PROJECT DESCRIPTION

Two conventional onsite pump up wastewater systems and one enhanced treatment onsite pump up wastewater system with gravity flow to infiltrator trenches is proposed to serve a proposed 6 bedroom dwelling, a proposed 2 bedroom ADU and a proposed winery and wine tasting room located on W Edmundson, Morgan Hill, in Santa Clara County, California.

CONSTRAINTS & DESIGN CRITERIA

- The proposed drainfield is sized to serve a 6 bedroom dwelling, a 2 bedroom ADU and a winery and wine tasting room with a total combined design wastewater flow of 1,314 gallons per day (gpd) per County DEH guidelines.
- The proposed conventional septic system #1 is sized to serve a 6 bedroom dwelling with a design wastewater flow of 675 gpd per County DEH guidelines.
- The proposed conventional septic system #2 is sized to serve a 2 bedroom ADU with a design wastewater flow of 300 gpd per County DEH guidelines.
- The proposed enhanced treatment system #3 is sized to serve a winery with a design wastewater flow of 339 gpd per County DEH guidelines. An "alternative" system is specified to provide supplemental treatment of the wastewater discharged on the site due to high strength wastewater generated by the wine making process.
- Soil profiles did not exhibit any evidence of seasonally high groundwater conditions. Seasonally high groundwater was measured to be 14' below grade.
- No wells, springs or watercourses are situated within 100' of the proposed Onsite Wastewater Treatment System (OWTS).

DRAINFIELD SIZING CALCULATIONS

(P) 6 BEDROOM MAIN DWELLING = **675 GPD**
(P) 2 BEDROOM ADU = **300 GPD**
(P) WINERY = **339 GPD***
*WINERY DESIGN FLOW BREAKDOWN
300 CASES OF WINE PRODUCED PER YEAR
2.4 GAL WINE PER 1 CASE WINE
1.5 GAL WASTEWATER GENERATED PER GAL OF WINE
300 CASES/YEAR x 2.4 GAL WINE/CASE x 1.5 GAL WASTEWATER/GAL WINE = 1,080 GAL WASTEWATER
1,080 GAL WASTEWATER I 5 DAYS = 216 GPD
25 PERSON WINE TASTING ROOM x 2.5 GAL/PERSON = 63 GAL
4 EMPLOYEES x 15 GPD = 60 GPD
TOTAL WINERY DESIGN FLOW = 216 GPD + 63 GPD + 60 GPD = **339 GPD**

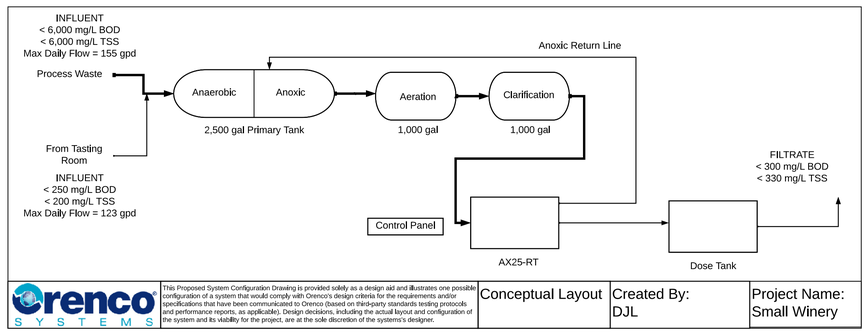
TOTAL DESIGN FLOW = **1,314 GPD**
AVG ADJ STABILIZED PERC RATE = 13 MPI
13 MPI = 0.75 GAL/SF APPLICATION RATE

1,314 GPD I .75 GPD/SF = 1,752 SF
1,752 SF I 4 SF/LF = 438 LF OF TRENCH REQUIRED
440 LF = 110 INFILTRATOR CHAMBERS
440 LF (PRIMARY) + 440 LF (SECONDARY) = 880 LF OF TRENCH
110 INFILTRATORS (PRIMARY) + 110 INFILTRATORS (SECONDARY) = 220 INFILTRATORS TOTAL

PRIMARY AND SECONDARY DRAINFIELDS, EACH CONSISTING OF **440** LF OF TRENCH (**110** QUICK4 HIGH-CAPACITY INFILTRATOR CHAMBERS) WITH A TOTAL DEPTH OF 4 FT WITH 4" INSPECTION RISERS (TYP.) ON EACH END OF TRENCH.

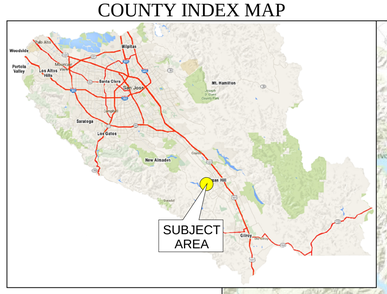
TOTAL: 880 LF TRENCH / 220 INFILTRATOR CHAMBERS

EACH TRENCH SHALL HAVE A TOTAL DEPTH OF 4 FEET (SEE DETAIL)
TRENCHES SHALL BE SPACED 6 FEET FROM CENTER TO CENTER

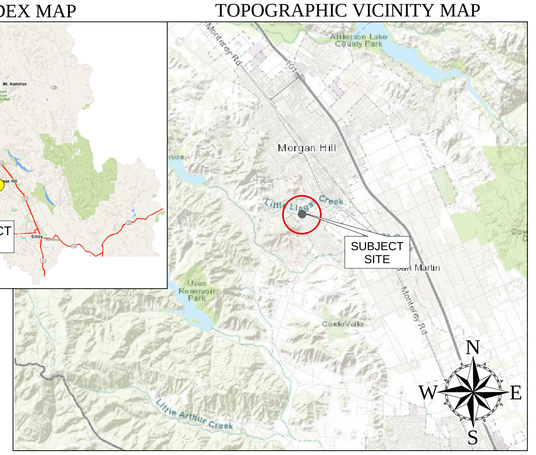


Orenco SYSTEMS	This Proposed System Configuration Drawing is provided solely as a design aid and illustrates one possible configuration of a system that would comply with Orenco's design criteria for the requirements and/or specifications that have been communicated to Orenco (based on third-party standards testing protocols and performance reports, as applicable). Design decisions, including the actual layout and configuration of the system and its viability for the project, are at the sole discretion of the systems's designer.	Conceptual Layout	Created By: DJL / Project Name: Small Winery

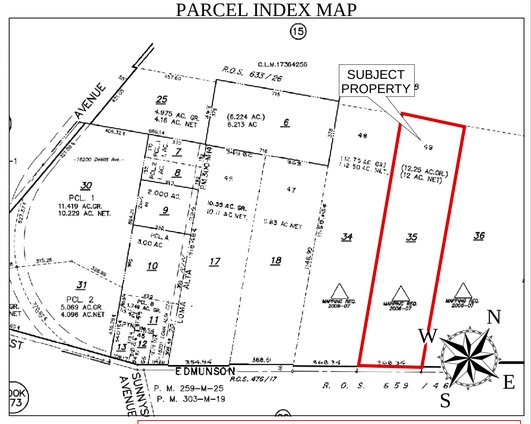
COUNTY INDEX MAP



TOPOGRAPHIC VICINITY MAP



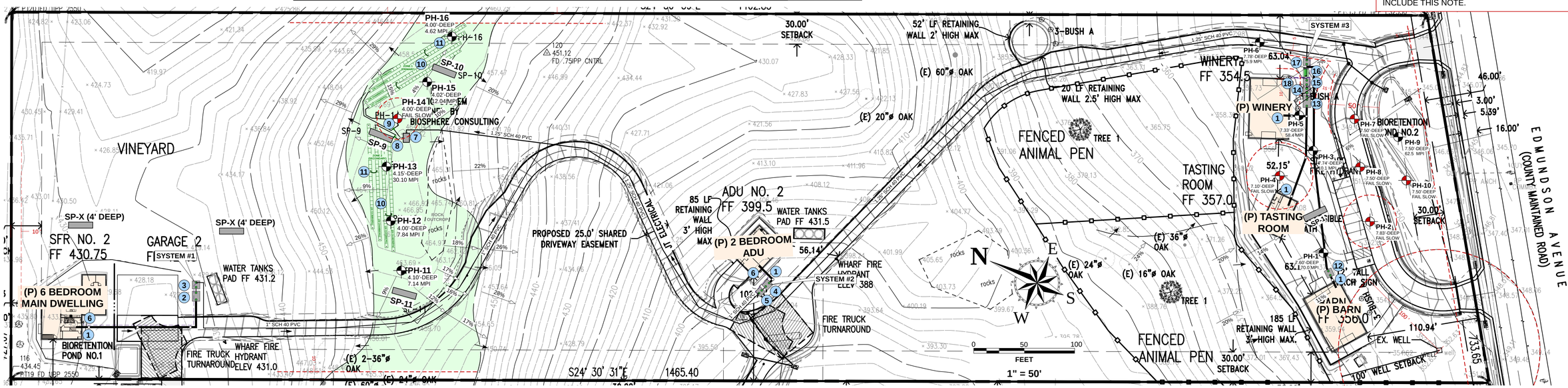
PARCEL INDEX MAP



IMPORTANT! SPECIFIED WASTEWATER DRAINFIELD DISPERSAL AREAS SHALL BE FENCED OFF PRIOR TO ANY SITE DEVELOPMENT IN ORDER TO PROHIBIT ANY GRADING EQUIPMENT OR STAGING OF MATERIALS IN THESE AREAS. IT IS IMPORTANT THAT THE NATURAL SOIL CONDITIONS IN THESE AREAS BE PRESERVED FOR PROPER FUNCTION OF THE SHALLOW SOIL DISCHARGE SYSTEM. DO NOT ALLOW SOILS IN THESE AREAS TO BE COMPACTED. DO NOT ROUTE UTILITY TRENCHES THROUGH THE PROPOSED DRAINFIELDS. ALL STORMWATER LINES, INLETS/OUTLETS AND DRAINAGEWAYS SHALL MAINTAIN THE REQUIRED DEH SETBACKS TO THE PROPOSED DRAINFIELDS.

ALL BUILDING PLANS PREPARED FOR THE PROJECT SHOULD INCLUDE THIS NOTE.

NOTE: CONTRACTOR SHALL NOT USE PURPLE PIPE. USE OF PURPLE PIPE IS PROHIBITED PER COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH REGULATIONS. UNDERGROUND WARNING TAPE MAY BE INSTALLED BY CONTRACTOR (RECOMMENDED).



