connected to the HOUSE. The existing drilled well is as shown on the plan. Locations for drilled wells on any lots created in the future must meet the requirements of the Vermont Environmental Protection Rules, (Vermont Water Supply Rule - Chapter 21, Appendix A, Part 11.4), including the following minimum isolation distances:

Source of Contamination:	Isolation Distance:
Septic Tanks & Pump Stations:	50 feet
Sewer lines & Force Mains:	50 feet
Buildings:	10 feet
Drives:	15 feet

    B. Maintain a 25-foot minimum isolation distance between water service lines and subsurface wastewater piping and related tanks.

    C. Well Yield:

    The Average Day Demand, (ADD), for the HOUSE is 490 gal./day. The Maximum Day Demand, (MDD) is calculated by dividing the ADD by not more than 720 minutes. The resulting flow rate is expressed in gallons per minute and equals the minimum well yield allowed without required storage. The MDD is:

    (490 gal./day) / (720 minutes) = 0.68 gallons per minute.

    D. However, wells that have yields less than the Instantaneous Peak Demand of 5 gallons per minute may require some type of storage. The Well Driller's yield for the existing well was reported to be 5 gallons per minute.

    E. Conventional water saving plumbing fixtures including, but not limited to, maximum 3 ½ gallons per flush toilets, maximum 2 g.p.m. low flow showerheads and faucet aerators shall be installed in the HOUSE.

    F. The Owner is responsible for assuring the CABIN well provides adequate quality and quantity before it is deemed ready for use. By this plan the Designer makes no guarantee as to well yield or quality.

3. Wastewater Disposal System Design:

    A. Required Wastewater Disposal Area:

    The mound wastewater disposal system for the HOUSE will utilize an Advantex™ AX20-RT filtrate disposal unit that will discharge to two mound wastewater disposal areas each capable of handling half of the design flow, (North & East). Based on filtrate effluent, the maximum application rate for a mound wastewater disposal system is 2.0 gal./s.f./day.

    The required mound wastewater disposal area for a four-bedroom house, at a design flow of 490 gal./day is:

    (490 gal./day)/(2.0 gal./s.f./day) = 245.0 s.f.

    For a 3.5 foot wide trench, 70.0 l.f. of trench is needed; use 2 – 3.5ft. X 35ft. trench mounds with 12 inches of sand beneath the uphill edge of mound disposal trench, design provides 240 s.f. of wastewater disposal area.

    A Hydrogeologic Capacity Analysis prepared by Craig D. Heindel, CPG confirms depth of mound sand and minimum freeboard requirements for the two mound wastewater disposal areas. A copy of the Hydrogeologic Capacity Analysis has been attached to the Wastewater System & Potable Water Supply permit application.

    B. Basal Area:

    Based on a design percolation rate of 33 minutes per inch, the effective basal application rate is 0.74 gal./s.f./day.

    The required basal area, for each mound, is:

    (245 gal./day) / (0.74 gal./s.f./day) = 332 s.f.

    Minimum basal area provided by each mound is 1,453 s.f.

    C. Pressure Distribution Design:

    At one orifice per 25 s.f. of disposal area, a minimum of 4.9 orifices are required for each mound. Use 17 orifices on one 32 ft. line at 2.0 ft. O.C. for each mound in the distribution system.

    For a ¼" orifice and a minimum pressure of 1.3 p.s.i. at the distal orifice, the flow through any one orifice is:

    $$\begin{aligned} Q &= CA\sqrt{2gh} \\ &= 0.6\,[\pi(\tfrac{1}{4}'' \times 1'/12'' \times \tfrac{1}{2})^2]\,\sqrt{2(32.2'/\text{sec.}^2)(3.0)} \\ &= 1.3402 \text{ g.p.m.} \end{aligned}$$

    Use 1½" Sch. 40 P.V.C. piping with solvent weld joints.

    Find the head loss along the lateral assuming an end manifold:

Orifice #	Orifice Pressure (ft.)	Orifice Flow (gpm)	Total Lateral Flow (gpm)	Segment headloss (ft.)	Lateral Length (ft.)	Sum of Headloss (ft.)
1	3.0000	1.3402	1.3402	0.0003	0	0.0003
2	3.0003	1.3402	2.6804	0.0012	2	0.0015
3	3.0015	1.3405	4.0209	0.0026	4	0.0041
4	3.0041	1.3411	5.3620	0.0044	6	0.0085
5	3.0085	1.3421	6.7041	0.0066	8	0.0151
6	3.0151	1.3435	8.0477	0.0093	10	0.0244
7	3.0244	1.3456	9.3933	0.0123	12	0.0367
8	3.0367	1.3483	10.7416	0.0158	14	0.0525
9	3.0525	1.3519	12.0935	0.0197	16	0.0722
10	3.0722	1.3562	13.4497	0.0240	18	0.0962
11	3.0962	1.3615	14.8112	0.0287	20	0.1248
12	3.1248	1.3678	16.1789	0.0337	22	0.1586
13	3.1586	1.3751	17.5541	0.0392	24	0.1978
14	3.1978	1.3837	18.9377	0.0451	26	0.2430
15	3.2430	1.3934	20.3311	0.0515	28	0.2944
16	3.2944	1.4044	21.7355	0.0583	30	0.3527
17	3.3527	1.4168	23.1523	0.0655	32	0.4182

    D. Pump Sizing:

    The mounds will be dosed by a Duplex Pump Basin located at the discharge of the Advantex™ AX20-RT filtrate disposal unit. The basin will have a discharge pump for each mound; the control panel will alternate pumps providing equal distribution of treated effluent. The sizing for each pump is:

    Total head losses: (Worst Case for North Mound)

Distribution piping & Residual Head =	4.5'
Pump Station & 160' of 2" P.V.C. @ 23.1 g.p.m.=	2.5'
Elevation =	26.3'
Total Dynamic Head =	33.3'

    Use an Orenco ½ HP, PF3005 High Head Effluent Pump, single phase, 115 volt, or approved equivalent; Pump to provide 23.1 g.p.m. against 33.3 feet Total Dynamic Head.

