



Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044
Colorado Springs, CO 80907
(719) 578-3199 *phone*
(719) 575-8664 *fax*
www.elpasocountyhealth.org

ENGINEERED ON-SITE WASTEWATER TREATMENT SYSTEM FINAL INSPECTION FORM

P

On-site ID: ON0049935
Environmental Health Specialist: Kat McGarvy

Tax schedule(APN) #: 5232203013
Final Inspection Date: 8.16.2019

Permit Type: New
Approved: Yes

Residential Property Information:

Owner: Joel Mandel Address: 7061 Lakenheath Ln Colorado Springs CO 80908 Approved No. Bedrooms: 4
Water supply: Well Well Installation verified: 8.16.2019 Well Location GPS: 38 58.129'N, 104 41.717
Approval will be revoked if in the future any well is found to be within 50 feet of the septic tank and/or 100 feet of the soil treatment area.

Minimum System Requirements:

Soil (in-situ) Type: 3A LTAR (In-situ soil): 0.3 Limiting Layer: Groundwater: NONE Bedrock: NONE
OWTS Tank: Capacity (gallons): 1250 OWTS Pump Tank: Capacity (gallons): N/A
Soil Treatment Area (STA): Sq. Ft. (10-1): 1750 Sq. Ft. (10-2): 1750 Sq. Ft. (10-3): 1225 Sq. Ft. (with Diverter Valve): N/A
NDDS (STA): Sq. Ft. (10-1): N/A NDDS Factor: N/A Sq. Ft. (NDDS adjustment): N/A
Mound (STA): LTAR (imported soil): N/A Chamber adjustment: n/a Distribution Area: n/a Basal Area: n/a

Engineering:

Design Engineer: American Geoservices Engineer design #: 0477-CS18
Date engineer record drawing/certification letter recieved: 11.18.2019
Tier II Licensed Installer: Down 2 Earth Excavating

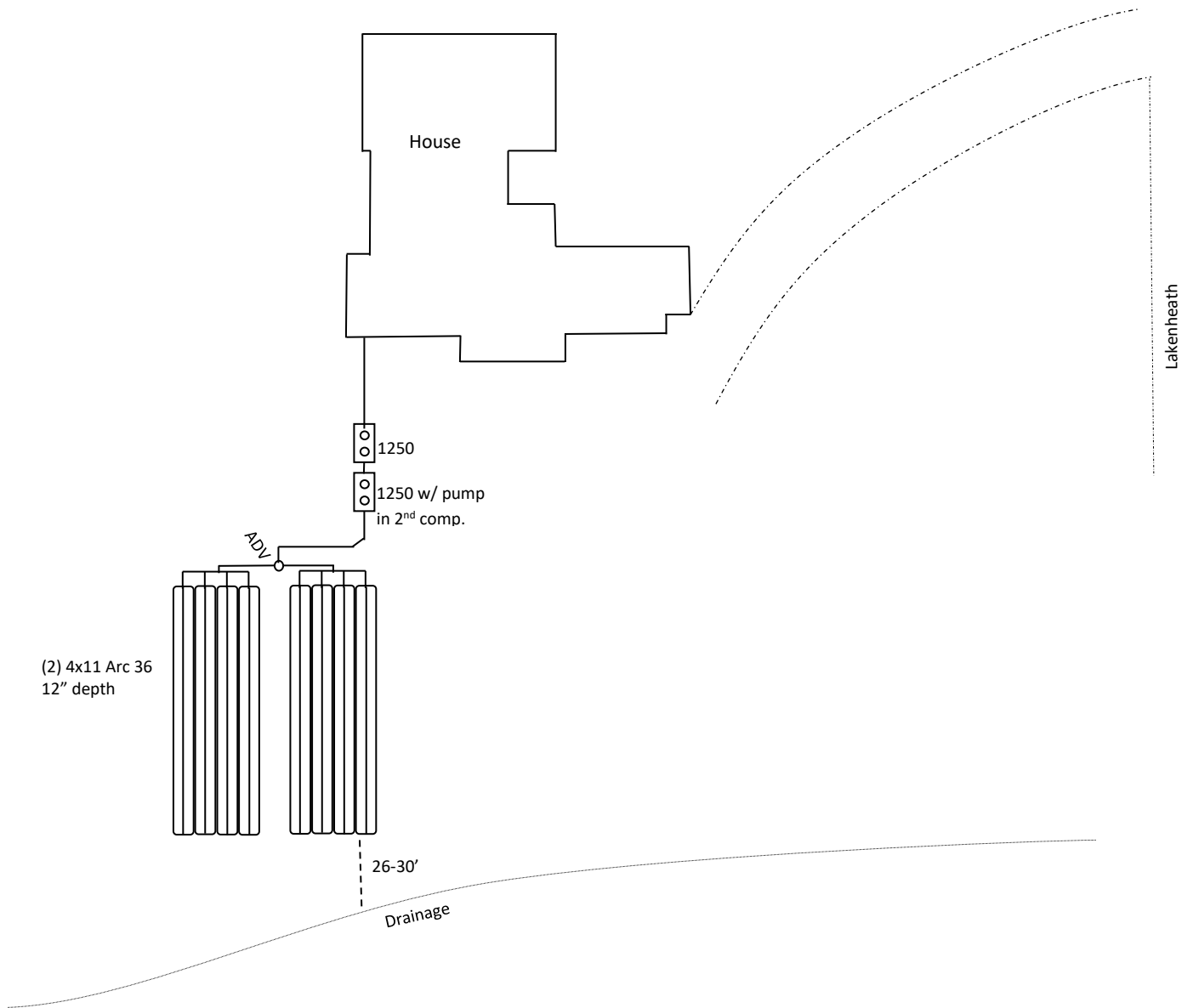
Final system installation:

Treatment Level: 1
Annual Operation and Maintenance Inspection: Not Required
OWTS Tank: GPS Location: 38 58.118' N, 104 41.723' W
Tank Type: New Concrete Capacity (gallon): 1250
OWTS Pump Tank:
Tank Type: New concrete - pump 2nd comp Capacity (gallon): 1250 Audio/Visual Alarm: Yes
OWTS Pump: not provided
Gal/dose: 125 Flow(gpm): 23 Total Dynamic Head: 20'
Soil Treatment Area (STA): GPS Location: 38 58.096'N, 104 41.719'W
Configuration: Bed Distribution: Pressured Distribution
Distribution Media: Chambers Infiltrative Surface Depth: 12"
Distribution Area Length: 55' Distribution Area Width: 30'
Basal Area Length: n/a Basal Area Width: n/a
Media Type: Arc 36 Chambers (15 sq/ft) Total installed: 88 chambers Total Sq. Ft installed: 1320

Notes:

26-30' TO DRAINAGE AREA
Enginer only provided certification letter and did not provide record drawing.
See attached EPCPH record drawing

May 2019



August 16, 2019

PROJECT NO: 0477-CS18-SEPTIC-FINAL

CLIENT: Mr. Joel Mandel

Reference: Onsite Wastewater Treatment and Disposal Systems (OWTS) Final Inspection Letter Report, 7061 Lakenheath Lane, Colorado Springs, Colorado

At your request, we visited the site and performed final inspection of the installed OWTS. Results of our inspections are as summarized below.