SYSTEM 1 AND 2 NOTES:

WASTEWATER DESIGN FLOW IS **1,314** GPD.
BASED ON PROPOSED **6** BEDROOM MAIN HOUSE (**675** GPD)
A 2 BEDROOM ADU (**300** GPD)
AND A WINERY (**339** GPD)

1. 4" ABS GRAVITY SEWER LINE WITH MINIMUM 2% GRADIENT AND 2-WAY CLEANOUTS SPACED 50' APART MIN.
2. 2,000 GALLON CONCRETE, PINNACLE-STYLE CHAPIN SEPTIC TANK WITH 24" ORENCO RISERS AND OSI EFFLUENT FILTER (MODEL: FTS0444-36V) TO SERVE MAIN DWELLING
3. 1,500 GALLON CONCRETE, PINNACLE-STYLE CHAPIN PUMP DOSE TANK WITH PF**1005** DISCHARGE PUMP TO SERVE MAIN DWELLING
4. 1,500 GALLON CONCRETE, PINNACLE-STYLE CHAPIN SEPTIC TANK WITH 24" ORENCO RISERS AND OSI EFFLUENT FILTER (MODEL: FTS0444-36V) TO SERVE ADU
5. 1,000 GALLON CONCRETE, PINNACLE-STYLE CHAPIN PUMP DOSE TANK WITH PF**1005** DISCHARGE PUMP TO SERVE ADU
6. TWO MVP CONTROL PANELS WITH LOGO SCREENS AND 110 OUTLET. REQUIRE **ONE 10 AMP 120 VOLT CIRCUIT AND ONE 20 AMP 120 VOLT CIRCUIT** (MODEL: MVP-S1DM)
7. GRAVITIY FLOW DISTRIBUTION BOX
8. BULL RUN VALVE (SEE DETAIL)
9. POLYLOK FLOW DIVIDER **2X** (SEE DETAIL)
10. PRIMARY AND SECONDARY DRAINFIELDS, EACH CONSISTING OF **440** LF OF TRENCH (**110** QUICK4 HIGH-CAPACITY INFILTRATOR CHAMBERS) WITH A TOTAL DEPTH OF 4 FT AND 4" INSPECTION RISERS (TYP.) ON EACH END OF TRENCH.
    TOTAL: 880 LF TRENCH / 220 INFILTRATOR CHAMBERS
11. REDUNDANT OVERFLOW/RELIEF (POP-OVER) LINE **4X**

SYSTEM 3 NOTES:

12. 1,500 GALLON CONCRETE, PINNACLE-STYLE CHAPIN SEPTIC TANK WITH 24" ORENCO RISERS AND OSI EFFLUENT FILTER (MODEL FTS0444-36V) TO SERVE BARN
13. 2,500 GALLON CONCRETE, PINNACLE-STYLE CHAPIN SEPTIC TANK WITH THREE 24" ORENCO RISERS, OSI EFFLUENT FILTER (MODEL FTS0444-36V) AND INTEGRATED EMERGENCY CAPACITY TANK WITH PF1005 DISCHARGE PUMP TO SERVE WINERY AND TASTING ROOM
14. 1,000 GALLON CONCRETE, PINNACLE-STYLE CHAPIN AERATION TANK WITH 30" ORENCO RISERS AND DUPLEX PF**5015** PRE-AERATION PUMPS TO SERVE WINERY AND TASTING ROOM
15. 1,000 GALLON CONCRETE, PINNACLE-STYLE CHAPIN CLARIFICATION TANK WITH 24" ORENCO RISERS TO SERVE WINERY AND TASTING ROOM
16. 800 GALLON ADVANTEX AX-25RT WASTEWATER TREATMENT SYSTEM
17. 1,000 GALLON CONCRETE, PINNACLE-STYLE CHAPIN PUMP DOSE TANK WITH PF**1005** DISCHARGE PUMP TO SERVE WINERY, TASTING ROOM AND BARN
18. ST-COMM CONTROL PANEL WITH LOGO SCREEN AND 110 OUTLET. REQUIRES **ONE 20 AMP 120 VOLT CIRCUIT AND FIVE 20 AMP 230 VOLT CIRCUITS**, AND AN ACTIVE CAT 5 DATA LINE FOR PANEL TELEMETRY

PROFESSIONAL GEOLOGIST
ANDREW BROWNSTONE
No. 7453
Exp. 12/31/23
STATE OF CALIFORNIA

COUNTY E.H. ACCEPTANCE/APPROVAL STAMPS

BioSphere Consulting Incorporated
• Site Evaluation & Mapping
• Soil Analysis & Percolation Testing
• New Development, Upgrade & Repairs
• Residential & Commercial
Alternative Wastewater System Design
1315 King Street
Santa Cruz, CA 95060
Tel: (831) 430-9116
www.biosphere-consulting.com

ONSITE WASTEWATER TREATMENT SYSTEM DESIGN PLAN

Project Location:	W Edmundson, Morgan Hill, California 95037 [Santa Clara County]		
Property Owner:	Jim Hartigan		
Mailing Address:	16428 Peacock Lane, Los Gatos, California 95032		
Owner Phone #:	(408) 768-9343 email: jim@hartigan.net		
Date: 04/13/23	**By:** David Quinn / Andrew Brownstone		Sheet:
REVISION:		**Job No.:** 22002	**APN:** 767-19-035 **1** OF 4

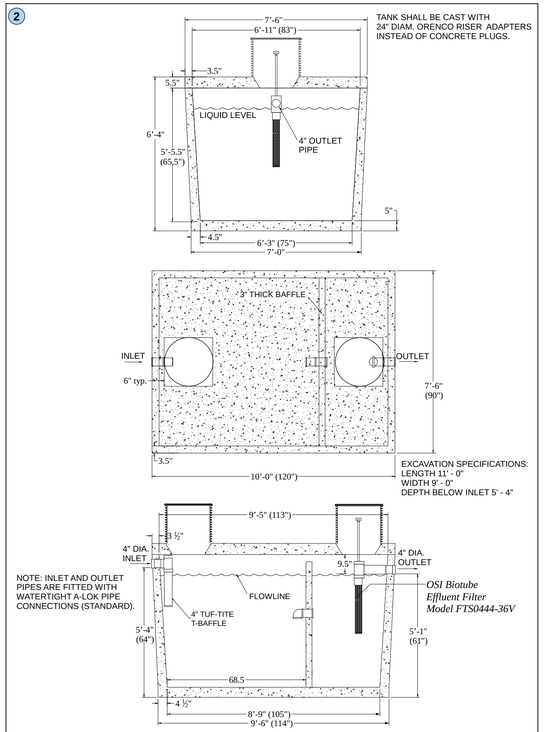
SYSTEMS #1 & #2
CONVENTIONAL SYSTEM SPECIFICATIONS

1. Building Sewer Lines, & Proposed Processing Tank
   - 1.1. A 4" ABS building sewer line shall be installed to convey all raw sewage from dwellings to the respective septic tanks. All gravity sewer piping must maintain a minimum 2% continuous gradient. ***All wastewater including graywater shall be discharged to the septic tank.***
   - 1.2. Locate a 2-way, 4" ABS cleanout fittings on the building sewer to facilitate snaking and line locations.
   - 1.3. A 2,000 gallon and a 1,500 gallon, watertight, concrete, pinnacle style tank from Chapin, are specified for use as septic tanks. The tanks shall each have two 24" diameter OSI access risers with fiberglass, bolt-down lids (brown). The tanks shall be installed according to the manufacturers guidelines.
   - 1.4. The tank holes shall be excavated so that the tanks sit level. Install the access risers with a watertight joint using the adhesives supplied by manufacturer. Access riser lids shall be brown unless otherwise requested.
   - 1.5. Install the tank inlet fittings with a watertight joint. Cap off or use a test plug on these fittings and fill the tanks with clean water 2" above the joint between the riser and the tank top. Repair any leaks.
   - 1.6. Obtain a watertight tank inspection by EH and the designer or distributor with 24 hours notice to each.
   - 1.7. Install an OSI Effluent Filter (Model: FTS0444-36V) at tank outlets.
2. Discharge Pump Tank and Filtrate Pumping
   - 2.1. A 1,500 gallon and 1,000 gallon watertight, concrete, pinnacle style Chapin pump tank shall be installed adjacent to their respective septic tanks.
   - 2.2. The pump tanks shall be installed according to the manufacturer's instructions including anti-floatation specifications and be made watertight.
   - 2.3. The tank holes shall be excavated so that the tanks sit level. Install the access risers with a watertight joint using the adhesives supplied by manufacturer. Access riser lids shall be brown unless otherwise requested.
   - 2.4. Install the tank inlet fittings with a watertight joint. Cap off or use a test plug on these fittings and fill the tank with clean water 2" above the joint between the riser and the tank top. Repair any leaks.
   - 2.5. Obtain a watertight tank inspection by EH and the designer or distributor with 24 hours notice to each.
   - 2.6. Install the pumps and float trees according to the instructions provided by manufacturer/dealer.
   - 2.7. A PF1005 lift pump with EasyPak Pump Package vaults shall be installed in their respective pump tanks.
3. Effluent Distribution and Dispersal Trenches (to serve both residences and the winery)
   - 3.1. A gravity flow distribution box, a Bull Run valve and two Polylok Flow dividers shall be installed to divert effluent flow between the eight proposed trenches as shown on the plan.
   - 3.2. 4" ABS or SCH 40 PVC tightline shall be used to make gravity flow connections between the septic tank and the drainfield trenches. All gravity lines shall maintain a continuous 2% min. gradient.
   - 3.3. A primary and secondary leachfield shall each consist of a total of 110 Quick4 Plus High-Capacity Infiltrator Chambers (220 chambers total).
   - 3.4. Dispersal trenches shall each have a total depth of 4 feet, shall be installed in the general location shown on the plan. The floor of each trench shall be level and sidewalls scarified.
   - 3.5. Trenches shall be spaced at least 3 feet from edge to edge.
   - 3.6. A 4" ABS inspection riser with tight cap shall be installed at both ends of each trench and shall extend a minimum of 12" above grade or remain accessible by means of a 10" round valve box to grade.
   - 3.7. Installer shall assure that surface drainage is directed away from the proposed septic tank and dispersal trenches.
4. Piping Schedule
   - 4.1. All piping shall be installed to conform to requirements in the current California Plumbing Code.
   - 4.2. The house sewer pipe to the septic tank shall be constructed of 4" ABS and shall include a 2-way clean out fitting near dwelling as shown on the plan.
5. Installer Qualifications and Responsibilities
   - 5.1. The system installer shall be licensed by the State of California, Department of Consumer Affairs, to install septic systems.
   - 5.2. All piping shall conform to the current edition of the California Plumbing Code.
   - 5.3. The installer shall be responsible for locating any property lines, underground utilities or piping. Any damage to these facilities shall be the responsibility of the installer.
   - 5.4. For tree setback requirements, refer to the Santa Clara County Ordinance C-16 Tree Preservation and Revision.
   - 5.5. The appropriate Environmental Health Office or Specialist must be notified by the installation contractor at least 48-hours prior to starting construction and for each required inspection: Main Office (1555 Berger Drive, Suite 300, San Jose) 408-918-3400 or South County Office (80 Highland Ave, San Martin) 408-918-3400
6. Electrical Work
   - 6.1. The MVP control panel shall be installed in the location shown on the map ***with the bottom of the panel box at 51" from the ground surface.***
   - 6.2. One, 10 amp, 120V electrical circuit and one, 20 amp, 120V electrical circuit shall be extended to the MVP panel in a single conduit. Underground circuits in separate conduits shall be installed from the panel to the recirculation pump and discharge pump.
   - 6.3. All work shall conform to the California Electrical Code and the contractor shall be responsible for obtaining any electrical permits required.
7. Site Clean up and Erosion Control Measures
   - 7.1. All excavated areas shall be smoothed and all construction debris shall be removed from the site.
   - 7.2. All disturbed soils shall be seeded and mulched. Erosion Control Mix seed shall be used at the coverage recommended on the package for all disturbed soil.
   - 7.3. Straw shall be used to cover all disturbed soil.
   - 7.4. PER DIVISION C12, CHAPTER III OF THE COUNTY CODE (Sec. C12-513. Temporary erosion control.) "The permittee and any person(s) doing, causing or directing the grading shall install and maintain all precautionary measures necessary to protect adjacent watercourses and public or private property from damage by erosion, flooding, or deposition of mud or debris originating from the site. Precautionary measures must include provisions of properly designed erosion prevention and sediment control measures, so that downstream properties are not affected by upstream erosion or sediment transport by stormwater."