    Total head losses: (Worst Case for East Mound)

Distribution piping & Residual Head =	4.5'
Pump Station & 100' of 2" P.V.C. @ 23.1 g.p.m.=	1.9'
Elevation =	11.3'
Total Dynamic Head =	17.7'

    Use an Orenco ½ HP, PF3005 High Head Effluent Pump, single phase, 115 volt, or approved equivalent; Pump to provide 23.1 g.p.m. against 17.7 feet Total Dynamic Head.

4. Boundary and topographic information:

    Topographic information is from a survey conducted by Heindel and Noyes. Boundary information was compiled from Town of Charlotte Tax Maps and information provided by the owner.

STATE OF VERMONT · DAVID W. FUQUA · NO. 280-B · CLASS B · LICENSED DESIGNER

DESIGN NOTES

SWIFT & McCARGO

1021 TOWN LINE ROAD
CHARLOTTE, VERMONT

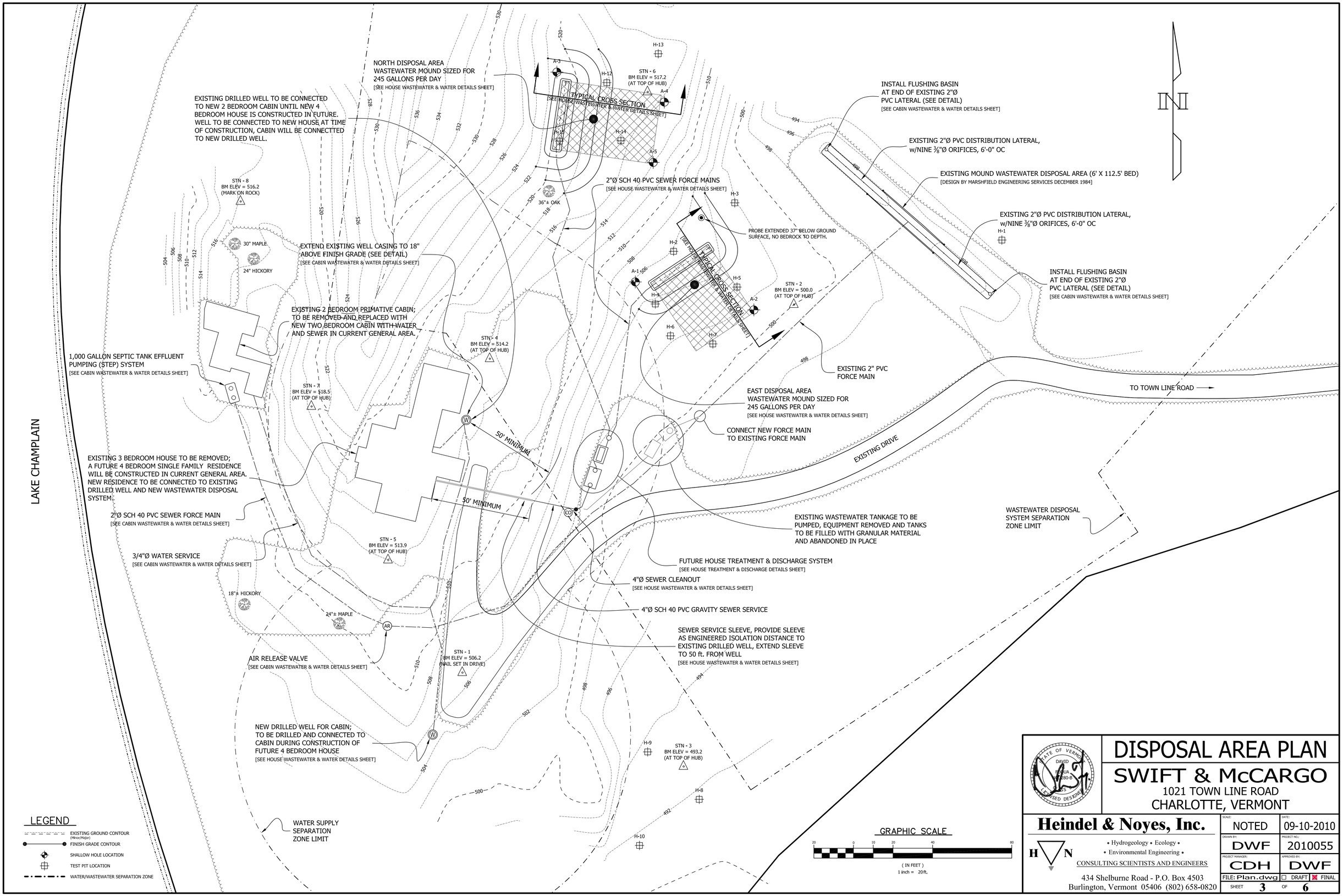
Heindel & Noyes, Inc.

H N • Hydrogeology • Ecology • • Environmental Engineering •

CONSULTING SCIENTISTS AND ENGINEERS

434 Shelburne Road - P.O. Box 4503
Burlington, Vermont 05406 (802) 658-0820

SCALE:	DATE:
NOTED	09-10-2010
DRAWN BY: DWF	PROJECT NO.: 2010055
PROJECT MANAGER: CDH	APPROVED BY: DWF
FILE: Plan.dwg	☐ DRAFT ☒ FINAL



DISPOSAL AREA PLAN

SWIFT & McCARGO

1021 TOWN LINE ROAD
CHARLOTTE, VERMONT

Heindel & Noyes, Inc.