Septic Tank

The construction material of the treatment tank: Concrete

Free of apparent visible physical damage: Yes

The manhole covers are functional and without damage: Yes

Inlet baffle condition: Satisfactory

Outlet baffle condition: Satisfactory

Outlet baffle filter: Clean

Watertight (no visual leaks): Yes

Risers/lids in good condition--lids secure: Yes

Overall tank condition acceptable: Yes

Septic tank pumping recommended: Yes

Watertight (no visual leaks): Yes

Risers/lids in good condition--lids secure: Yes

Overall tank condition acceptable: Yes

Floats functioning properly: Yes

Pump chamber appears structurally functional: Yes

Electrical connections appear undamaged & functional to the effluent pump within the pump chamber: Yes

Activation floats for the effluent pump appear functional: yes

A functional warning alarm present: Yes

Soil Treatment Area

Appropriate vegetative cover: Yes

Monitoring ports accessible: Yes

Ponding in any of the ports: No
Ponding or saturation noted: No
Evidence of physical damage or hydraulic overload: No
System appears to be dosing properly: Yes
System appears to be properly backfilled: Yes
Evidence of system malfunction: No
Absorption area appear functional: Yes
lateral clean-outs visible: Yes

Findings and determinations of this evaluation reflect conditions as they existed on the date the OSS was inspected. No claim is made, either expressed or implied, concerning future success or failure of the OWTS.

Maintenance

Septic system inspections should be performed on an annual basis to ensure proper functioning. We make following recommendations in regard to maintenance.

- Vehicles should be kept off the soil treatment area.
- The surface of the soil treatment area shall be planted with a suitable vegetative cover that does not require irrigation. A good quality topsoil capable of supporting re-vegetation shall be placed over the entire disturbed area. Native grass seeds that can stabilize soil cover without taproots should be used. Any trees or shrubs requiring irrigation should be avoided. The owner should maintain the OWTS area with proper vegetation cover.
- All vents, air intakes, and air hoses shall be protected from snow, ice, or water vapor accumulations.
- For pumps, air release valves and weep holes should be installed and maintained to facilitate pump lines to drain in order to minimize risk of freezing.
- Protection of openings against entry of insects, rodents, other vectors and unauthorized people must be maintained.
- Livestock should not be allowed to graze in the soil treatment area.
- The soil treatment area shall be protected against erosion and frost.
- The owners of property shall maintain all necessary operating permits.
- The owners of property shall be responsible for the operation and maintenance of the entire OWTS system. All new water wells should be located at least 100 ft away from the soil treatment areas.
- Septic system maintenance shall take place every six months.

- The owners of property should check plumbing fixtures (such as leaky or running taps) in the house regularly to make sure no excessive water is being discharged to OWTS.
- Every two years, the owners of property should pump the septic tank or as needed based on the measurements of solids in the tank.
- Garbage disposal should be kept to a minimum and non-biodegradable material should not be discharged into the OWTS. Grease should not be placed in the drains in the house and loading from water softener and any hazardous materials should not be discharged into the OWTS. It should be noted that the designed OWTS is for domestic use only.

We appreciate the opportunity to be of service to you on this project. If we can provide additional assistance or observation and testing services during design and construction phases, please call us at 1 888 276 4027.

Sincerely,



Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE
Attachments

Attn: JOEL MANDEL
7061 LAKENHEATH LN
COLORADO SPRINGS, CO 80908

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.



**EL PASO COUNTY PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION**
1675 W. GARDEN OF THE GODS ROAD, SUITE 2044
COLORADO SPRINGS, CO 80907
PHONE: (719) 578-3199 FAX: (719) 578-3188
www.elpasocountyhealth.org

NEW SYSTEM PERMIT - OWTS

Valid From 7/18/2019 To 7/18/2020

PERMITEE :

JOEL MANDEL
7061 LAKENHEATH LN
COLORADO SPRINGS, CO 80908

OWNER NAME :

JOEL MANDEL

Onsite ID: ON0049935

Tax Schedule # : 5232203013

Permit Issue Date: 07/18/2019

Dwelling Type: RESIDENTIAL

of Bedrooms (if Res): 4

Proposed Use (if Comm):

Designed Gallons/Day:

Water Source: PRIVATE WELL

System Installation Requirements:

- An Engineered OWTS system to be installed on site due to encountering USDA soil type 3A, requiring a Tier II licensed installer.
- System installation to include pressure distribution chambers in two beds, max installation depth of 12" due to moisture observed in soil at 48". Minimum tank requirements 1250 gallon, 500 gallon pump tank, and 1225 sq ft of soil treatment area (102 Q4 / 82 Arc 36 chambers required).
- The system must be installed per approved American GeoServices design document #0477-CS18 stamped and dated 07 Jan. 2019, revised 7.16.2019, changes to the approved design document must be submitted and approved by both the engineer and Public Health prior to installation.
- All horizontal setbacks must be maintained through system installation. In addition, system must remain completely uncovered, including the tank size, for final inspection.
- The well must be installed at time of final inspection, or final approval will not be given until well installation is verified. Must maintain 100' set back to all wells on property or neighboring property.
- Engineered systems require the as built drawing and certification letter from the engineer be submitted to Public Health prior to final approval and Regional Building sign off
- Ensure that all work is completed prior to contacting and requesting final line for inspection, otherwise additional fees may be incurred.

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.

Attn: JOEL MANDEL
7061 LAKENHEATH LN
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This permit is issued in accordance with 25-10-106 Colorado Revised Statutes. The PERMIT EXPIRES upon completion/installation of the Onsite Wastewater Treatment System, or at the end of twelve (12) months from date of issue, whichever occurs first. If both a Building Permit and an Onsite Wastewater Treatment System Permit are issued for the same property and construction has not commenced prior to the expiration date of the Building Permit, the Onsite Wastewater Permit shall expire at the same time as the Building Permit. This permit is revocable if all stated requirements are not met. The Onsite Wastewater Treatment System must be installed by an El Paso County Licensed System Contractor, or the property owner.

The Health Officer shall assume no responsibility in case of failure or inadequacy of an Onsite Wastewater Treatment System, beyond consulting in good faith with the property owner or representative. Access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with the requirements of this law (permit).

Inspection request line: Call (719) 575-8699 before 3:30 p.m. the business day prior to the requested inspection date.



Authorized By: Environmental Health Specialist



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J00030032

Environmental Health Division

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APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT

Property Information:

Property Address: 7061 Lakenheath LN City and Zip: C/S, CO 80908
Legal Description: Lot 33, Highland Park Filing No 1A
Tax Schedule #: 5232203013 Lot size: 2.5 ACRES

Is the property gated: ☐ Yes ☒ No Please provide a gate code if necessary: _____
Site Located Inside City Limits: ☒ Yes ☐ No Proposed Use: ☒ Residential ☐ Commercial
Water Supply: ☒ Well ☐ Cistern ☐ Municipal Potential Number of Bedrooms: 4
Has a Conditional Acceptance Document been issued for this property: ☐ Yes ☒ No ☐ Unsure

Owner Information:

☒ Primary Contact
Owner: Joel Mandel Daytime Phone: 719-338-6940
Owners Mailing Address: 4862 Preachers Hollow Tr, CS, CO 80924
Email Address: jmandel@msn.com Fax #: _____
General Contractor: self Phone/Email: _____

OWTS Installer Information:

☒ Primary Contact
System Installer: Kunau Drilling LLC Daytime Phone: 719 683 3720
Email Address: ms.kunau@gmail.com Licensed installer: ☐ Tier 1 ☒ Tier 2

All engineer-design systems must be installed by a Tier 2 licensed installer

CURRENT FEES AS APPROVED BY THE EL PASO COUNTY BOARD OF HEALTH

All Payments are due at the time of application submittal; by cash, check or major credit card (Visa / MC)

- ☒ **New Permit:** \$750.00 (EPCPH Charge) + \$147.00 (EPC Planning Dept. Surcharge) + \$23.00 (CDPHE Surcharge) = **\$920.00**
☐ **Modification Permit:** \$675.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = **\$698.00**
☐ **Major Repair Permit:** \$535.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = **\$558.00**
☐ **Minor Repair Permit:** \$245.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = **\$268.00**

Permits expire one year from date of issuance, unless otherwise noted

REQUIRED: Provide a complete written scope of work to be performed on the property.