SYSTEM OPERATION AND MAINTENANCE

- The septic tank should be pumped when the total thickness of the scum and sludge layers in the inlet side of the tank is greater than 1/3 of total liquid level depth, typically about 2 feet.
- The effluent filter in the septic tank should be removed yearly and cleaned by hosing off into the inlet side of the septic tank. Less frequent cleanings may be acceptable.
- Grease and oils should not be put into the home drains.
- The septic tank is alive with microorganisms performing oxidation and reduction of the contents. Do not add any materials (paint thinner, paint, motor oil, unused medicine, cat litter, etc.) that may disrupt this process.
- DO NOT ROUTE WATER SOFTENER BACKFLUSH DISCHARGE TO TREATMENT SYSTEM! This discharge may be routed directly to an approved dispersal field.
- Repair all plumbing leaks (especially toilet leaks) promptly.
- Keep the area over the leach fields trimmed to prevent the growth of trees and shrubs. Do not construct anything or drive/park over the septic tanks or dispersal trenches.

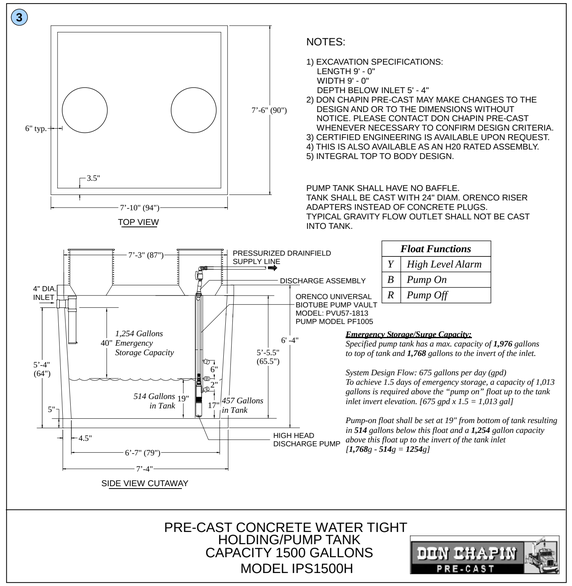
2,000 GALLON PRE-CAST CONCRETE TANK DETAIL



PRE-CAST CONCRETE WATER TIGHT
SEPTIC TANK
CAPACITY 2000 GALLONS
MODEL IPS2000

DON CHAPIN PRE-CAST
2735 BOLSA RD.
HOLLISTER, CA 95023
(831) 630-1042
(831) 630-5763

1,500 GALLON CONCRETE PUMP TANK DETAIL



NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 9' - 0"
   WIDTH 9' - 0"
   DEPTH BELOW INLET 5' - 4"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

PUMP TANK SHALL HAVE NO BAFFLE.
TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS.
TYPICAL GRAVITY FLOW OUTLET SHALL NOT BE CAST INTO TANK.

Float Functions	
Y	*High Level Alarm*
B	*Pump On*
R	*Pump Off*

Emergency Storage/Surge Capacity:
Specified pump tank has a max. capacity of ***1,976*** *gallons to top of tank and* ***1,768*** *gallons to the invert of the inlet.*

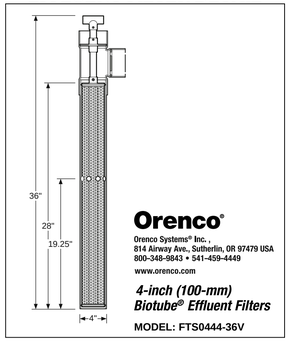
System Design Flow: 675 gallons per day (gpd)
To achieve 1.5 days of emergency storage, a capacity of 1,013 gallons is required above the "pump on" float up to the tank inlet invert elevation. [675 gpd x 1.5 = 1,013 gal]

Pump-on float shall be set at 19" from bottom of tank resulting in ***514*** *gallons below this float and a* ***1,254*** *gallon capacity above this float up to the invert of the tank inlet*
[1,768g - 514g = 1254g]

PRE-CAST CONCRETE WATER TIGHT
HOLDING/PUMP TANK
CAPACITY 1500 GALLONS
MODEL IPS1500H

DON CHAPIN PRE-CAST

EFFLUENT FILTER DETAIL

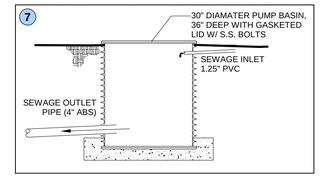


Orenco®
Orenco Systems® Inc. ,
814 Airway Ave., Sutherlin, OR 97479 USA
800-348-9843 • 541-459-4449
www.orenco.com

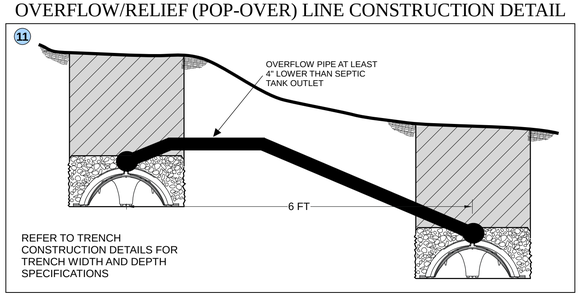
4-inch (100-mm) Biotube® Effluent Filters

MODEL: FTS0444-36V

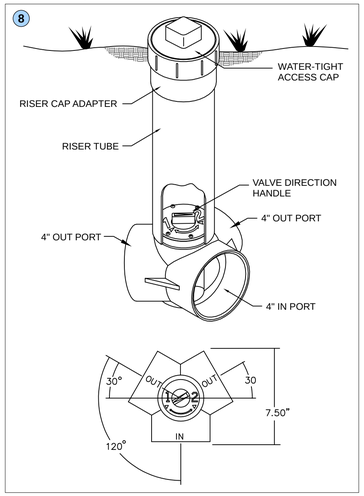
DISTRIBUTION BOX DETAIL



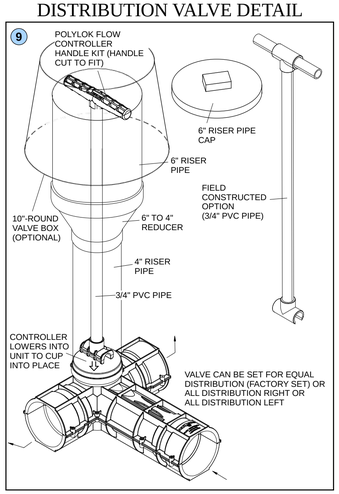
OVERFLOW/RELIEF (POP-OVER) LINE CONSTRUCTION DETAIL



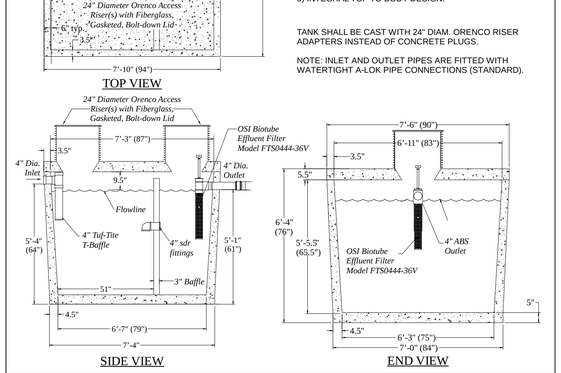
BULL RUN DIVERSION VALVE DETAIL



POLYLOK FLOW CONTROLLER DISTRIBUTION VALVE DETAIL



1,500 GALLON CONCRETE SEPTIC TANK DETAIL



NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 9' - 0"
   WIDTH 9' - 0"
   DEPTH BELOW INLET 5' - 4"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

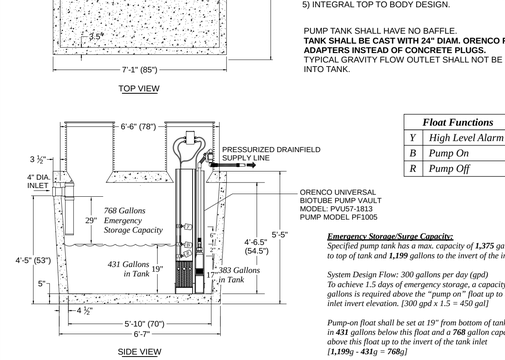
TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS.

NOTE: INLET AND OUTLET PIPES ARE FITTED WITH WATERTIGHT A-LOK PIPE CONNECTIONS (STANDARD).

PRE-CAST CONCRETE WATER TIGHT
SEPTIC TANK
CAPACITY 1500 GALLONS
MODEL IPS1500

DON CHAPIN PRE-CAST

1,000 GALLON CONCRETE PUMP TANK DETAIL



NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 8' - 0"
   WIDTH 8' - 0"
   DEPTH BELOW INLET 4' - 5"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

PUMP TANK SHALL HAVE NO BAFFLE.
TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS.
TYPICAL GRAVITY FLOW OUTLET SHALL NOT BE CAST INTO TANK.

Float Functions	
Y	*High Level Alarm*
B	*Pump On*
R	*Pump Off*

Emergency Storage/Surge Capacity:
Specified pump tank has a max. capacity of ***1,375*** *gallons to top of tank and* ***1,199*** *gallons to the invert of the inlet.*

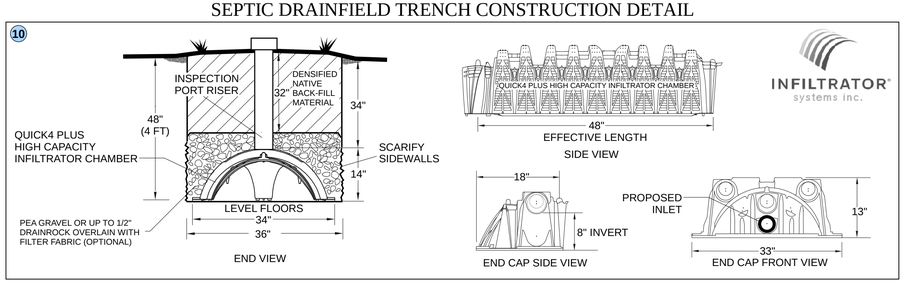
System Design Flow: 300 gallons per day (gpd)
To achieve 1.5 days of emergency storage, a capacity of 450 gallons is required above the "pump on" float up to the tank inlet invert elevation. [300 gpd x 1.5 = 450 gal]

Pump-on float shall be set at 19" from bottom of tank resulting in ***431*** *gallons below this float and a* ***768*** *gallon capacity above this float up to the invert of the tank inlet*
[1,199g - 431g = 768g]

PRE-CAST CONCRETE WATER TIGHT
HOLDING/PUMP TANK
CAPACITY 1000 GALLONS
MODEL IPS1000H

DON CHAPIN PRE-CAST

INFILTRATOR QUICK4 PLUS HIGH-CAPACITY SEPTIC DRAINFIELD TRENCH CONSTRUCTION DETAIL



COUNTY E.H. ACCEPTANCE/APPROVAL STAMPS

PROFESSIONAL GEOLOGIST
ANDREW BROWNSTONE
No. 7453
Exp. 12/31/23
STATE OF CALIFORNIA

BioSphere Consulting Incorporated
Alternative Wastewater System Design
• Site Evaluation & Mapping
• Soil Analysis & Percolation Testing
• New Development, Upgrade & Repairs
• Residential & Commercial
1315 King Street
Santa Cruz, CA 95060
Tel: (831) 430-9116
www.biosphere-consulting.com