• Hydrogeology • Ecology •
• Environmental Engineering •
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DRAWN BY: DWF	PROJECT NO.: 2010055
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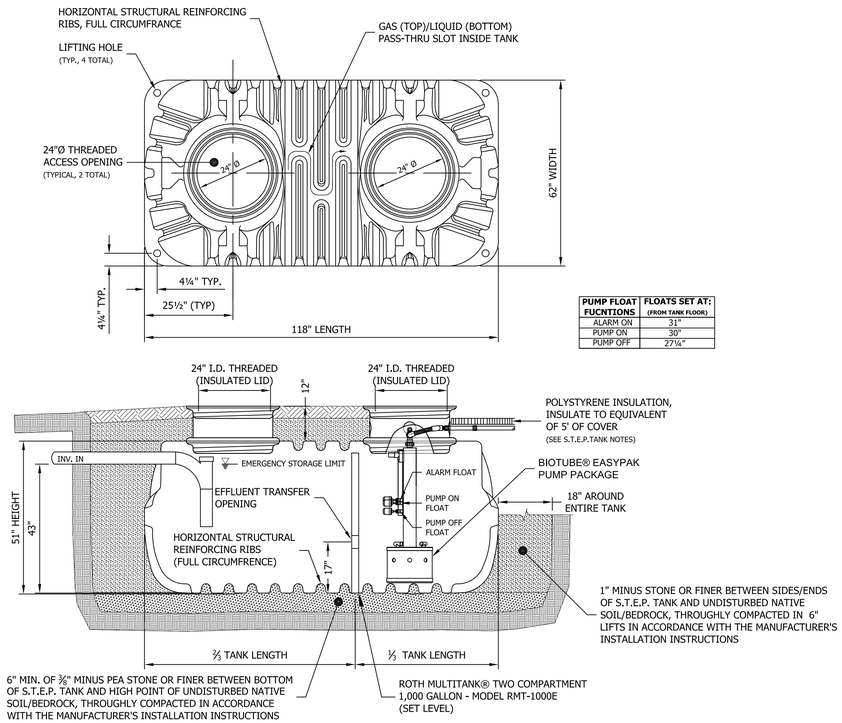
SHEET 3 OF 6	



PUMP FLOAT FUCNTIONS	FLOATS SET AT: (FROM TANK FLOOR)
ALARM ON	31"
PUMP ON	30"
PUMP OFF	27¼"

1,000 GALLON S.T.E.P. TANK DETAIL

NOT TO SCALE

S.T.E.P. TANK NOTES:

1. PROVIDE A HIGH WATER AUDIO AND VISUAL ALARM, TO BE INSTALLED ON BUILDING.

2. PROVIDE 280 GALLONS OF EMERGENCY STORAGE ABOVE THE ALARM FLOAT. DESIGN PROVIDES 296 GALLONS OF STORAGE BETWEEN TANK INLET INVERT AND HIGH WATER ALARM.

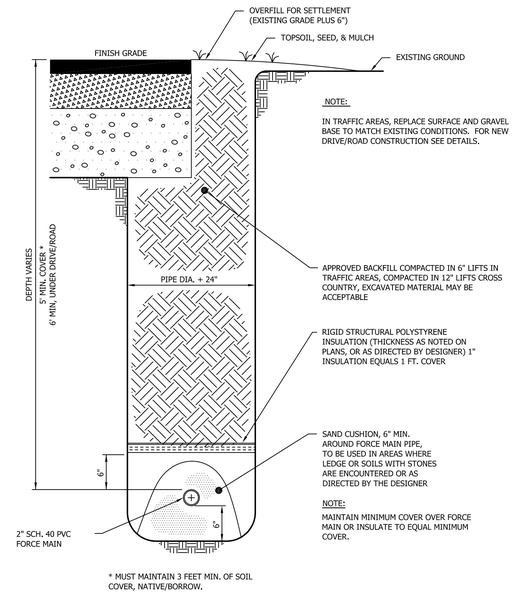
3. SUPPILIERS TO CERTIFY SUITABILITY OF TANAKAGE & EQUIPMENT BASED ON SITE CONDITIONS.

4. CONTRACTOR TO INSTALL TANK IN ACCORDANCE WITH MANUFACTUREURS INSALLATION PROCEDURES, INCLUDING BUT NOT LIMITED TO ANTI-FLOATATION MEASURES, ETC... FAILURE TO PROPERLY COMPACT BEDDING AND BACKFILL MATERIAL WILL VOID MANUFACTURER'S WARANTY.

5. CONTRACTOR TO CONTACT DESIGNER DURING TANK EXCAVATION. TO VERIFY IF ADDITIONAL MEASURES WILL BE REQUIRED.

6. PROVIDE RIGID STRUCTURAL POLYSTYRENE INSULATION OVER FORCE MAIN PIPING FROM TANK TO MINIMUM BURY DEPTH. SEWER FORCE MAINS THAT DO NOT MEET MINIMUM BURY DEPTH SHALL BE INSULATED TO MEET MINIMUM REQUIREMENTS WITH RIGID STRUCTURAL POLYSTYRENE INSULATION, (THICKNESS AS SHOWN ON PLANS OR AS DIRECTED BY DESIGNER), 1" INSULATION IS EQUVILANT TO 1ft. OF COVER.