Install new septic system.

The following documents MUST be included with your application.

- A soils report: including at least 1 soil profile excavation pit, in accordance with section 8.5 A-F of OWTS regulations
- A clear and legible design document: including the proposed and alternate locations, as well as system layout, labeled with all setbacks to pertinent structures and features in table 7-1.
- Provide directions to property, from a main highway, on the backside of application.

Failure to provide the above listed documents may result in denial of the permit application

I certify that the information provided on this application is in compliance with Section 8.3, Chapter 8 of the Onsite Wastewater System (OWS) Regulations of the El Paso County Board of Health. I also authorize the assigned representative of El Paso County Public Health to enter onto this property in order to obtain information necessary for the issuance of a permit.

Applicants Signature: Joel Mandel

Date: 2/6/19

Bryan

- Property address or lot number must be clearly marked and visible from the road.
- Profile excavation test pit and/or soil profile holes must be clearly marked
- Proposed and alternate soil treatment areas must be protected from compaction and disturbance
- Locked gates require the gate code or lock combination be provided on front of application
- Please provide directions to the property from a main highway, by text or picture, below.

Failure to comply with the above information may result in an additional charge for a return trip.

Permit #: 0N0049935 Site Inspection date: 2-11-19

Date Approvals Rcvd: Development Services: 2-11-19 Floodplain/enumerations: 2-12-19

Design: ☐ Conventional ☒ Engineer

Design Engineer: American Geo Services

Engineer Job #: 4477-CS18

Engineer Date Stamped: 47 JAN. 2019 rev. 7.16 7

LTAR/Soil Type: 434 / 3A Groundwater: - PP1/ - PP2 Bedrock: - PP1/ - PP2

Minimum Requirements: Tank Capacity: 1254 Soil Treatment Area: 1,474 ft²

System Feed: ☒ Gravity ☐ Pump to Gravity ☐ Pressure Dosed ☐ Other: _____

System Media: ☒ Chambers ☐ Rock and Pipe ☐ Other Soil Treatment Area: ☐ Trenches ☒ Bed

Pump specs: Tank capacity: _____ gal Gal/dose: _____ Flow: _____ gpm Total Dynamic Head: _____'

Additional Comments: Q = 75 x 7 = 525 GPD A = G/LTAR Q4/4' = 1474 ft²/12 ft² = 123

A = 525 GPD / 4.34 = 1754 ft² Per 36: 1474 ft²/15 ft² = 98

Bed: 1.2 Chambers: 4.7 A = 1754 ft² (1.2) (4.7) = 1474 ft²

E.H. Specialist: [Signature] Date: 21 Feb 2019 ☒ Approved ☐ Denied

7:18:19 Alteration

525/0.3 = 1750 (1.0) = 1750 (0.7) = 1225 (10204/80 ft² 3)
DD - chambers - bed



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GEOTECHNICAL & MATERIALS
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ENGINEERING AND SCIENCE

888-276-4027

January 7, 2019 **Revised July 16, 2019**

PROJECT NO: 0477-CS18

CLIENT: Mr. Joel Mandel

Reference: Onsite Wastewater Treatment and Disposal Systems (OWTS) Design Report, 7061 Lakenheath Lane, Colorado Springs, CO 80908

At your request, we have completed the design of OWTS for the referenced project in general accordance with the most current El Paso County, Colorado Health Department's regulatory standards. Results of our 'site evaluation' and 'design' are attached.

PRELIMINARY INVESTIGATION

The site is located as shown in Figure 1 and Figure 2. There are NO existing structures at the site. Based on our review of available USGS topographic map and site visit, the site is gently sloping downwards to the east-southeast with a slope of approximately 3-10%.

Available NRCS soil survey map data (Web Soil Survey) revealed that the septic field area and the site is generally underlain by 'Pring Coarse Sandy Loam.' This soil is classified as 'well-drained.'

The soil treatment area (STA) with pressure distribution is estimated to be approximately 1536 sq.ft as noted in Data Sheet 1 and Figure 3. STA is not located within any easements, flood plain, or wetlands. At present, there are no physical features on-site and off-site that will require setbacks from the proposed septic field location.

RECONNAISSANCE

The proposed septic field as noted in Figure 2 is not located in a depression or in the area where there will be significant surface water run-off and accumulation towards the field. In any case, it is the owner's responsibility to make sure all the surface water will be diverted away from the septic field area so that surface water run-off does not accumulate at or near the proposed septic field. Stable water table and groundwater springs were not noted during the reconnaissance and during field exploration.

OK
7/18/19

Site topography is gently sloping downwards towards the east-southeast with a slope of about 3-10%. Site is generally covered with natural grass and no wetland vegetation. There are no natural or known cultural features of concern at the site. There is no current or historic land use at the site that is of concern for the proposed septic system.

SITE INVESTIGATION

Two test pits (TP1 and TP2) were performed at location shown in Figure 2. Stable groundwater table was not noted in the profile test pits. Results of profile hole investigation are illustrated in Design Data Sheet No. 2. Limiting layer was not noted in TP1 and TP2. Based on our site investigation, we have used the following Long-term Acceptance Rate (LTAR).

- Long-term Acceptance Rate (LTAR) for soil Type 3A = 0.30 gpd/sq.ft.

CONSTRUCTION AND MAINTENANCE

We make following recommendations in regard to construction and maintenance.

- The installer must be licensed through El Paso County Health Department.
- In addition to the recommendations given in attached drawings, construction must occur in accordance with El Paso County Onsite Wastewater Treatment System Regulations and the installation permit provided by governing authorities.
- Construction equipment or trucks should be kept off the soil treatment area, so construction must happen from the side and ends.
- The surface of the soil treatment area shall be planted with a suitable vegetative cover that does not require irrigation. A good quality topsoil capable of supporting re-vegetation shall be placed over the entire disturbed area. Native grass seeds that can stabilize soil cover without taproots should be used. Any trees or shrubs requiring irrigation should be avoided. The owner should maintain the OWTS area with proper vegetation cover.
- Mechanical components shall be installed in a properly vented location and all vents, air intakes, and air hoses shall be protected from snow, ice, or water vapor accumulations.
- For pumps, air release valves and weep holes should be installed to facilitate pump lines to drain in order to minimize risk of freezing.
- All systems shall be installed to include protection of openings against entry of insects, rodents, other vectors and unauthorized people.
- Livestock should not be allowed to graze in the soil treatment area.
- Following construction, the soil treatment area shall be protected against erosion and frost.
- The owners of property shall obtain and maintain all necessary operating permits.

- The owners of property shall be responsible for the operation and maintenance of the entire OWTS system. All water wells should be located at least 100 ft away from the soil treatment areas.
- Septic system maintenance shall take place every six months.
- The owners of property should check plumbing fixtures (such as leaky or running taps) in the house regularly to make sure no excessive water is being discharged to OWTS.
- Every two years, the owners of property should pump the septic tank or as needed based on the measurements of solids in the tank.
- Garbage disposal should be kept to a minimum and non-biodegradable materials should not be discharged into the OWTS. Grease should not be placed in the drains in the house and loading from water softener and any hazardous materials should not be discharged into the OWTS. It should be noted that the designed OWTS is for domestic use only.

INSTALLATION MONITORING

We recommend that a representative AGS should observe OWTS installation during construction to assure proper installation in accordance with our design and construction recommendations. We request a 24-hour notice for site visits for monitoring purposes. Field inspection costs are not included in the cost of the preparation of this report.