ONSITE WASTEWATER TREATMENT SYSTEM DESIGN PLAN

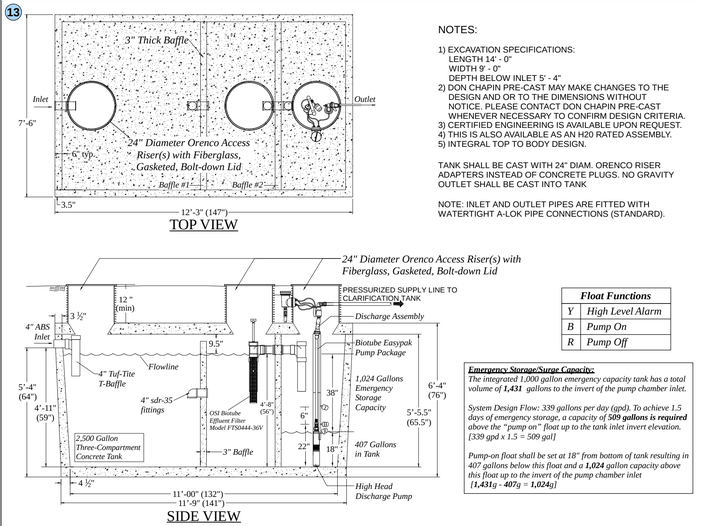
Project Location:	W Edmundson, Morgan Hill, California 95037 [Santa Clara County]		
Property Owner:	Jim Hartigan		
Mailing Address:	16428 Peacock Lane, Los Gatos, California 95032		
Owner Phone #:	(408) 768-9343	email: jim@hartigan.net	
Date: 04/13/23	**By:** David Quinn / Andrew Brownstone		Sheet:
REVISION:		**Job No.:** 22002 **APN:** 767-19-035	**2** OF 4

SYSTEM #3
ENHANCED TREATMENT SYSTEM SPECIFICATIONS

1. Building Sewer Lines & Proposed Septic Tank with Emergency Storage Capacity
   - 1.1. A 4" ABS building sewer line shall be installed to convey all raw sewage from buildings to the respective septic tanks. All gravity sewer piping must maintain a minimum 2% continuous gradient. ***All wastewater including graywater shall be discharged to the septic tank.***
   - 1.2. Locate a 2-way, 4" ABS cleanout fittings on the building sewer to facilitate snaking and line location.
   - 1.3. The septic tank serving the barn shall be a 1,500 gallon, watertight, concrete, pinnacle style Chapin Pre-Cast septic tank. OSI riser adapters shall be cast into the lid of the tank by Chapin Pre-Cast. The tank shall have two 24" diameter OSI access risers with fiberglass, bolt-down lids (brown).
   - 1.4. The septic tank serving the winery and the tasting room shall be a 2,500 gallon, three compartment, watertight, concrete, pinnacle style Chapin Pre-Cast septic tank with discharge pump. OSI riser adapters shall be cast into the lid of the tank by Chapin Pre-Cast. The tank shall have three 24" diameter OSI access risers with fiberglass, bolt-down lids (brown).
   - 1.5. Riser heights will be determined by tank burial depth (ideally 12" to 24"). Risers shall be installed 2" above finished grade. The tanks shall be installed according to the manufacturers guidelines including anti-flotation specifications.
   - 1.6. The tank holes shall be excavated so that the tanks sit level. Install the access risers with a watertight joint using the adhesives supplied by manufacturer. Access riser lids shall be brown unless otherwise requested.
   - 1.7. Install the tank inlet fittings with a watertight joint. Cap off or use a test plug on this fitting and fill the tanks with clean water 2" above the joint between the riser and the tank top. Repair any leaks.
   - 1.8. Obtain a watertight tank inspection by EH and the designer or distributor with 24 hours notice to each.
   - 1.9. Install an OSI Effluent Filter (Model: FTS0444-36V) in each tank as shown.
   - 1.10. In order to meet the required 1.5 day emergency surge capacity, a third chamber was created in the 2,500 gallon tank with a discharge pump (see detail).
   - 1.11. Install the pump and float tree according to the instructions provided by manufacturer/dealer.
   - 1.12. A 1/2 hp OSI high head effluent pump (PF1005) is specified to meter flow into the clarification tank.
   - 1.13. The filtrate ***transport pipe from the emergency capcacity violume chamber to the clarification tank to dispersal system shall be 1.0" schedule 40 PVC.***
2. Aeration Tank
   - 2.1. A 1,000 gallon, watertight, concrete, pinnacle style Chapin Pre-Cast holding tank (no baffle) is specified for use as an aeration tank. OSI riser adapters shall be cast into the lid of the tank by Chapin Pre-Cast. The tank shall have two 30" diameter OSI access risers with fiberglass, bolt-down lids (brown). Riser heights will be determined by tank burial depth (ideally 12" to 24"). Risers shall be installed 2" above finished grade. The tank shall be installed according to the manufacturers guidelines including anti-flotation specifications.
   - 2.2. The tank hole shall be excavated so that the tank sits level. Install the access risers with a watertight joint using the adhesives supplied by manufacturer. Access riser lids shall be brown unless otherwise requested.
   - 2.3. Install the tank inlet fitting with a watertight joint. Cap off or use a test plug on this fitting and fill the tank with clean water 2" above the joint between the riser and the tank top. Repair any leaks.
   - 2.4. Obtain a watertight tank inspection by EH and the designer or distributor with 24 hours notice to each.
   - 2.5. Install the pump and float tree according to the instructions provided by manufacturer/dealer.
   - 2.6. Duplex PF5015 pre-aeration pumps are specified.
   - 2.7. The aeration recirculation pipes shall be ***2" schedule 40 PVC***.
   - 2.8. Install Mazzei aeration and Orenco components according to the instructions provided by manufacturer/dealer.
3. Clarification Tank
   - 3.1. A 1,000 gallon, watertight, concrete, pinnacle style Chapin Pre-Cast holding tank (no baffle) is specified for use as a clarification tank. OSI riser adapters shall be cast into the lid of the tank by Chapin Pre-Cast. The tank shall have two 24" diameter OSI access risers with fiberglass, bolt-down lids (brown). Riser heights will be determined by tank burial depth (ideally 12" to 24"). Risers shall be installed 2" above finished grade. The tank shall be installed according to the manufacturers guidelines including anti-flotation specifications.
   - 3.2. The tank hole shall be excavated so that the tank sits level. Install the access risers with a watertight joint using the adhesives supplied by manufacturer. Access riser lids shall be brown unless otherwise requested.
   - 3.3. Install the tank inlet fitting with a watertight joint. Cap off or use a test plug on this fitting and fill the tank with clean water 2" above the joint between the riser and the tank top. Repair any leaks.
   - 3.4. Obtain a watertight tank inspection by EH and the designer or distributor with 24 hours notice to each.
4. AdvanTex™ Treatment System
   - 4.1. An AdvanTex™ AX25-RT treatment system and telemetry-enabled VeriComm® control panel is specified.
   - 4.2. Install the AdvanTex™ system according to the installation instructions and in the location shown on the plan. *The RT lid shall be installed 2"min above final grade. An RT spacer/riser may be required.*
   - 4.3. The AX25-RT tank hole shall be excavated so that the tank sits level.
   - 4.4. Install the AX25-RT inlet fitting with a watertight joint. Cap off or use a test plug on this fitting and fill the unit with clean water. Repair any leaks.
   - 4.5. Obtain a watertight tank inspection by DEH and the designer or distributor with 24 hours notice to each.
   - 4.6. Install all Orenco Systems components in strict accordance to the installation manual instructions.
5. Discharge Pump Tank and Filtrate Pumping
   - 5.1. A 1,000 gallon watertight, concrete, pinnacle style Chapin Pre-Cast (holding) pump tank shall be installed adjacent to the processing tank.
   - 5.2. The pump tank shall be installed according to the manufacturer's instructions including anti-floatation specifications and be made watertight.
   - 5.3. Install the pump and float tree according to the instructions provided by manufacturer/dealer.
   - 5.4. A 1/2 hp OSI high head effluent pump (PF1005) is specified to pump effluent up to the gravity distribution box.
   - 5.5. The effluent ***transport pipe to dispersal system shall be 1.25" schedule 40 PVC.***
6. Effluent Distribution and Dispersal Trenches
   - 6.1. The winery utilizes the same drainfield as the residential systems. See Conventional System Specifications section 3.
7. Installer Qualifications and Responsibilities
   - 7.1. The system installer shall be licensed by the State of California, Department of Consumer Affairs, to install septic systems. Installer certification is required by the local AdvanTex™ dealer. The installer is required to fully read and understand the AdvanTex™ manuals prior to the commencement of work.
   - 7.2. All piping shall conform to the current edition of the California Plumbing Code.
   - 7.3. The installer shall be responsible for locating any property lines, underground utilities or piping. Any damage to these facilities shall be the responsibility of the installer.
   - 7.4. A pre-construction conference with designer, inspector and dealer/service provider shall be arranged prior to the commencement of work. Construction inspections, watertight tank test inspection, AdvanTex™ installation inspection, and final operation of system shall be made by designer (BioSphere Consulting) or local distributor and system service provider and the County of Santa Clara Department of Environmental Health (408-918- 3400). The installer shall give at least 48 hours notice to each party for all inspections. Designer shall provide final installation approval letter and as-built drawings per DEH requirements.
8. Electrical Work
   - 8.1. The ST-Comm® control panel with Logo screen and 110 outlet shall be installed in the location shown on the map ***with the bottom of the panel box at 51" from the ground surface.***
   - 8.2. One, 20 amp, 120V electrical circuit and five, 20 amp, 230V electrical circuits shall be extended to the ST-Comm® panel in a single conduit. Underground circuits in separate conduits shall be installed from the panel to the recirculation pump and discharge pump. A separate underground conduit containing a live CAT5 phone line shall be installed to the ST-Comm® panel. The system will not be finalized until everything (including panel telemetry) is functional.
   - 8.3. All work shall conform to the California Electrical Code and the contractor shall be responsible for obtaining any electrical permits required.
9. Site Clean up and Erosion Control Measures
   - 9.1. All excavated areas shall be smoothed and all construction debris shall be removed from the site.
   - 9.2. All disturbed soils shall be seeded and mulched. Erosion Control Mix seed shall be used at the coverage recommended on the package for all disturbed soil.
   - 9.3. Straw shall be used to cover all disturbed soil.
   - 9.4. PER DIVISION C12, CHAPTER III OF THE COUNTY CODE (Sec. C12-513. Temporary erosion control.) "The permittee and any person(s) doing, causing or directing the grading shall install and maintain all precautionary measures necessary to protect adjacent watercourses and public or private property from damage by erosion, flooding, or deposition of mud or debris originating from the site. Precautionary measures must include provisions of properly designed erosion prevention and sediment control measures, so that downstream properties are not affected by upstream erosion or sediment transport by stormwater."
10. Operating Permit for Alternative OWTS
    - 10.1. In addition to the installation permit, an operating permit is required for alternative OWTS per section B11-92 of the Santa Clara County Ordinance.
    - 10.2. The operating permit will be issued after completion of the septic system installation and final inspection.
    - 10.3. The operating permit is subject to renewal, fees and will be recorded on the deed to the property by the County Recorder of Santa Clara County.