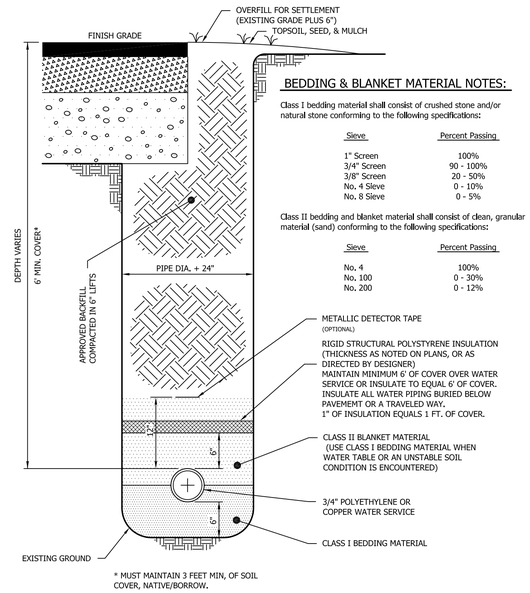
7. DOSE VOLUME: 75 GALLONS/DOSE.



* MUST MAINTAIN 3 FEET MIN. OF SOIL COVER, NATIVE/BORROW.

SEWER FORCE MAIN TRENCH DETAIL

NOT TO SCALE



BEDDING & BLANKET MATERIAL NOTES:

Class I bedding material shall consist of crushed stone and/or natural stone conforming to the following specifications:

Sieve	Percent Passing
1" Screen	100%
3/4" Screen	90 - 100%
3/8" Screen	20 - 50%
No. 4 Sieve	0 - 10%
No. 8 Sieve	0 - 5%

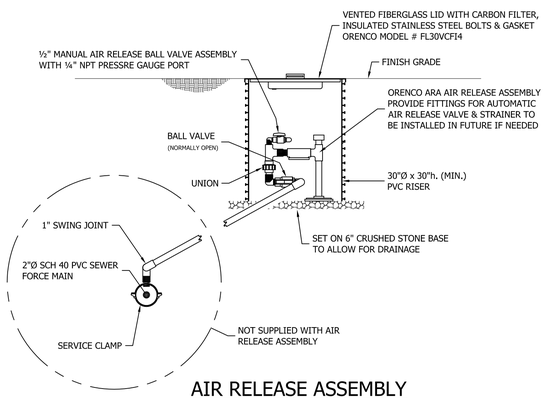
Class II bedding and blanket material shall consist of clean, granular material (sand) conforming to the following specifications:

Sieve	Percent Passing
No. 4	100%
No. 100	0 - 30%
No. 200	0 - 12%

* MUST MAINTAIN 3 FEET MIN, OF SOIL COVER, NATIVE/BORROW.

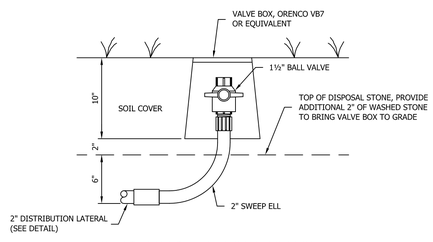
WATER SERVICE TRENCH DETAIL

NOT TO SCALE



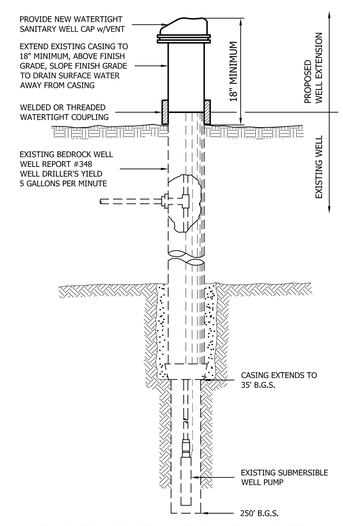
AIR RELEASE ASSEMBLY

NOT TO SCALE



FLUSHING VALVE DETAIL

NOT TO SCALE



EXISTING DRILLED WELL DETAIL

(WELL CASING EXTENSION)
NOT TO SCALE

CABIN

WASTEWATER & WATER DETAILS

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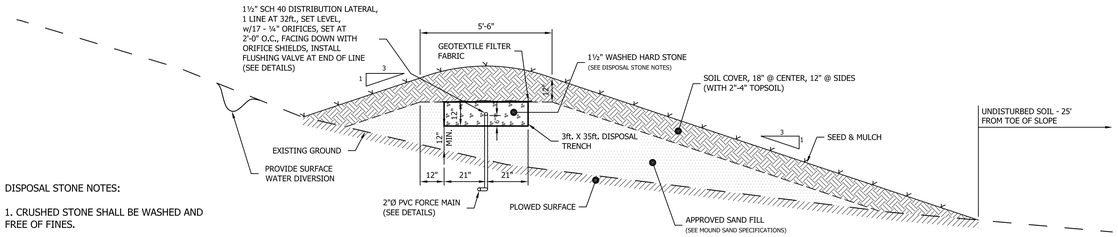
SHEET 4	OF 6

DISPOSAL STONE NOTES:

1. CRUSHED STONE SHALL BE WASHED AND FREE OF FINES.

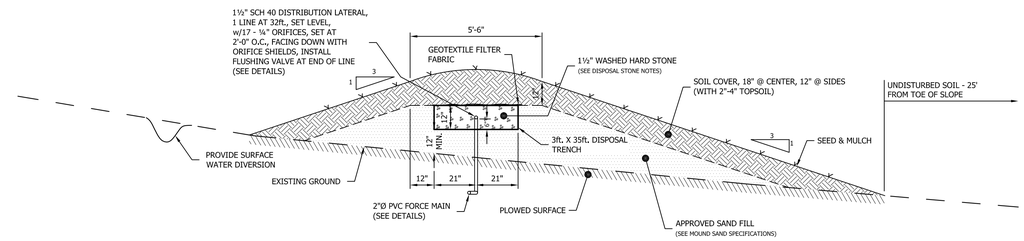
2. STONE LESS THAN 3/4" IN SIZE IS UNACCEPTABLE.