LIMITATIONS

Design Data/Recommendations contained in this report are based on our field observations and subsurface explorations, limited site evaluation, and our present knowledge of the proposed construction as described by you. It is possible that soil conditions could vary between or beyond the points explored. If soil conditions are encountered during construction that differ from those described herein, we should be notified so that we can review and make any supplemental recommendations necessary. If the scope of the proposed construction, including the proposed use, number of occupants, or structural locations changes from that described in this report, our recommendations should also be reviewed and revised by AGS.

Flood hazards evaluation of the site, surveying of on-site and surrounding well locations was beyond our scope of services. Our scope of work for this project did not include research, testing, or assessment relative to past or present contamination of the site by any source. If such contamination were present, it is very likely that the exploration and testing conducted for this report would not reveal its existence. If the Owner is concerned about the potential for such contamination, additional studies should be undertaken. We are available to discuss the scope of

such studies with you. No tests were performed to detect the existence of mold or other environmental hazards as it was beyond Scope of Work.

Local regulations regarding land or facility use, on and off-site conditions, or other factors may change over time, and additional work may be required with the passage of time. Based on the intended use of the report within one year from the date of report preparation, AGS may recommend additional work and report updates. Non-compliance with any of these requirements by the client or anyone else will release AGS from any liability resulting from the use of this report by any unauthorized party. Client agrees to defend, indemnify, and hold harmless AGS from any claim or liability associated with such unauthorized use or non-compliance.

In this report, we have presented judgments based partly on our understanding of the proposed construction and partly on the data we have obtained. This report meets professional standards expected for reports of this type in this area. Our company is not responsible for the conclusions, opinions or recommendations made by others based on the data we have presented.

This report has been prepared exclusively for the client, its' engineers and subcontractors for the purpose of design and construction of the proposed structure. No other engineer, consultant, or contractor shall be entitled to rely on information, conclusions or recommendations presented in this document without the prior written approval of AGS.

We appreciate the opportunity to be of service to you on this project. If we can provide additional assistance or observation and testing services during design and construction phases, please call us at 1 888 276 4027.

Sincerely,



Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE
Attachments

GENERAL NOTES:

The septic system is designed and intended for the given wastewater load. The owner must assume responsibility for ongoing maintenance to assure long-term performance.

Site feature locations are approximate and not surveyed. The property owner should assure proper survey is done and proposed construction is located within the property boundaries. The owner/ contractor must verify all distances and setbacks during construction.

All utilities should be located and damaged prevented during construction.

Deviation from these plans should not be allowed without approval of American GeoServices, LLC (AGS). A set of plans approved by local county must be available onsite during construction.

An experienced contractor should install the septic system and assure that all components meet local county standards. Any unspecified requirements should also be met.

AGS should observe the installation of the recommended system. As a minimum, observation of excavations, final pre-cover, and final grade post-cover must be performed.

Septic system should be located at least 100 feet away from onsite or neighboring water wells to avoid deep well grouting.

There are no anticipated construction related issues. There are no foreseeable land use changes which would adversely impact the proposed system performance.

No difficulties were encountered during site visit. The site conditions were evaluated by the following individual:

Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE

American GeoServices, LLC

Mailing Address: 2663 Cinnabar Rd, Colorado Springs, CO 80921

Phone: 719 761 6072

Email: sma@americangeoservices.com

Registered Professional Civil Engineer

State of Colorado, PE No. 41370

DESIGN: The septic system is designed to serve a family, up to 4 bedrooms, up to 7 persons.

Estimated flow = $75 \times 7 = 525$ gallons per day (GPD), Table 6-1, Pg 41, El Paso County, CO OWTS Regulations. Use design flow, $Q = 525$ GPD.

Septic tank: Minimum required tank capacity = 1,250 (for up to 4 bedrooms), Table 9-1, Pg 54, El Paso County, CO OWTS Regulations. First compartment capacity minimum is $1250 / 2 = 625$ Gallons. USE 1,500-GALLON THREE COMPARTMENT TANK WITH HIGH HEAD PUMP FOR PRESSURE DISTRIBUTION, precast concrete septic tank (or equivalent) as illustrated in attached figures. Septic tank should be listed as 'Accepted for Use in Colorado On-site Wastewater Treatment Systems.' In place of Precast, any other tank may be used as long as all the design requirements are met.

Soil profile = Soil Type "3A"

Long Term Acceptance Rate (LTAR) considered = 0.30 gpd/sq.ft. (Table 10-1, Pg 62, El Paso County, CO OWTS Regulations)

Minimum soil treatment area required (STA) = $(Q/LTAR) = (525/0.3) = 1,750.00$ sq.ft.

Adjustment factors for gravity bed, 1.2 and infiltrators, 0.7; Required STA = $1750 \times 1.2 \times 0.7 = 1,470$ sq.ft. (Table 10-2 and 10-3, Pg 64, El Paso County, CO OWTS Regulations)

Number of QUICK4+ STANDARD CHAMBER with 12 SQ.FT./UNIT absorption area: $1,470/12=123$ chambers. Use a leach field of 65ft X 12ft TWO BEDS to fit 128 chambers (total eight rows of 16 chambers) as shown in attached figures.



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GENERAL & DESIGN NOTES

7061 Lakenheath Lane,
Colorado Springs, CO 80908

SCALE	PLOT NO.	PROJECT NO.	DATE
As Shown	Sheet 1	0477-CS18 SEPTIC	01/07/2019

TEST PIT 1

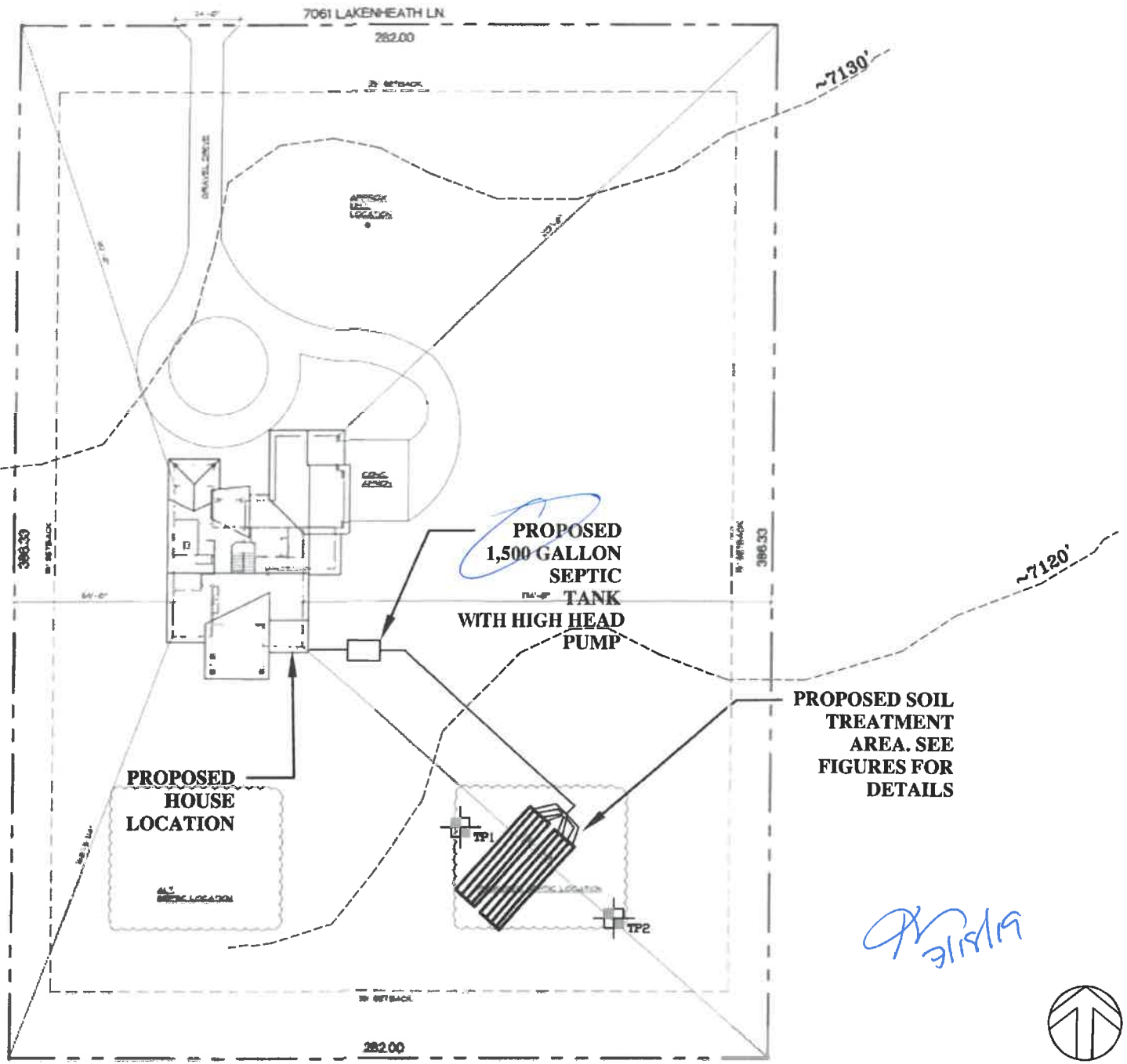
SOIL TYPE, TEXTURE, AND STRUCTURE				
Test Pit	Soil Type	Texture	Structure	Structure/ Grade
0-4ft	2A	Sandy Loam to Silt Loam	Granular	Weak
6-8ft	3A	Sandy Clay Loam (ARKOSE)	Massive; No fractures; No joints; Non-cemented to weakly cemented	Moderate
No groundwater. No limiting layer.				