2,500 GALLON CONVENTIONAL SEPTIC TANK AND EMERGENCY CAPACITY TANK DETAIL

13



Float Functions	
Y	*High Level Alarm*
B	*Pump On*
R	*Pump Off*

Emergency Storage/Surge Capacity:
The integrated 1,000 gallon emergency capacity tank has a total volume of ***1,431*** *gallons to the invert of the pump chamber inlet.*

System Design Flow: 339 gallons per day (gpd). To achieve 1.5 days of emergency storage, a capacity of ***509 gallons is required*** *above the "pump on" float up to the tank inlet invert elevation. [339 gpd x 1.5 = 509 gal]*

Pump-on float shall be set at 18" from bottom of tank resulting in 407 gallons below this float and a ***1,024*** *gallon capacity above this float up to the invert of the pump chamber inlet [**1,431g - 407g = 1,024g**]*

NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 14' - 0"
   WIDTH 9' - 0"
   DEPTH BELOW INLET 5' - 4"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS. NO GRAVITY OUTLET SHALL BE CAST INTO TANK

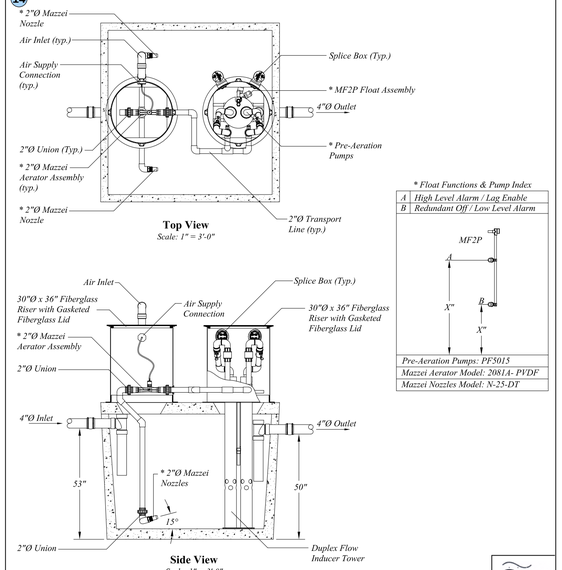
NOTE: INLET AND OUTLET PIPES ARE FITTED WITH WATERTIGHT A-LOK PIPE CONNECTIONS (STANDARD).

PRE-CAST CONCRETE SEAMLESS
SEPTIC TANK
CAPACITY 2500 GALLONS
MODEL IPS2500

DON CHAPIN PRE-CAST

1,000 GALLON AERATION TANK

14



* Float Functions & Pump Index

A	High Level Alarm / Lag Enable
B	Redundant Off / Low Level Alarm

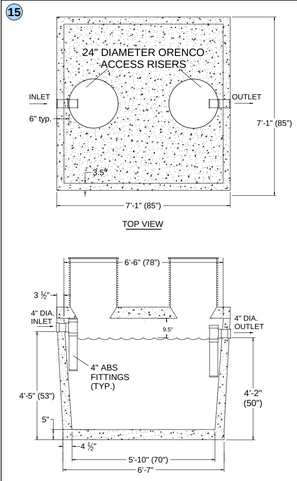
Pre-Aeration Pumps: PF5015
Mazzei Aerator Model: 208LA- PVDF
Mazzei Nozzles Model: N-25-DT

1,000 Gallon Chapin Pinnacle Style Concrete Tank

Orenco Systems® Incorporated

1,000 GALLON CONCRETE CLARIFICATION TANK DETAIL

15



NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 8' - 0"
   WIDTH 8' - 0"
   DEPTH BELOW INLET 4' - 5"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

TANK SHALL HAVE NO BAFFLE.
TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS.

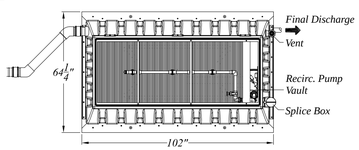
NOTE: INLET AND OUTLET PIPES ARE FITTED WITH WATERTIGHT A-LOK PIPE CONNECTIONS (STANDARD).

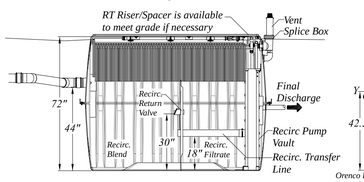
PRE-CAST CONCRETE WATER TIGHT
HOLDING/PUMP TANK
CAPACITY 1000 GALLONS
MODEL IPS1000H

DON CHAPIN PRE-CAST

ADVANTEX AX25RT DETAIL

16





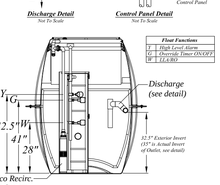
Design Notes

For residential strength waste. up to 6 bedrooms.

Installation to be performed by an AdvanTex Authorized Installer only.

Start-up and service to be performed by an AdvanTex Authorized Service Provider only.

Installer shall be responsible for installing anti-buoyancy deadmen to prevent unit from rising out of the ground during heavy rainfall.

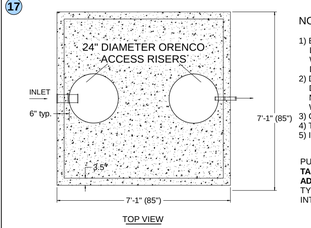


AdvanTex AX25RT
Treatment System

Orenco Systems® Incorporated

1,000 GALLON CONCRETE PUMP TANK DETAIL

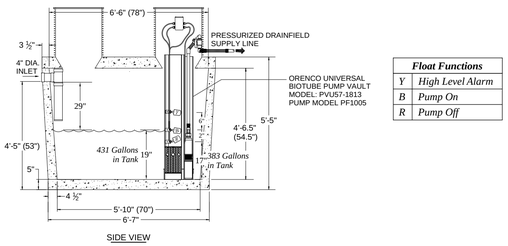
17



NOTES:

1) EXCAVATION SPECIFICATIONS:
   LENGTH 8' - 0"
   WIDTH 8' - 0"
   DEPTH BELOW INLET 4' - 5"
2) DON CHAPIN PRE-CAST MAY MAKE CHANGES TO THE DESIGN AND OR TO THE DIMENSIONS WITHOUT NOTICE. PLEASE CONTACT DON CHAPIN PRE-CAST WHENEVER NECESSARY TO CONFIRM DESIGN CRITERIA.
3) CERTIFIED ENGINEERING IS AVAILABLE UPON REQUEST.
4) THIS IS ALSO AVAILABLE AS AN H20 RATED ASSEMBLY.
5) INTEGRAL TOP TO BODY DESIGN.

PUMP TANK SHALL HAVE NO BAFFLE.
TANK SHALL BE CAST WITH 24" DIAM. ORENCO RISER ADAPTERS INSTEAD OF CONCRETE PLUGS.
TYPICAL GRAVITY FLOW OUTLET SHALL NOT BE CAST INTO TANK.



Float Functions	
Y	*High Level Alarm*
B	*Pump On*
R	*Pump Off*

PRE-CAST CONCRETE WATER TIGHT
HOLDING/PUMP TANK
CAPACITY 1000 GALLONS
MODEL IPS1000H

DON CHAPIN PRE-CAST

ENHANCED TREATMENT SYSTEM OPERATION AND MAINTENANCE

- The owner should read and operate the system according to the AdvanTex™ operation and maintenance literature.
- Orenco requires biannual maintenance servicing of the AdvanTex™ by a qualified technician.
- County Environmental Health will issue an OWTS Annual Operating Permit and requires that the property owner maintain a system service agreement/contract with a qualified third-party service provider. This requirement will be placed on the title deed for the property.
- The treatment tank is alive with important microorganisms. Do not add any materials (paint thinner, paint, motor oil, unused medicine, etc.) that may disrupt the biologic treatment process. The primary tank should be pumped when the total of the scum/sludge thickness is greater than 1/3 of the total liquid level depth.
- DO NOT ROUTE WATER SOFTENER BACKFLUSH DISCHARGE TO TREATMENT SYSTEM! This discharge may be routed directly to a drainfield trench or an approved dispersal field.
- Repair all plumbing leaks (especially toilet leaks) promptly.

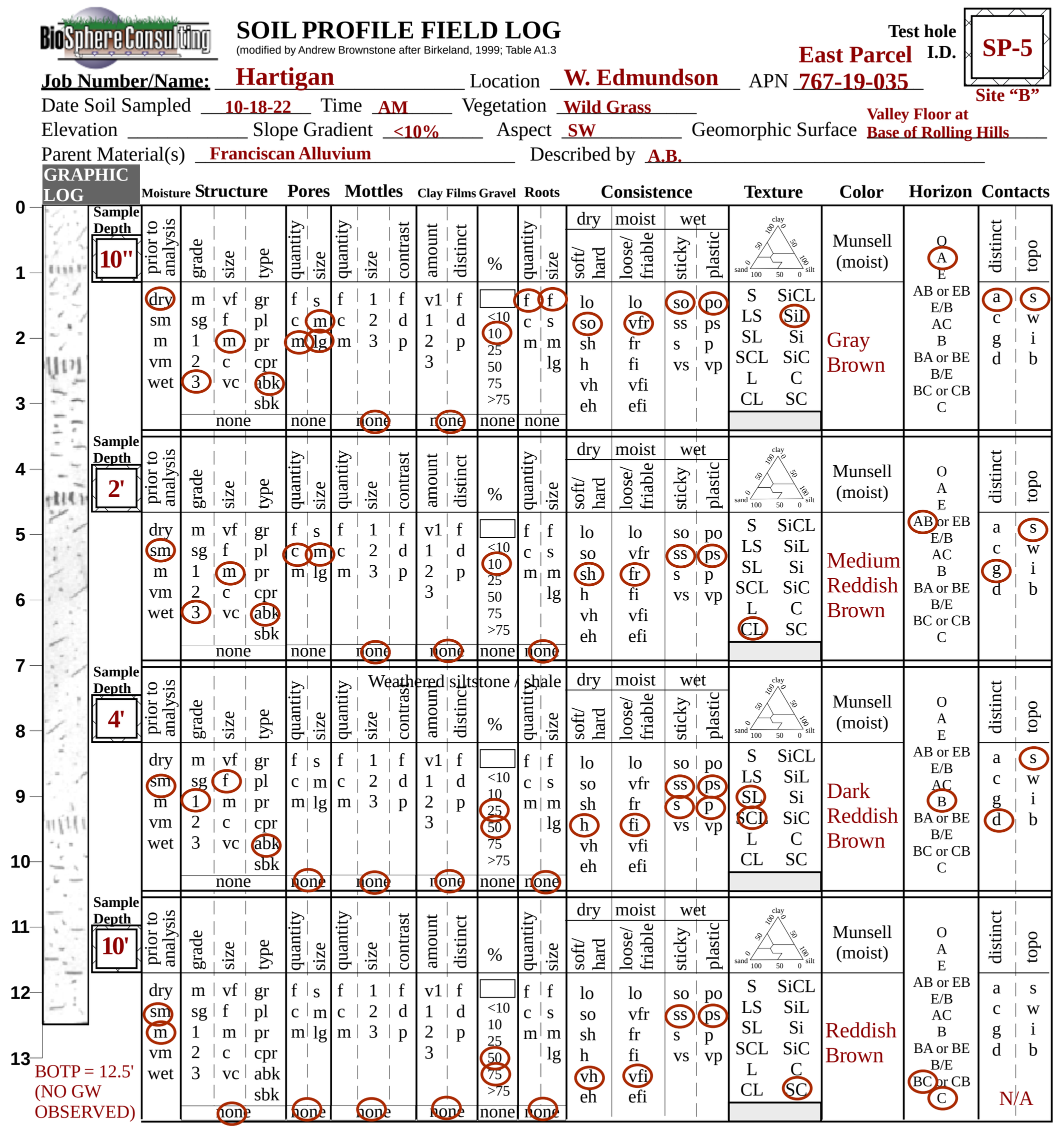
PROFESSIONAL GEOLOGIST
ANDREW BROWNSTONE
No. 7453
Exp. 12/31/23
STATE OF CALIFORNIA