3. LIMESTONE IS UNACCEPTABLE.



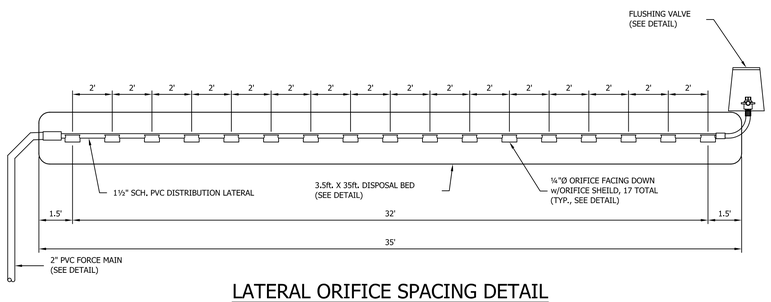
NORTH DISPOSAL MOUND - TYPICAL CROSS SECTION

NOT TO SCALE



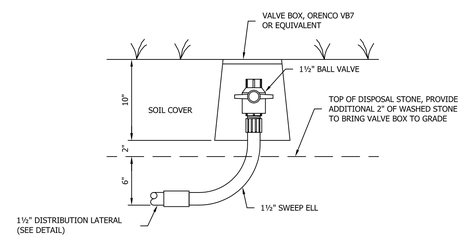
EAST DISPOSAL MOUND - TYPICAL CROSS SECTION

NOT TO SCALE



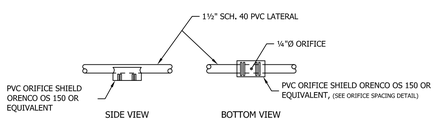
LATERAL ORIFICE SPACING DETAIL

NOT TO SCALE



FLUSHING VALVE DETAIL

NOT TO SCALE



ORIFICE SHIELD DETAIL

NOT TO SCALE

MOUND CONSTRUCTION PROCEDURE

1. CONTACT THE DESIGNER, PRIOR TO CONSTRUCTION FOR AN ON-SITE MEETING WITH THE CONTRACTOR TO DISCUSS THE CONSTRUCTION AND TO STAKE OUT THE MOUND WITH THE PROPER ORIENTATION ACCORDING TO THE APPROVED PLAN.

2. CLOSELY CUT AND REMOVE ALL ABOVE GROUND VEGETATION THROUGHOUT THE AREA TO BE COVERED BY THE FILL MATERIAL. TREE STUMPS SHOULD BE CUT FLUSH WITH THE GROUND SURFACE, BUT THE ROOTS SHOULD NOT BE REMOVED. PRIOR TO PLOWING, INSTALL THE DOSING DISCHARGE LINE FROM THE POINT OF CONNECTION WITH THE DISTRIBUTION PIPING HEADER TO BEYOND THE MOUND CONSTRUCTION AREA.

3. PLOW THE AREA TO A DEPTH OF 7" TO 8", PARALLEL TO THE LAND CONTOURS WITH THE PLOW THROWING THE SOIL UPHILL TO PROVIDE A PROPER INTERFACE BETWEEN THE NATURAL SOILS AND FILL MATERIAL. CONSTRUCTION OR PLOWING SHALL NOT BE STARTED WHEN THE SOIL MOISTURE CONTENT IS HIGH. (IF A SAMPLE OF SOIL OBTAINED APPROXIMATLY 9" BELOW THE SURFACE CAN BE EASILY ROLLED INTO A WIRE, THE SOIL MOSITURE CONTENT IS TOO HIGH FOR CONSTRUCTION PURPOSES.)

4. PLACE THE SAND TEXTURE SOIL (SEE MOUND SAND SPECIFICATIONS) AROUND THE EDGE OF THE PLOWED AREA BY DUMPING IT ON THE PLOWED AREA, BUT KEEP THE WHEELS OF THE DUMP TRUCK OFF THE PLOWED AREA. USE A CRAWLER TRACTOR WITH A BLADE TO MOVE THE SAND AROUND INTO PLACE KEEPING AT LEAST 6" OF SAND UNDER THE TRACKS TO MINIMIZE COMPACTION OF THE PLOWED LAYER. PLACE ALL SAND NEEDED IN THE MOUND, WHICH WILL BE TO THE TOP OF THE BED. SHAPE THE SIDES TO THE DESIRED SLOPE.

5. WITH A BACKHOE FORM THE BED. THE SAND WALLS WILL STAY SUFFICIENTLY STABLE. MAKE SURE THE BOTTOM OF THE BED IS LEVEL. SOME HAND SHOVELING WILL BE REQUIRED.

6. USING A BUCKET ON THE CRAWLER, DUMP THE STONE IN THE BED BY TRAVELING UP THE SIDE SLOPE. LEVEL THE STONE OFF AT THE DESIRED ELEVATION. (6" ABOVE THE BASE OF THE STONE BED.)

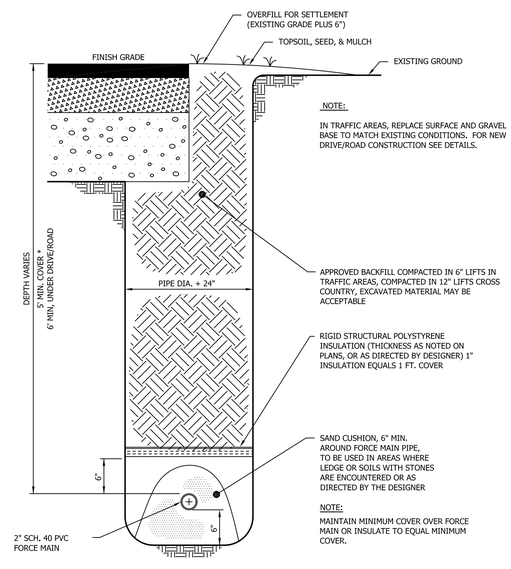
7. INSTALL THE DISTRIBUTION PIPING AS SHOWN ON THE PLAN AND CONTACT THE DESIGNER WILL DIRECT TESTING OF THE DISTRIBUTION SYSTEM. INSURE THAT THE PIPE IS BEDDED PROPERLY WITH ALL DIPS AND RISES REMOVED AND COVER THE PIPE WITH A MINIMUM OF 4" OF THE STONE.