TEST PIT 2

SOIL TYPE, TEXTURE, AND STRUCTURE				
Test Pit	Soil Type	Texture	Structure	Structure/ Grade
0-6ft	2A/3A	Sandy Loam to Sandy Clay Loam	Granular / Blocky	Weak/Moderate
6-8ft	3A	Sandy Clay Loam (ARKOSE)	Granular / Blocky	Weak
Minimal perched water/very moist at 4 feet. No groundwater table; no limiting condition.				

min 12" instal depth
 7/18/19

 AMERICAN GEOSERVICES 888.276.4027 - american-geoservices.com	SITE AND SOIL EVALUATION			
	7061 Lakenheath Lane, Colorado Springs, CO 80908			
	SCALE As Shown	FIGURE NO. Sheet 2	PROJECT NO. 0477-CS18 SEPTIC	DATE 01/07/2019



W/FILE



SITE PLAN
SCALE: 1" = 20'-0"



LEGEND
 **TEST PIT LOCATION**
 TP

LEGAL DESCRIPTION
 Lot 33 HIGHLAND PARK
 FIL NO 1A

REFERENCES:
 SITE PLAN PROVIDED
 BY CLIENT

 **AMERICAN GEOSERVICES**
 888.276.4027 - american-geoservices.com

NOTE

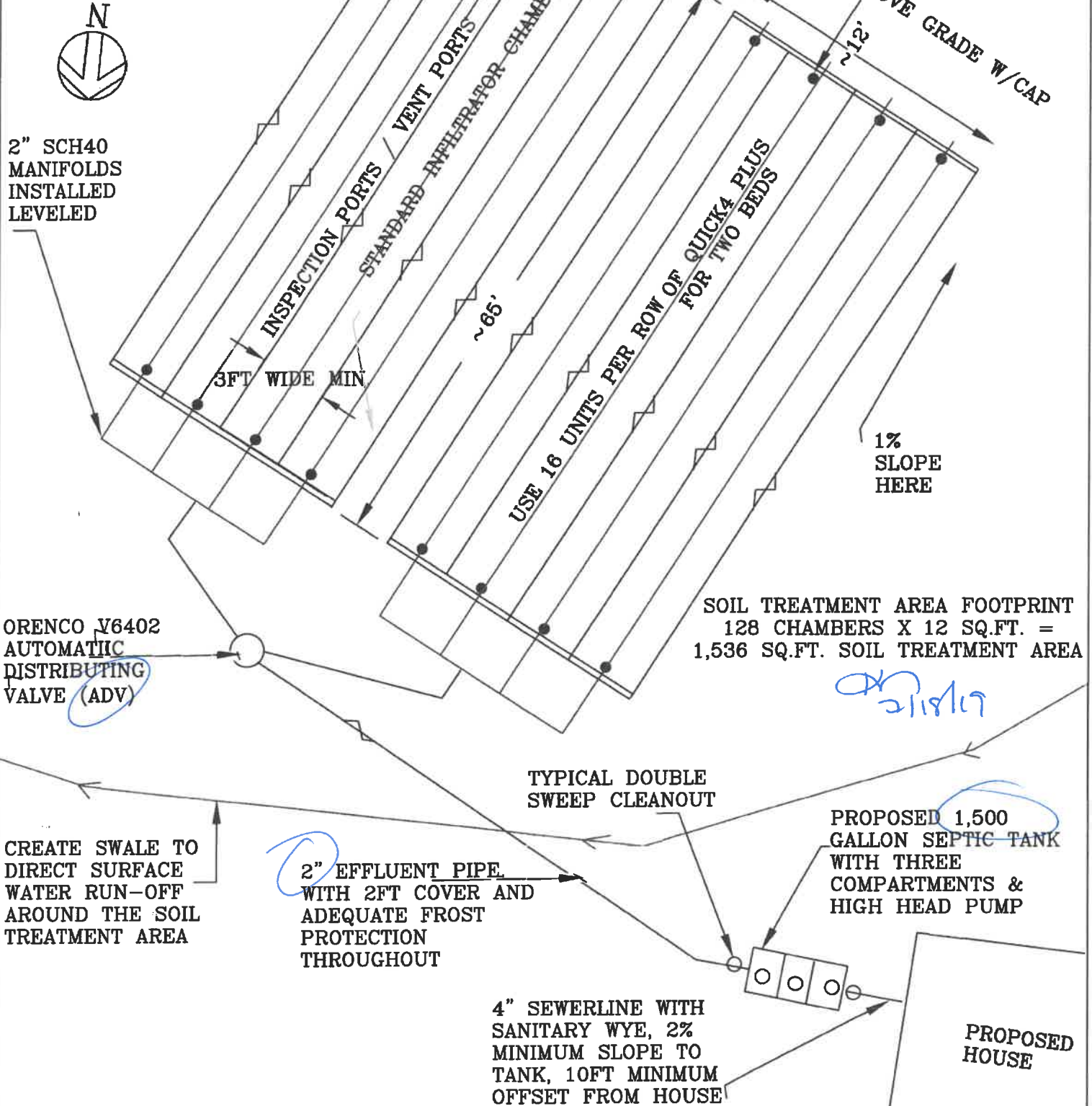
SITE WAS NOT SURVEYED BY AGS. SITE ELEVATIONS WERE CONFIRMED BASED ON USGS AND SITE VISIT INTERPRETATIONS. SITE SURVEY SHOULD BE DONE PRIOR TO CONSTRUCTION TO ASSURE ADEQUATE GRAVITY GRADIENT.