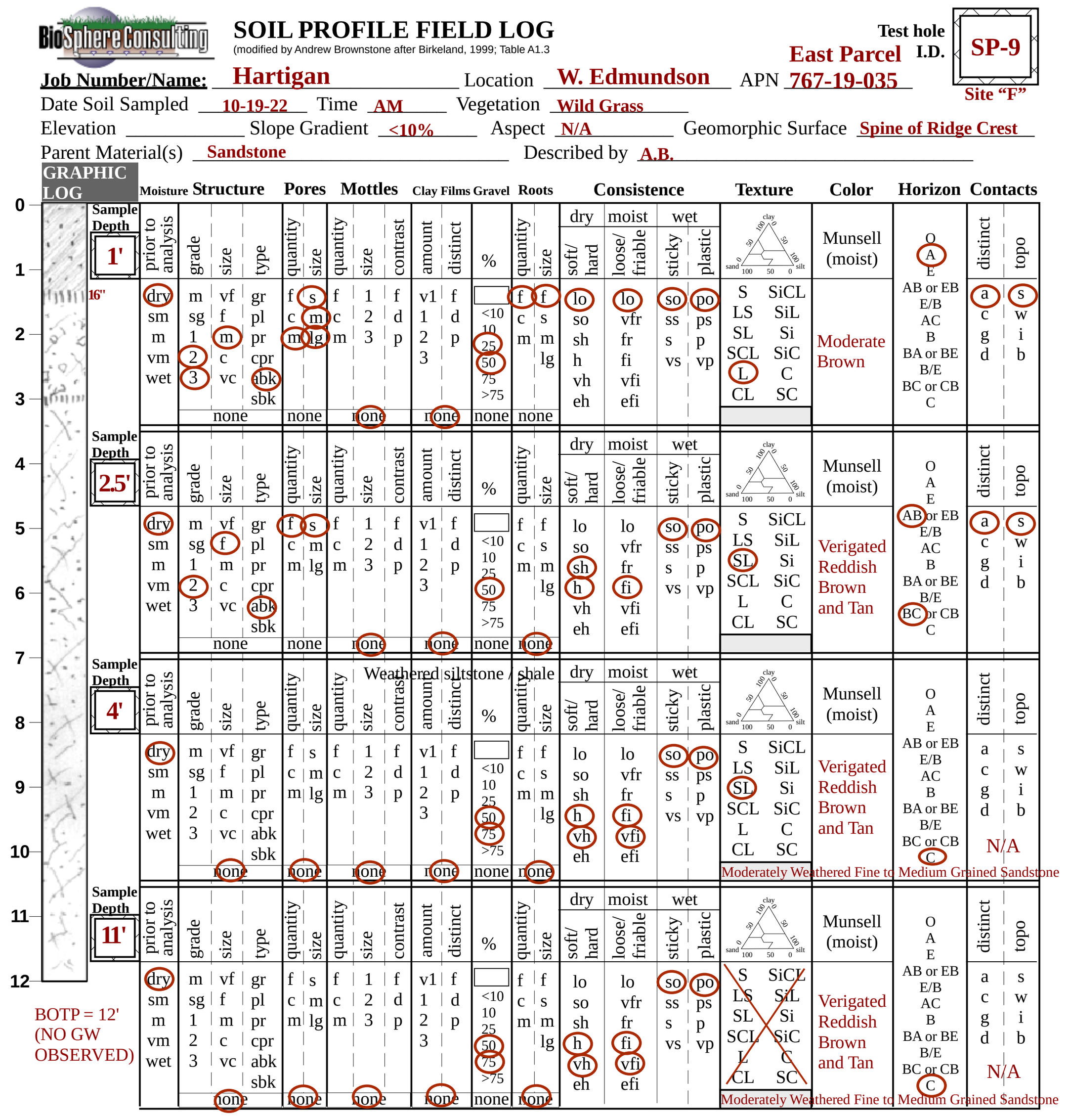
COUNTY E.H. ACCEPTANCE/APPROVAL STAMPS

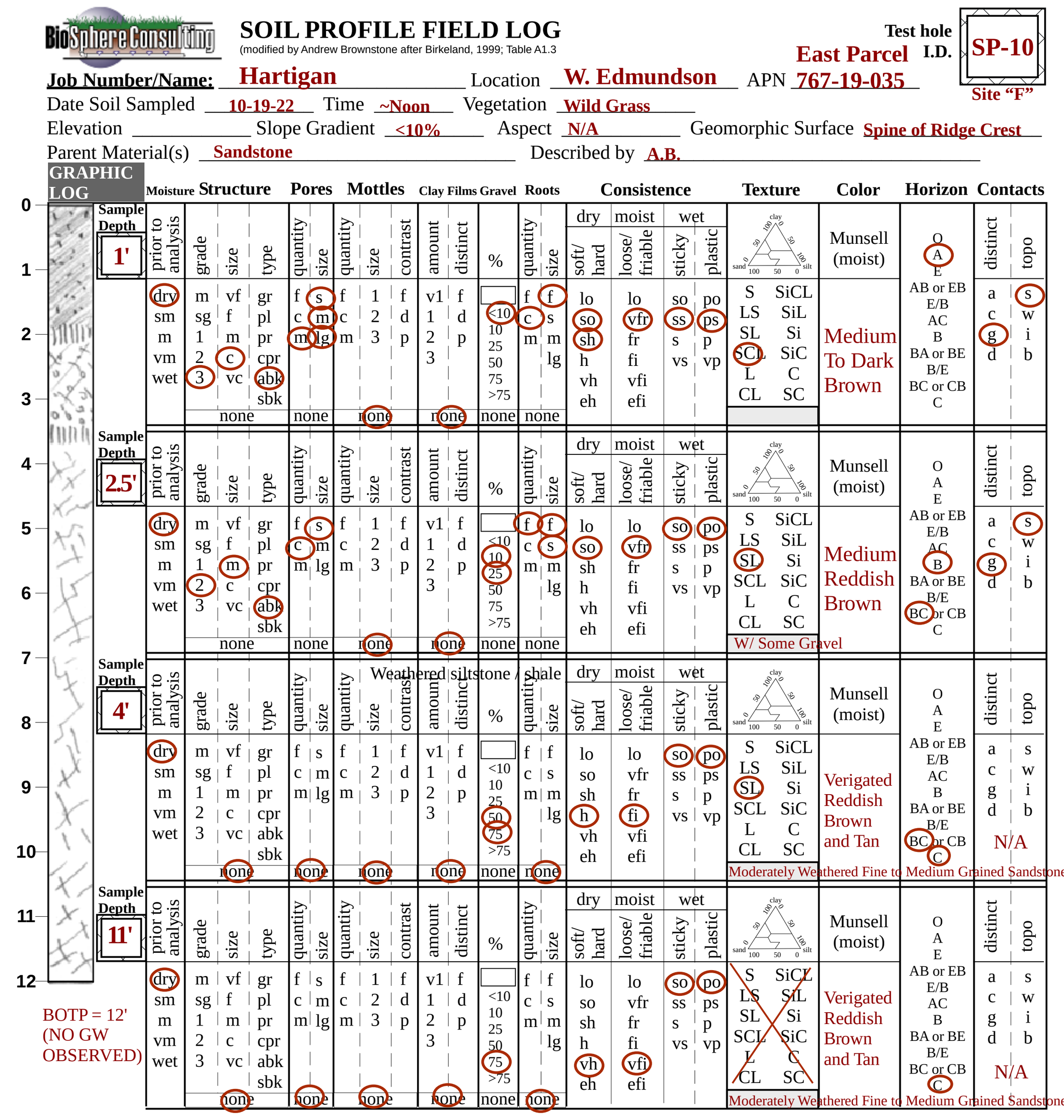
BioSphere Consulting Incorporated
Alternative Wastewater System Design
• Site Evaluation & Mapping
• Soil Analysis & Percolation Testing
• New Development, Upgrade & Repairs
• Residential & Commercial
1315 King Street
Santa Cruz, CA 95060
Tel: (831) 430-9116
www.biosphere-consulting.com

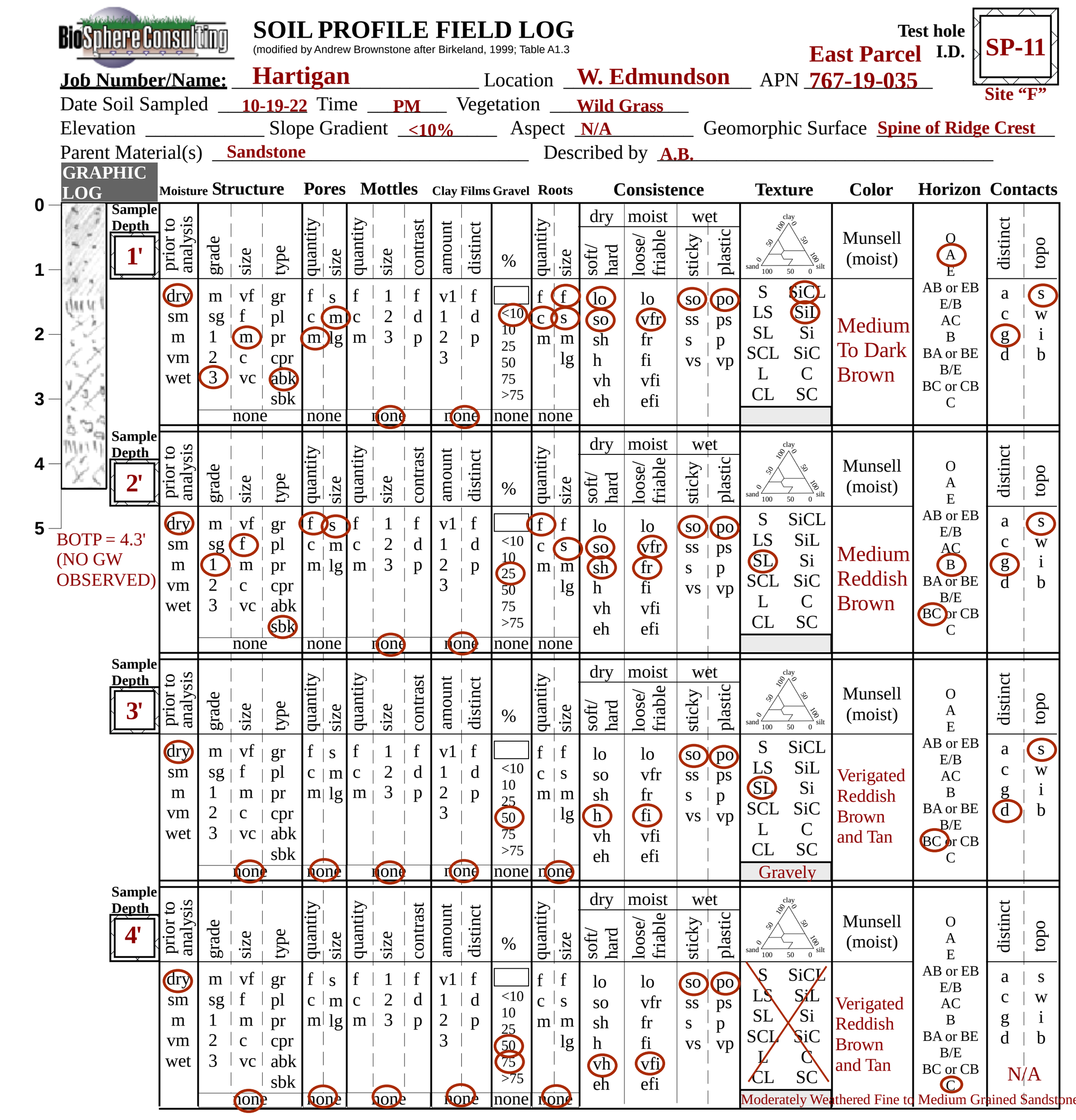
ONSITE WASTEWATER TREATMENT SYSTEM DESIGN PLAN