8. PLACE GROTEXTILE FILTER FABRIC OVER THE TOP OF THE STONE.

9. CROWN THE ENTIRE MOUND WITH A COVER OF SOIL LESS PERMEABLE THAN THE MOUND FILL, COVERING WITH 12" ON THE SIDE SLOPES AND A MINIMUM OF 18" OVER THE CENTER OF THE MOUND. NATIVE SOIL FROM THE SITE IS NORMALLY SUITABLE FOR COVER MATERIAL, THOUGH THE TOP 2" TO 4" OF THIS COVER SHALL BE TOPSOIL.

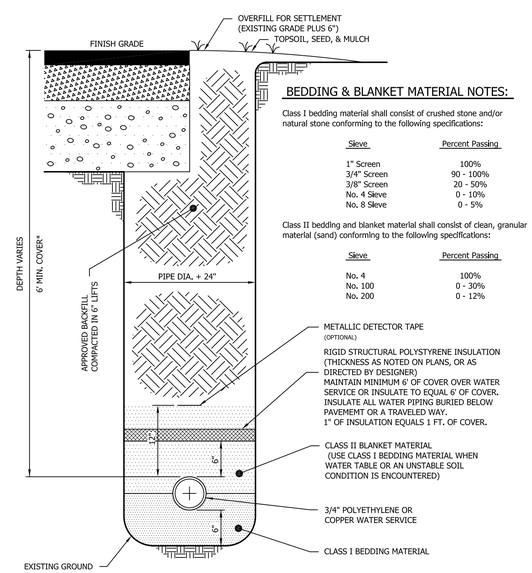
10. SEED AND MULCH THE ENTIRE MOUND TO ENSURE STABILITY OF THE INSTALLATION. SHRUBS PLACED AT THE FOOT AND UP THE SLOPE ON THE SIDES AND ENDS ARE RECOMMENDED. HOWEVER, DO NOT PLACE SHRUBS DIRECTLY ON TOP OF THE MOUND AS ROOTS MAY INTERFERE WITH THE DISTRIBUTION SYSTEM.

11. FORM THE SURFACE WATER DIVERSION SWALE. DIRECT ALL SURFACE WATER AWAY FROM THE MOUND.



SEWER FORCE MAIN TRENCH DETAIL

NOT TO SCALE



WATER SERVICE TRENCH DETAIL

NOT TO SCALE

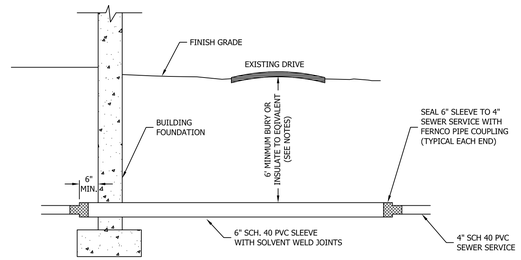
BEDDING & BLANKET MATERIAL NOTES:

Class I bedding material shall consist of crushed stone and/or natural stone conforming to the following specifications:

Sieve	Percent Passing
1" Screen	100%
3/4" Screen	90 - 100%
3/8" Screen	20 - 50%
No. 4 Sieve	0 - 10%
No. 8 Sieve	0 - 5%

Class II bedding and blanket material shall consist of clean, granular material (sand) conforming to the following specifications:

Sieve	Percent Passing
No. 4	100%
No. 100	0 - 30%
No. 200	0 - 12%



SEWER SERVICE SLEEVE DETAIL

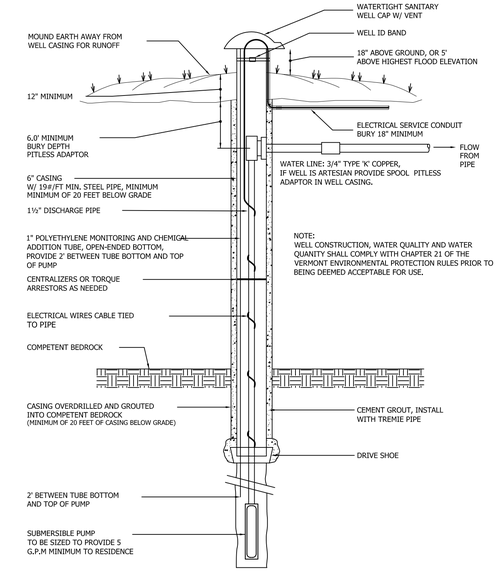
NOT TO SCALE

MOUND SAND SPECIFICATIONS

MOUND SAND SHALL CONFORM TO ONE OF THE FOLLOWING SPECIFICATIONS:

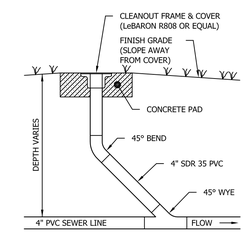
	% PASSING	SEIVE SIZE	mm
1.	85 - 100%	⅜	9.500
	25 - 75	40	0.42
	0 - 30	60	0.24
	0 - 10	100	0.149
	0 - 5	200	0.074
2.	95 - 100%	4	4.75
	80 - 100	8	2.38
	50 - 85	16	1.19
	25 - 60	30	0.59
	10 - 30	50	0.297
	2 - 10	100	0.149
3.	85 - 100%	⅜	9,500
	30 - 50	40	0.420
	5 - 10	200	0.074

NOTE:
THE MOUND SAND MUST MEET THE SPECIFICATIONS (1), (2), OR (3) ABOVE. INTERPOLATION OF ANALYSES IS NOT PERMITTED. FILL MATERIAL (2) IS ASTM SPECIFICATIONS C-33 AND IS INTENDED FOR MANUFACTURED MATERIAL.