SCHEMATIC SITE PLAN

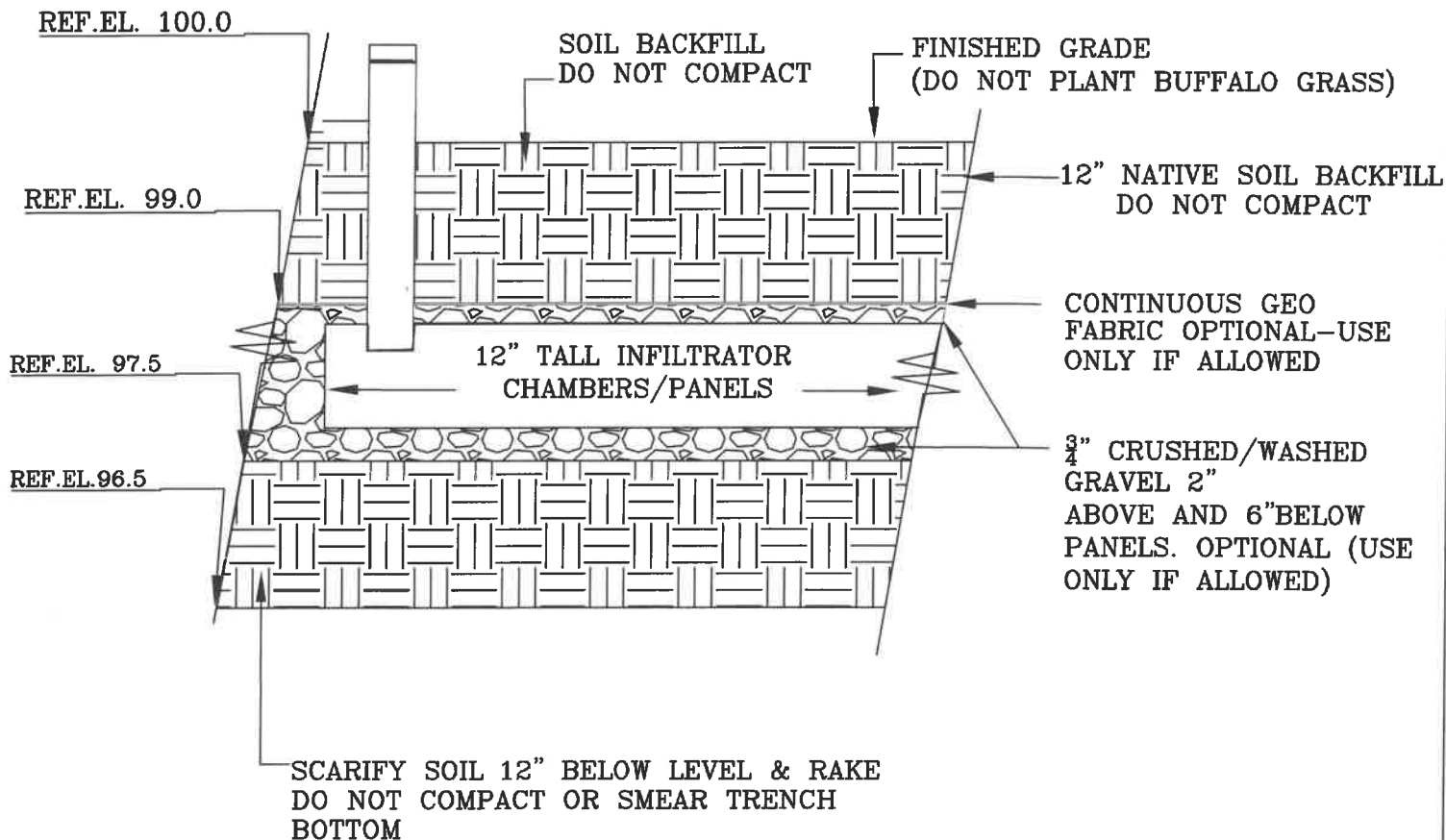
**7061 Lakenheath Lane,
 Colorado Springs, CO 80908**

SCALE	PROJECT NO.	PROJECT NAME	DATE
As Shown	2	0477-CS18 SEPTIC	01/07/2019

NOTE:
 1. NOT TO SCALE. SCHEMATIC PLAN TO SHOW APPROXIMATE LOCATIONS.
 2. SEPTIC TANK MADE BY ANY MANUFACTURER MAY BE USED AS LONG AS IT IS EQUIVALENT TO THE SPECIFIED TANK.3.



SOIL TREATMENT AREA DETAILS			
AMERICAN GEOSERVICES 888.276.4027 - americangeoservices.com			
7061 Lakenheath Lane, Colorado Springs, CO 80908			
SCALE As Shown	FIGURE NO. 3	PROJECT NO. 0477-CS18 SEPTIC	DATE 01/07/2019



NOTES:

SOIL TREATMENT AREA (STA) MUST BE CONSTRUCTED AT LOCATION SHOWN ON THE SITE PLAN.

STA AREA SHOULD BE LEVELED AND SCARIFIED. NO COMPACTION.

STA SHOULD BE INSTALLED ALONG THE GROUND CONTOURS IN ORDER TO MAINTAIN EXCAVATION DEPTHS CONSISTENT ALONG THE UPHILL AND DOWNHILL SIDES.

IN ORDER TO AVOID WATER INFILTRATION INTO THE SYSTEM, ALL CONNECTIONS IN PIPING SHOULD BE SECURELY FASTENED.

IN ADDITION, REDIRECT SURFACE WATER AWAY FROM STA BY GRADING.

EXCAVATED AREA SHOULD BE RE-VEGETATED WITH ONLY NATIVE SPECIES. CONTACT AGS FOR RECOMMENDATIONS.

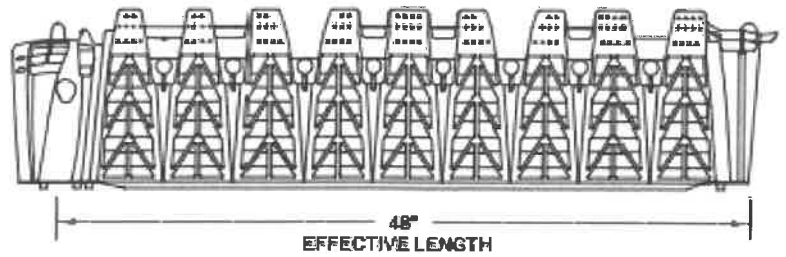
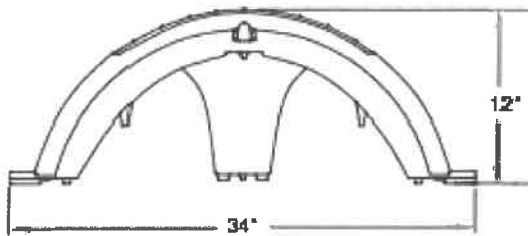
STA AREAS SHOULD BE FREE FROM ANY SNOW STORAGE.

OFF-SITE FILTERING MATERIAL IF USED, SHOULD BE CLEAN COURSE CONCRETE SAND MEETING ASTM C33 SPECIFICATIONS, CONTAINING <5% PASSING THE 200 SIEVE.

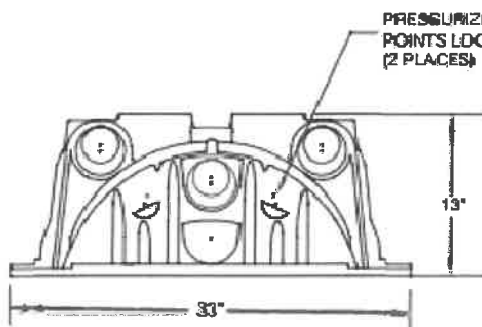
ALL ELEVATIONS ARE REFERENCE ELEVATIONS ONLY.