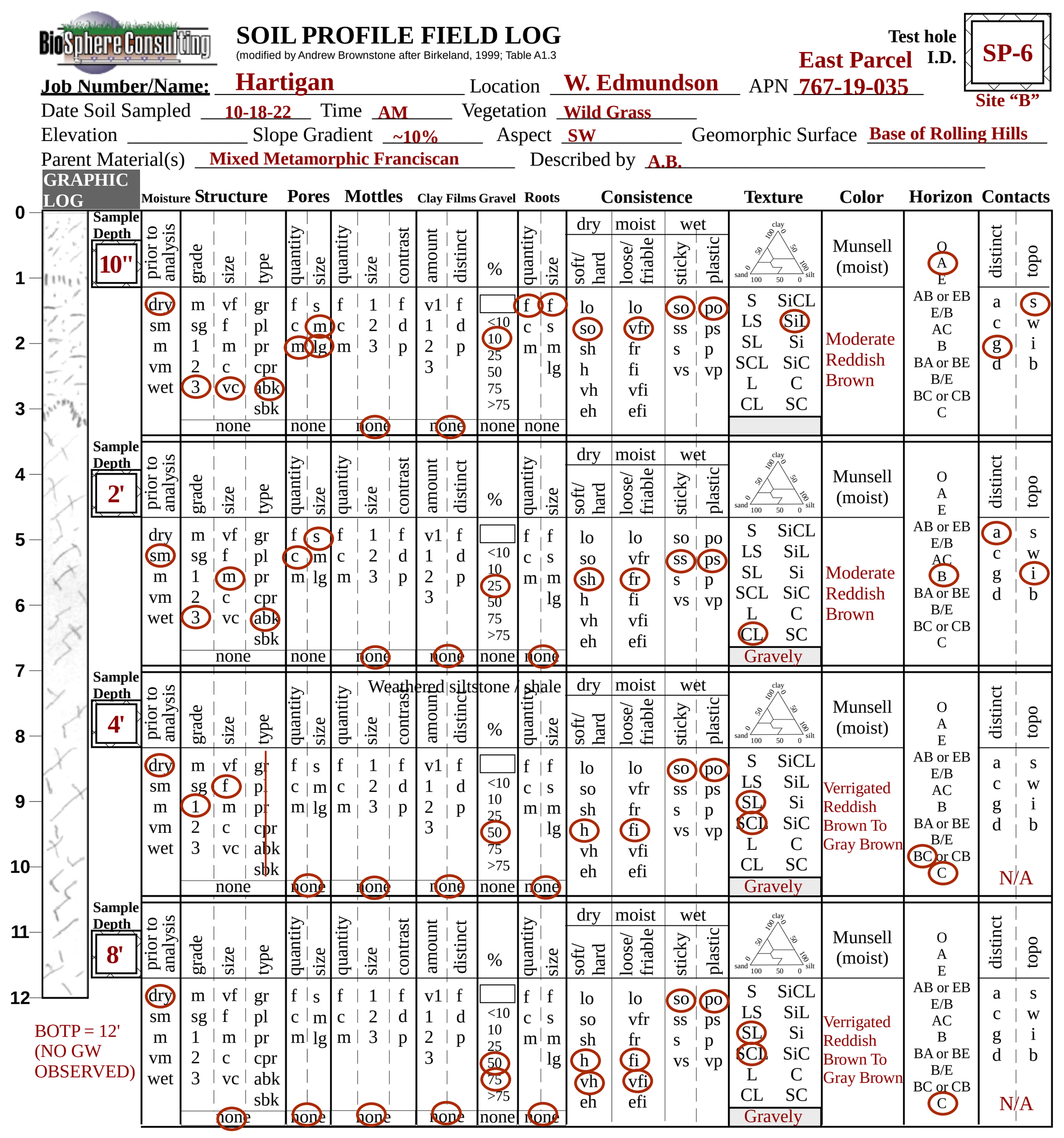
Project Location:	W Edmundson, Morgan Hill, California 95037 [Santa Clara County]		
Property Owner:	Jim Hartigan		
Mailing Address:	16428 Peacock Lane, Los Gatos, California 95032		
Owner Phone #:	(408) 768-9343 email: jim@hartigan.net		
Date: 04/13/23	**By:** David Quinn / Andrew Brownstone		Sheet:
REVISION:		**Job No.:** 22002 **APN:** 767-19-035	**3** OF 4

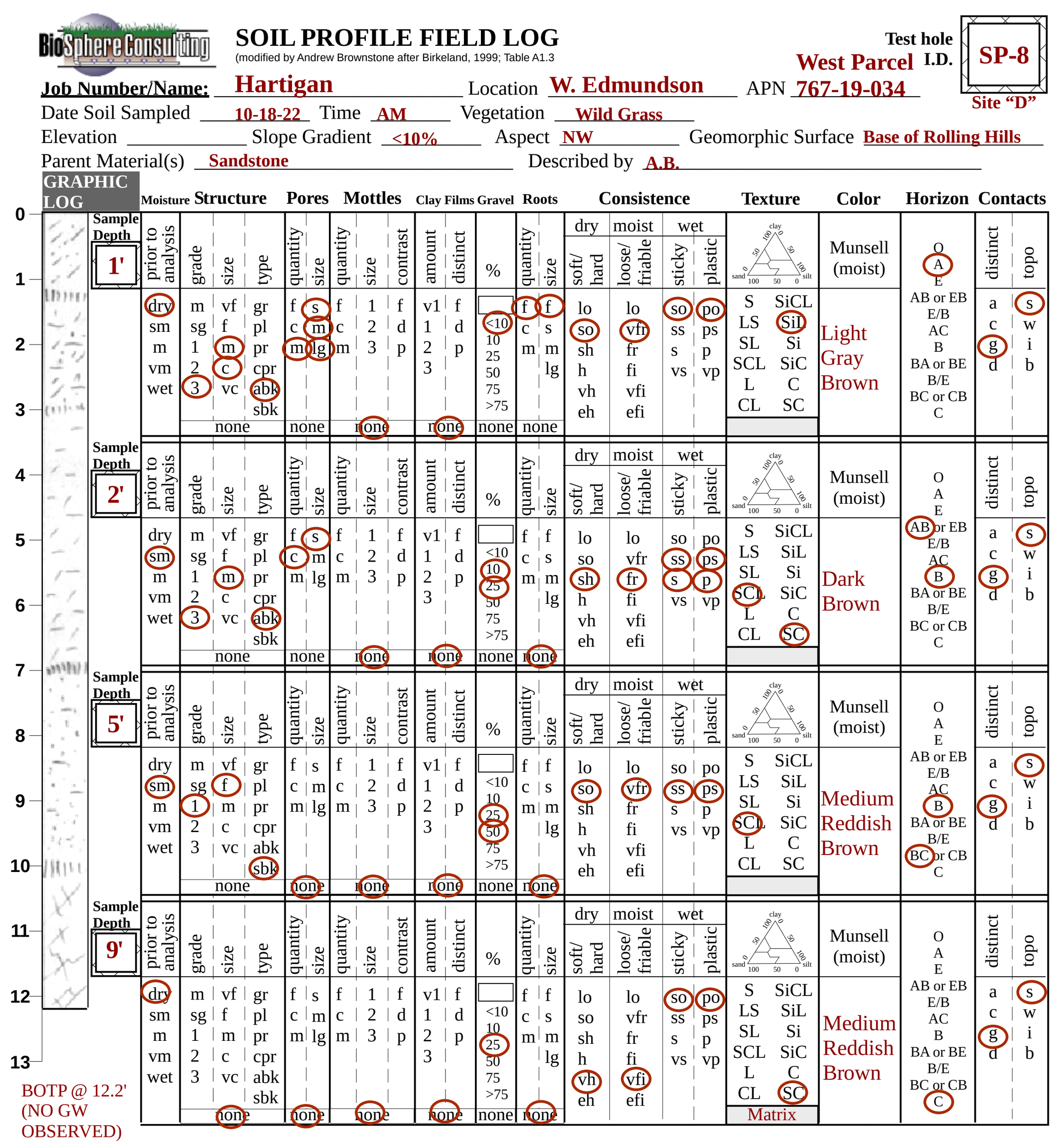












PUMP SELECTION CHART

HARTIGAN EAST - 6 BEDROOM DWELLING

Parameters

Discharge Assembly Size	1.0FC	inches
Transport Length	452	feet
Transport Pipe Class	40	
Transport Line Size	1.00	inches
Distributing Valve Model	None	
Max Elevation Lift	36	feet
Design Flow Rate	10	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	10	feet

Calculations

Transport Velocity	3.7	fps

Frictional Head Losses

Loss through Discharge	94.0	feet
Loss in Transport	24.9	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	10.0	feet

Pipe Volumes

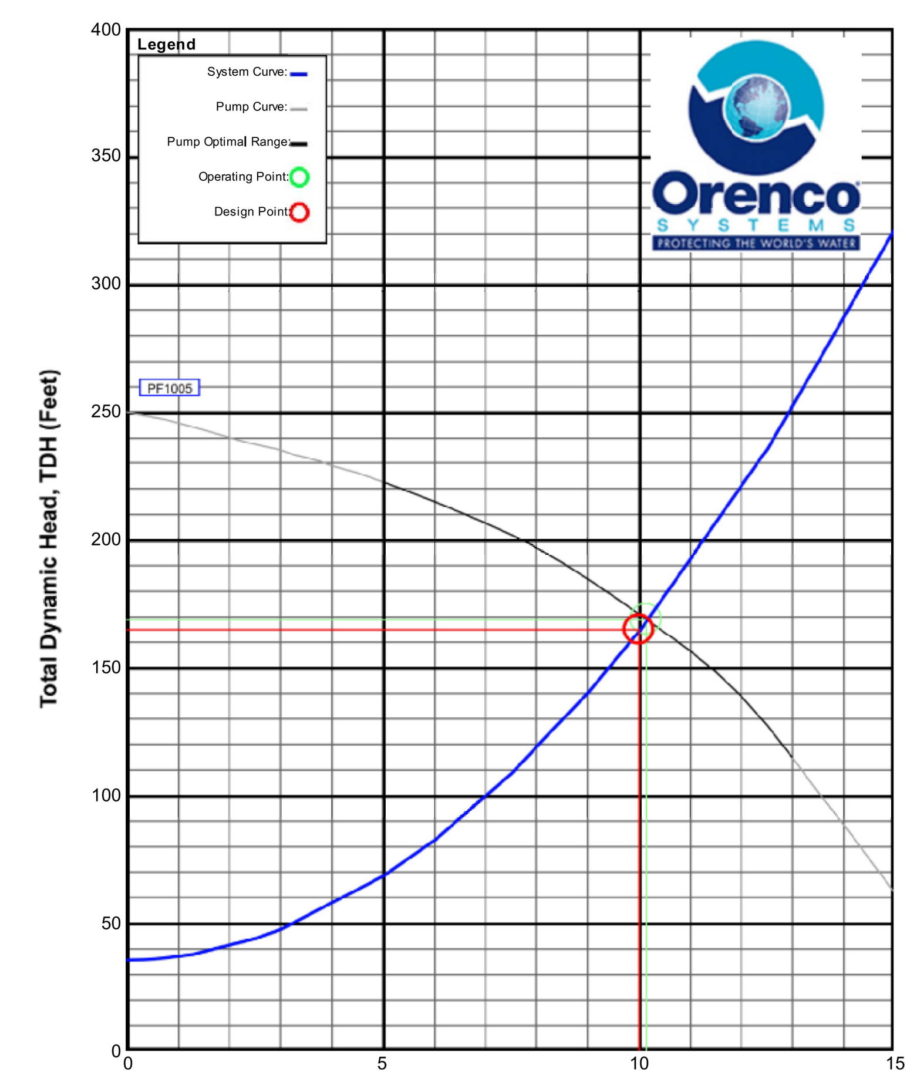
Vol of Transport Line	20.3	gals

Minimum Pump Requirements

Design Flow Rate	10.0	gpm
Total Dynamic Head	164.9	feet

PumpData

PF1005 High Head Effluent Pump
10 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz



PUMP SELECTION CHART

HARTIGAN EAST - 2 BEDROOM ADU

Parameters

Discharge Assembly Size	1.00	inches
Transport Length	470	feet
Transport Pipe Class	40	
Transport Line Size	1.00	inches
Distributing Valve Model	None	
Max Elevation Lift	81	feet
Design Flow Rate	10	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	5	feet

Calculations

Transport Velocity	3.7	fps

Frictional Head Losses

Loss through Discharge	4.5	feet
Loss in Transport	25.9	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	5.0	feet

Pipe Volumes

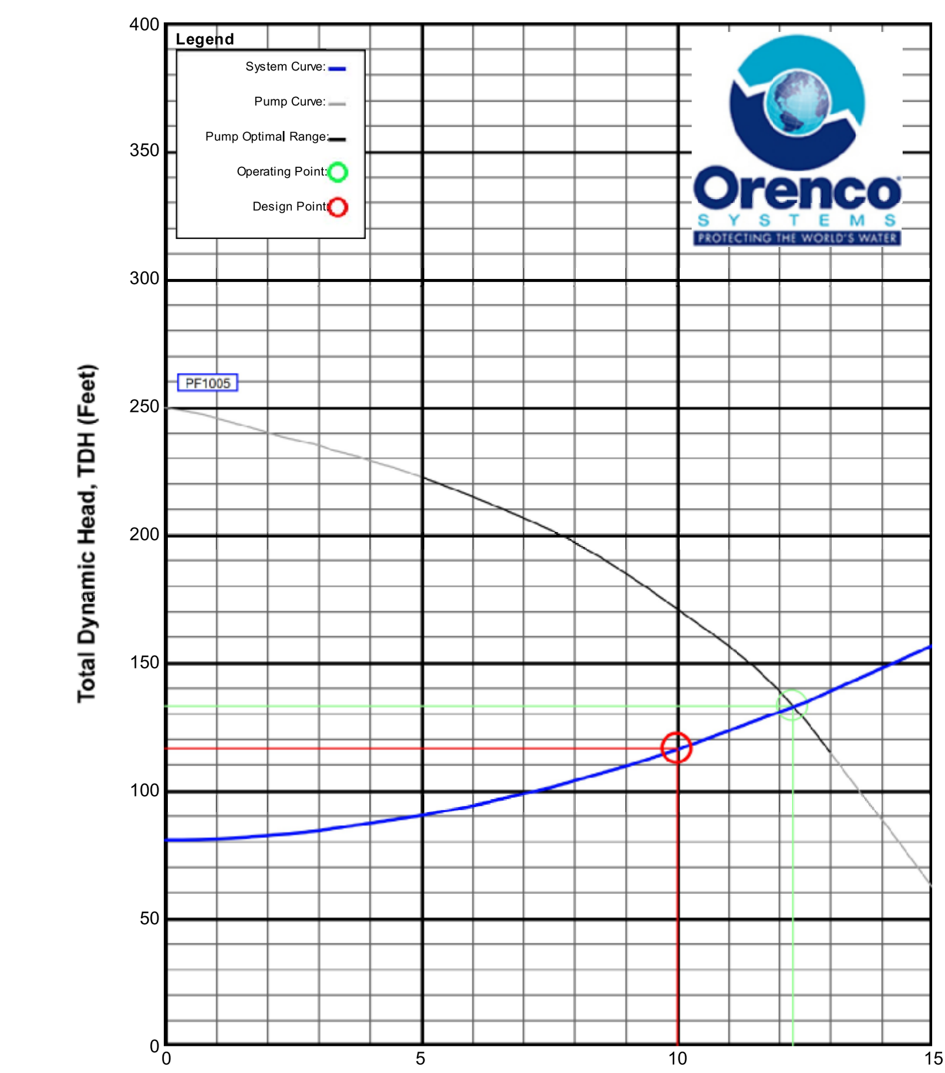
Vol of Transport Line	21.1	gals

Minimum Pump Requirements

Design Flow Rate	10.0	gpm
Total Dynamic Head	116.4	feet

PumpData

PF1005 High Head Effluent Pump
10 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz



PUMP SELECTION CHART

HARTIGAN EAST - WINERY

Parameters

Discharge Assembly Size	1.00	inches
Transport Length	1102	feet
Transport Pipe Class	40	
Transport Line Size	1.25	inches
Distributing Valve Model	None	
Max Elevation Lift	122	feet
Design Flow Rate	10	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	10	feet

Calculations

Transport Velocity	2.2	fps

Frictional Head Losses

Loss through Discharge	3.3	feet
Loss in Transport	16.0	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	10.0	feet

Pipe Volumes

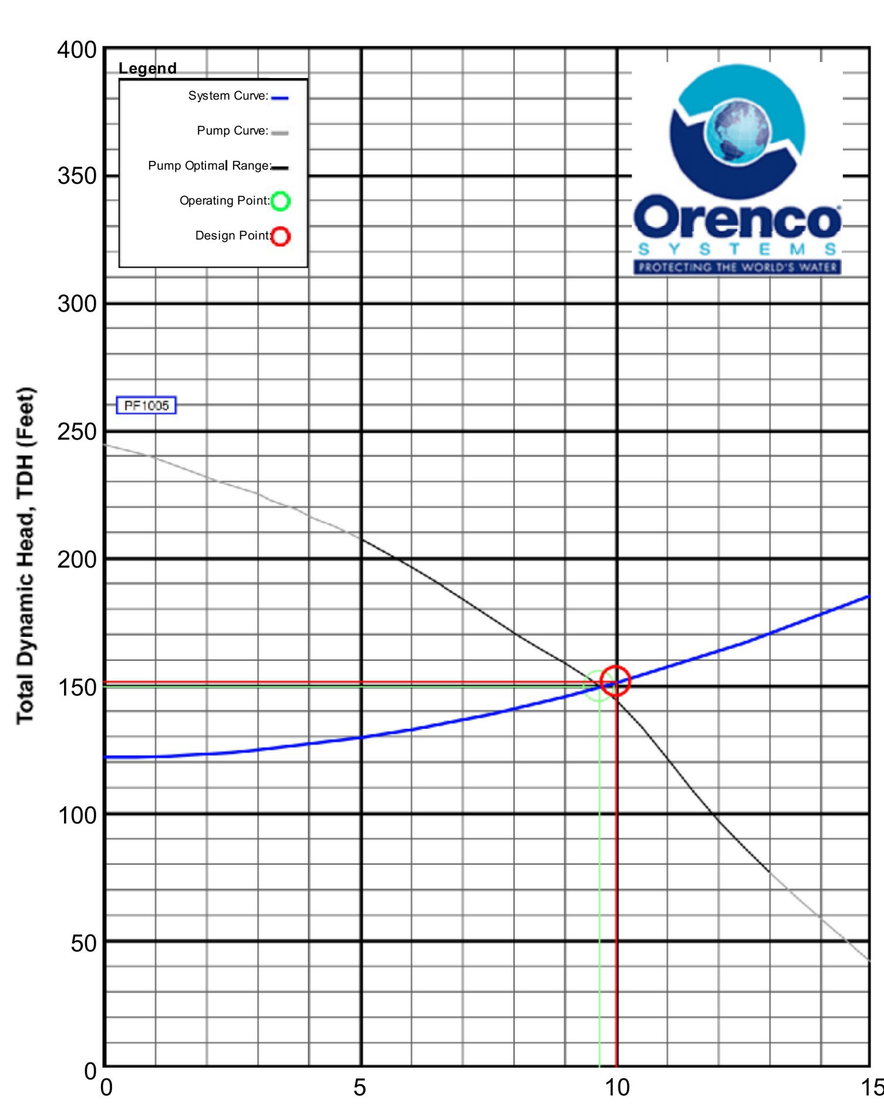
Vol of Transport Line	85.6	gals

Minimum Pump Requirements

Design Flow Rate	10.0	gpm
Total Dynamic Head	151.3	feet

PumpData

PF1005 High Head Effluent Pump
10 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz



SOIL PERCOLATION SUMMARY TABLE -- 10/25/22 EAST

Percolation Hole (PH)		PH-11	PH-12	PH-13	PH-14	PH-15	PH-16	
Depth		4.10'	4.00'	4.15'	4.00	4.02'	4.00'	
Stabilized MPI	R	5.10	5.60	21.50	97.20	8.60	3.30	
Adjusted Stabilized MPI	R_1=R x 1.4	7.14	7.84	30.10	136.08	12.04	4.62	
Avg. Adj. Stabilized MPI	**R_2=(∑R_1)/ #Holes**							**12.35**
# Bedrooms:	FOR OFFICE USE ONLY	TANK SIZE (Gal)			Leach Line (Ft)			

COUNTY E.H. ACCEPTANCE/APPROVAL STAMPS

PROFESSIONAL GEOLOGIST
ANDREW BROWNSTONE
No. 7453
Exp. 12/31/23
STATE OF CALIFORNIA

BioSphere Consulting
Incorporated
Alternative Wastewater System Design
• Site Evaluation & Mapping
• Soil Analysis & Percolation Testing
• New Development, Upgrade & Repairs
• Residential & Commercial
1315 King Street
Santa Cruz, CA 95060
Tel: (831) 430-9116
www.biosphere-consulting.com

ONSITE WASTEWATER TREATMENT SYSTEM DESIGN PLAN

Project Location:	W Edmundson, Morgan Hill, California 95037 [Santa Clara County]		
Property Owner:	Jim Hartigan		
Mailing Address:	16428 Peacock Lane, Los Gatos, California 95032		
Owner Phone #:	(408) 768-9343 email: jim@hartigan.net		
Date: 04/13/23	**By:** David Quinn / Andrew Brownstone		Sheet:
REVISION:		**Job No.:** 22002	**APN:** 767-19-035