BEDROCK WELL INSTALLATION DETAIL

NOT TO SCALE



CLEANOUT DETAIL

NOT TO SCALE

HOUSE

WASTEWATER & WATER DETAILS

SWIFT & McCARGO

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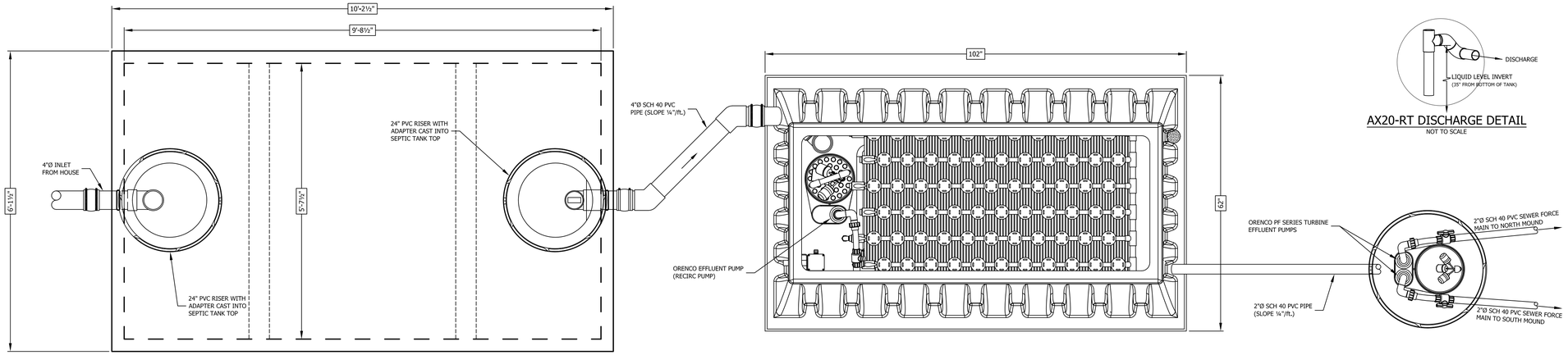
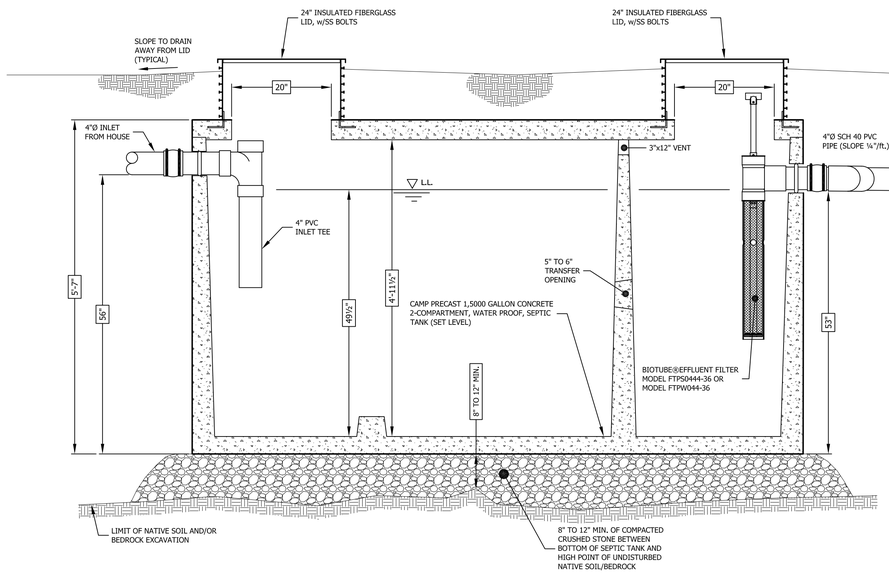
SHEET 5	OF 6