Handwritten signature and date: 2/18/19

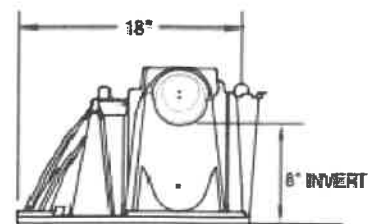
 AMERICAN GEOSERVICES 888.276.4027 - american-geoservices.com		SOIL TREATMENT AREA DETAILS	
		7061 Lakenheath Lane, Colorado Springs, CO 80908	
SCALE As Shown	FIGURE NO. 4	PROJECT NO. 0477-CS18 SEPTIC	DATE 01/07/2019



QUICK4 PLUS STANDARD CHAMBER



FRONT VIEW

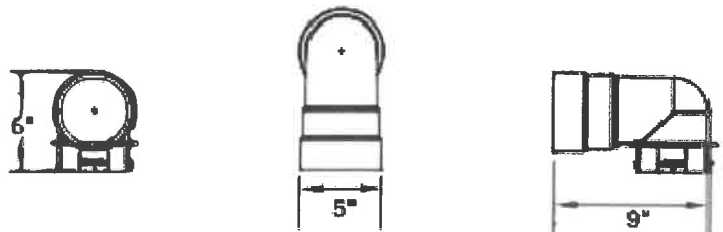
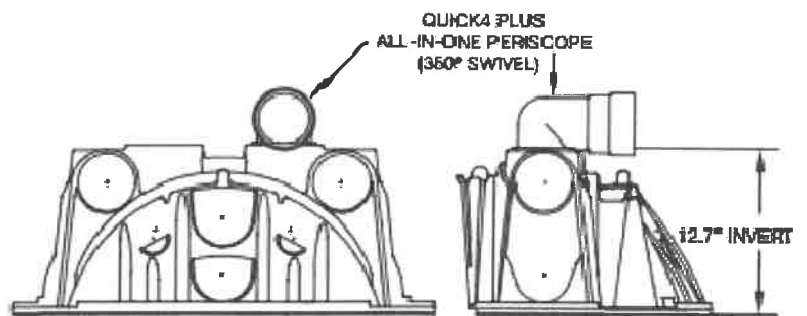


SIDE VIEW

QUICK4 PLUS ALL-IN-ONE 12 ENDCAP

NOTES:

1. BRING EFFLUENT PIPE ONLY IN TOP OF CHAMBER END CAP.
2. AS A SPLASH PLATE, INSTALL LARGE GRANITE OR DURABLE CERAMIC TILE UNDERNEATH INLET.
3. VENTILATE THE ENDS OF EVERY LEACH FIELD PIPE RUN OR SET OF CHAMBERS. THIS IS EXTREMELY IMPORTANT.
4. DO NOT COMPACT OR DENSIFY SOIL IN BASE OF THE TRENCH. SCARIFY THE SUBGRADE SOIL TO 'LOOSEN' AT LEAST ONE FOOT IN BASE OF TRENCH BEFORE BACKFILLING.
5. ADD GRAVEL INTO BASE OF TRENCH AND ATOP CHAMBERS IN ORDER TO IMPROVE DESIGN LIFE.
6. INSTALL GEOTEXTILE FABRIC TO PREVENT SOIL INTRUSION INTO GRAVEL FROM ABOVE & SIDES. DO NOT INSTALL GEOFABRIC IN THE BOTTOM OF THE TRENCH OR SEPTIC LEACH FIELD.
7. MAKE SURE THE LEACH FIELD IS 20+ FEET AWAY FROM TREES. DO NOT PLANT BUSHES OR DEEP-ROOTING FESCUE, DICHONDRA, BROME, OR RYE ATOP.
8. DO NOT DRIVE OVER A SEPTIC TANK OR LEACH FIELD IN PARALLEL.



QUICK4 PLUS ALL-IN-ONE PERISCOPE

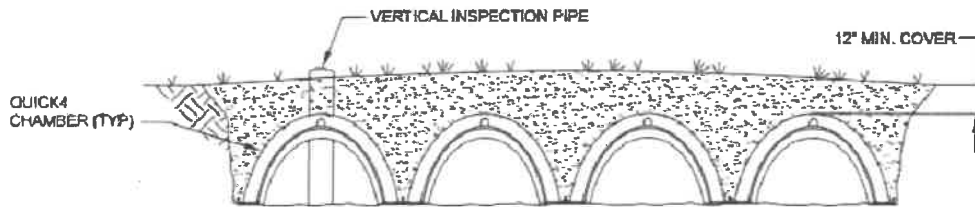


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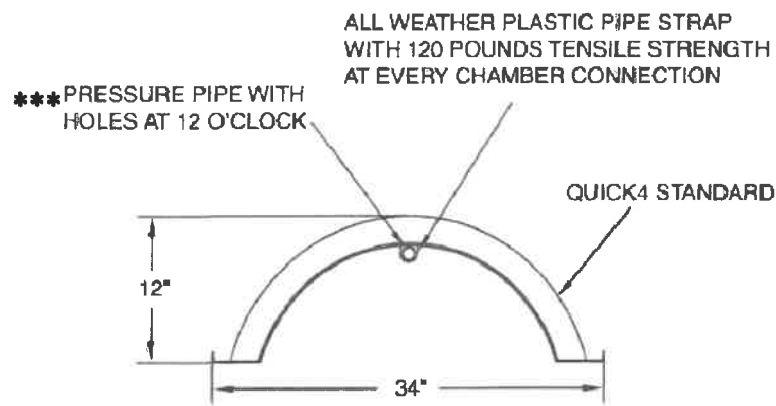
TYPICAL INFILTRATOR DETAILS

SCALE	FIGURE NO.	PROJECT NO.	DATE
AS SHOWN	6	0352-CS18-SEPTIC	9/18/2018

TYPICAL STANDARD BED SYSTEM (front view)

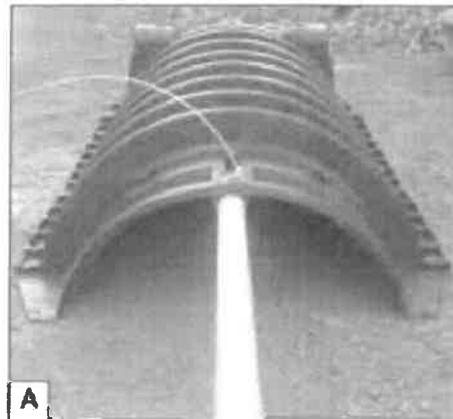


METHOD A: TOP PLACEMENT



Advantages of Method A

- Pipe and orifice placed closer to the chamber dome offer improved distribution.
- Pipe positioned at the top of the chamber places it well above effluent.
- Plastic pipe hanger easily secures pipe in place.
- If necessary, trim excess plastic pipe strap before connecting chambers.



*** DISTRIBUTION PIPE FOR ENTIRE LENGTH OF CHAMBERBED: 1.5INCH DIA. PERFORATED SCH 40 PVC WITH 1/8 INCH HOLES SPACED 3FT INTERVALS.

NOTE: USE MANUFACTURER'S INSTALLATION RECOMMENDATIONS AS LONG AS THEY DO NOT DIFFER FROM THE RECOMMENDATIONS OF A LOCAL REGULATORY AGENCY.