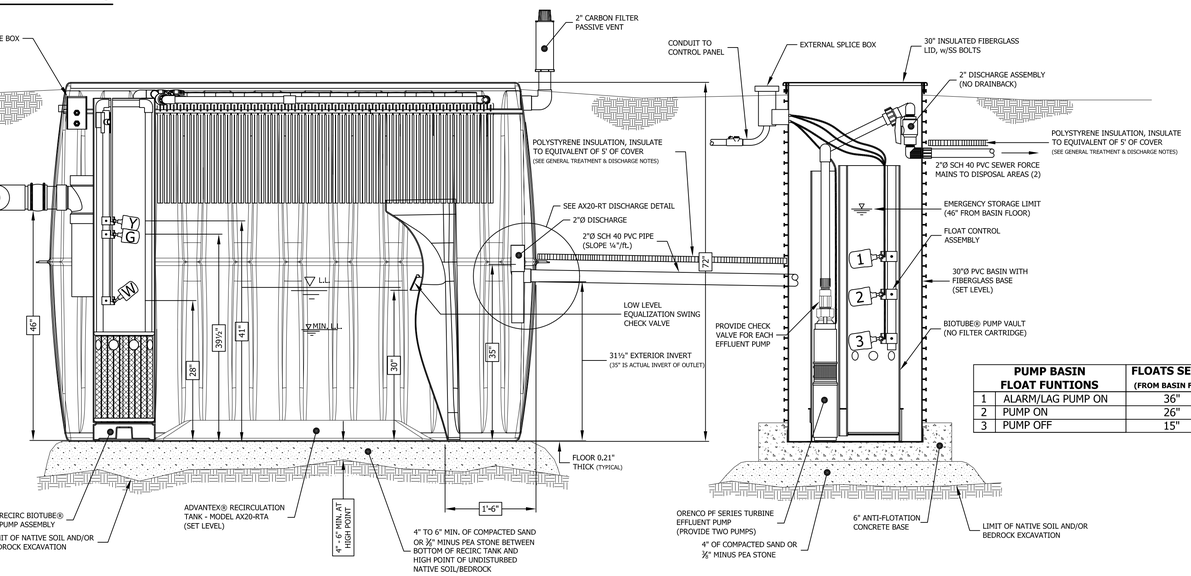


AX20-RT DISCHARGE DETAIL

NOT TO SCALE

PLAN VIEWS





PUMP BASIN FLOAT FUNTIONS		FLOATS SET AT: (FROM BASIN FLOOR)
1	ALARM/LAG PUMP ON	36"
2	PUMP ON	26"
3	PUMP OFF	15"

ELEVATION VIEWS

1,500 GALLON SEPTIC TANK DETAIL

NOT TO SCALE

AX20-RT RECIRCULATION TANK DETAIL

NOT TO SCALE

30"Ø DUPLEX PUMP BASIN DETAIL

NOT TO SCALE

GENERAL TREATMENT & DISCHARGE NOTES:

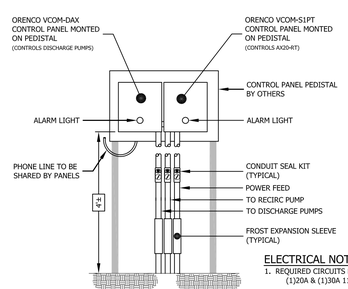
1. PROVIDE A HIGH WATER AUDIO AND VISUAL ALARM, TO BE INSTALLED ON PEDISTAL.

2. PROVIDE 122.5 GALLONS OF EMERGENCY STORAGE ABOVE THE ALARM FLOAT. DESIGN PROVIDES 140 GALLONS OF STORAGE BETWEEN AX20RT INLET INVERT AND HIGH WATER ALARM. (110 GALLONS IN AX20RT TANK AND 30 GALLONS IN PUMP BASIN)

3. PROVIDE RIGID STRUCTURAL POLYSTYRENE INSULATION OVER DISCHARGE PIPING FROM AX20-RT TO DUPLEX PUMP BASIN. SEWER FORCE MAINS THAT DO NOT MEET MINIMUM BURY DEPTH SHALL BE INSULATED TO MEET MINIMUM REQUIREMENTS WITH RIGID STRUCTURAL POLYSTYRENE INSULATION, (THICKNESS AS SHOWN ON PLANS OR AS DIRECTED BY DESIGNER), 1" INSULATION IS EQUVILANT TO 1ft. OF COVER.

4. SUPPILIERS TO CERTIFY SUITABILITY OF TANAKAGE & EQUIPMENT BASED ON SITE CONDITIONS.

5. DOSE VOLUME: 30 GALLONS/DOSE.



ELECTRICAL NOTES:

1. REQUIRED CIRCUITS FROM MAIN BREAKER PANEL:
   (1)20A & (1)30A 115V [PREFERRED: (1)20A, (2)30A]

2. REQUIRED CIRCUITS FROM CONTROL PANEL TO EACH SPLICE BOX:
   (4) #14AWG THHN (STRANDED), (3) #12AWG THHN (STRANDED) IN ¾" C.

CONTROL PANEL DETAIL

NOT TO SCALE

AX20-RT NOTES:

1. PHONE LINE WITH MINIMUM SERVICE IS REQUIRED. DOES NOT NEED TO BE A DEDICATED LINE.

2. TANK COORDINATION AND APPROVAL BY WTI IS REQUIRED PRIOR TO CONSTRUCTION. TANK MUST MEET MINIMUM STRUCTURAL STANDARDS AND BE TESTED FOR WATERTIGHTNESS.

3. PROVIDE AND INSTALL ANTI-FLOTATION FOR AX20-RT AS PER MANUFACTURER/SUPPLIER'S RECOMMENDATIONS.

4. FLOAT AND RSV SETTINGS BASED ON TYPICAL FLOW APPLICATIONS - MAY BE MODIFIED BASED UPON DESIGN/FIELD VERIFICATION.

5. MANUFACTURER REQUIRES THIS SYSTEM TO BE INSTALLED AND MAINTAINED BY A TRAINED/AUTHORIZED INSTALLER/MAINENANCE PROVIDER. FAILURE TO MAINTAIN AN ONGOING O&M CONTRACT MAY RESULT IN VOIDING OF ANY/ALL WARRANTIES. OTHER STATE AND/OR LOCAL REQUIREMENTS OR REGULATIONS MAY APPLY.

6. FOR MORE DETAILS REGARDING COMPONENTS, INSTALLATION OR OPERATION OF THIS SYSTEM; PLEASE CONTACT WASTEWATER TECHNOLOGIES, INC. MILTON, VT 877-212-3219

DESIGN NOTES:

Expected Flows	Expected Influent Quality	Typical Effluent Quality
Q_{avg} = 500 gpd	Grease & Oil: 20 mg/L	BOD: < 10 mg/L
Up To 4 Bedrooms	BOD: 150 mg/L	TSS: < 10 mg/L
	TSS: 40 mg/L	TN: < 25 mg/L
	TKN: 65 mg/L	

AX20-RT Float Functions	
Y	High Level Alarm
G	Override Timer ON/OFF
W	LLA/RO

HOUSE

TREATMENT & DISCHARGE DETAILS

SWIFT & McCARGO

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