TYPICAL INFILTRATOR DETAILS

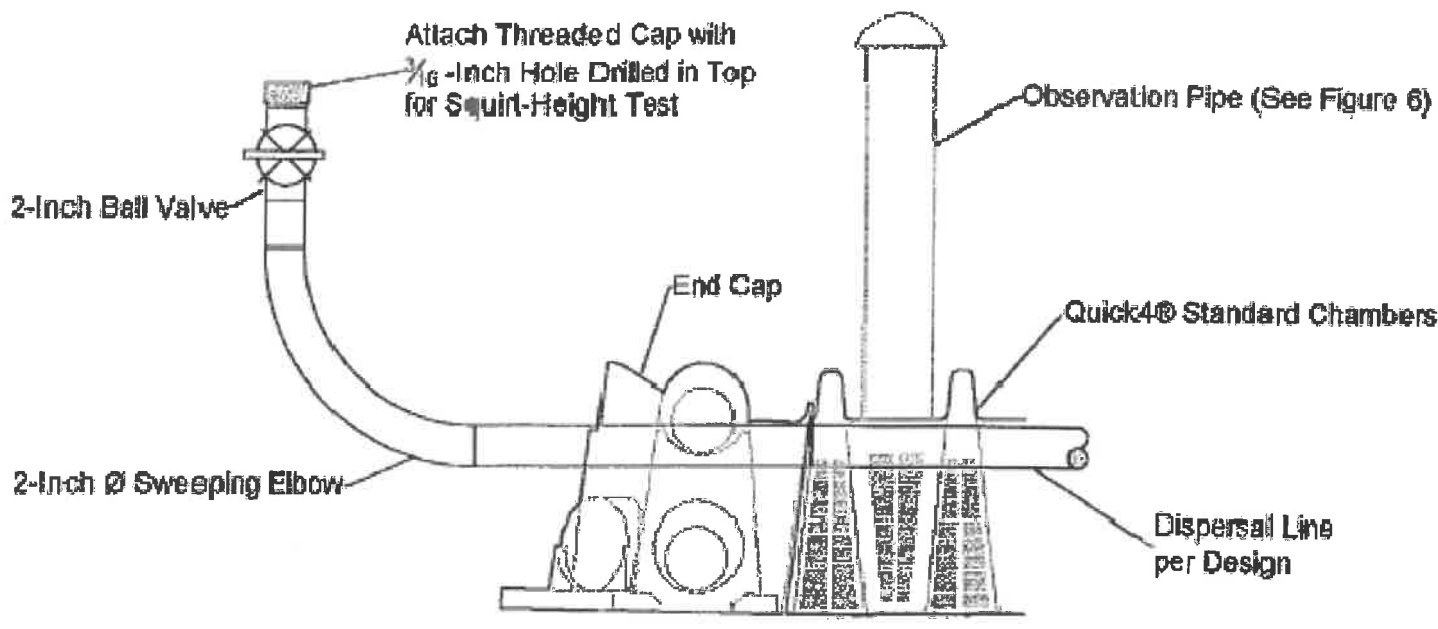
SCALE
As Shown

FIGURE NO.
7

PROJECT NO.

DATE

SIDE VIEW



DISTRIBUTION LATERAL CLEANOUT

Item #
1500T-3CP-F-HH

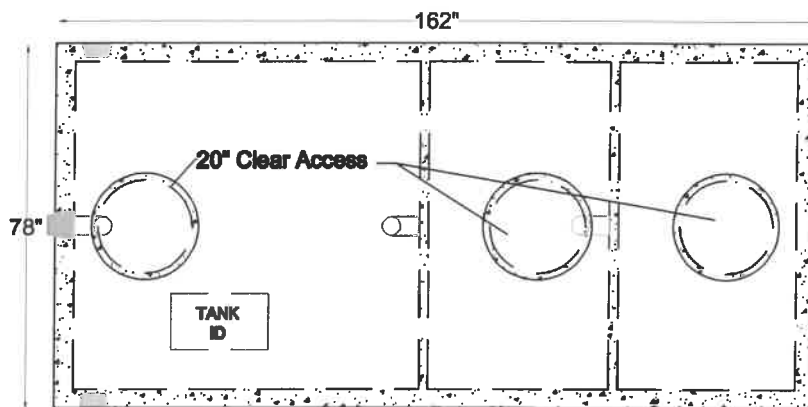
1500 Gallon Top Seam - 3CP Filter & High Head Pump (2000 Gallon Total Volume)

DESIGN NOTES

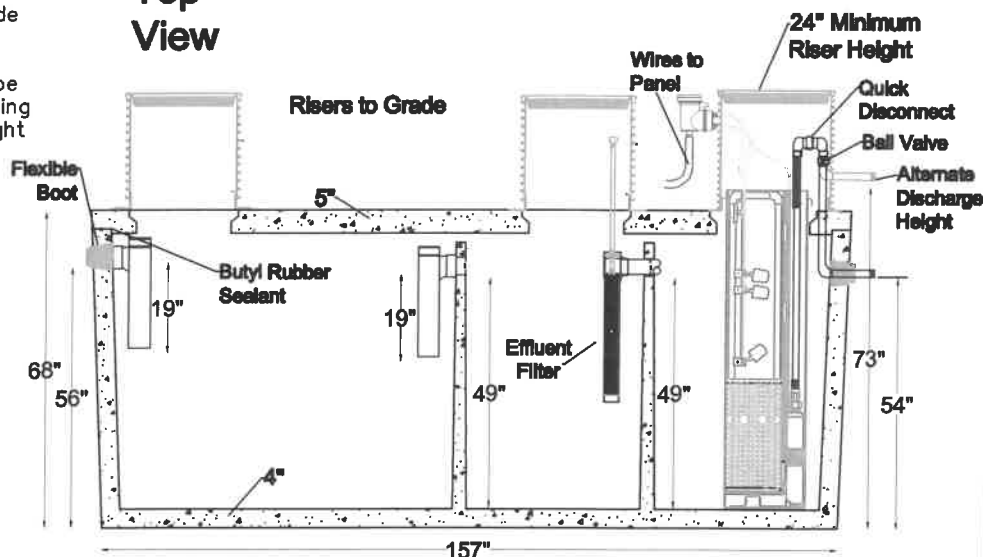
- Design per performance test per ASTM C1227
- Top surface area 87.75 ft²
- f'c @ 28 days; concrete = 6,000 PSI Min.

Installation:

- Tank to be set on 5" min. sand bed or pea gravel
- Tank to be backfilled uniformly on all sides in lifts less than 24" and mechanically compacted
- Excavated material may be used for backfill, provided large stones are removed
- Excavation should be dewatered and tank filled with water prior to being put in service for installation with water table less than 2' below grade
- Meets C1644-06 for resilient connectors
- Inlet and Outlet identified above pipe
- Delivered complete with internal piping
- Control Panel to be mounted in sight line of tank
- 4' Maximum bury depth



Top View



ALLOWABLE BURY (Based on Water Table)	
WATER TABLE	ALLOWABLE EARTH FILL
0' - 0"	3' - 0"
1' - 0"	3' - 0"
2' - 0"	4' - 0"
3' - 0"	4' - 0"
DRY	4' - 0"

EFFLUENT PUMP SYSTEM: PF5005, 1/2HP, 115V, 50 GPM AT 30.5 FT TOTAL DYNAMIC HEAD, DOSE VOLUME 185 GALLONS, RESIDUAL HEAD (SQUIRT HT) OF 5 FT AT DISTAL END OF EACH LATERAL TO BE TESTED AT FINAL. SEE PUMP LITERATURE AND DETAILS.

***Service contracts available**

Digging Specs	Invert		Dimensions			Net Capacity				Net Weight		
15' Long x 8' Wide	Inlet	Outlet	Length	Width	Min. Height	Inlet	Middle	Outlet	Total	Lid	Tank	Total
56" below inlet	56"	54" or 73"	162"	78"	92"	1016 gal	505 gal	507 gal	2028 gal	5420 lbs	16240 lbs	21860 lbs

**VALLEY
PRECAST, Inc.**
Buena Vista, Colorado

Phone: 719-395-6764
Fax: 719-395-3727
Website: www.valleyprecast.com
Email: frontdesk@valleyprecast.com

Pump Selection for a Pressurized System

7061 LAKENHEATH LN, COLORADO SPRINGS, CO

- Single Family Residence Project

Parameters

Discharge Assembly Size	2.00	inches
Transport Length Before Valve	120	feet
Transport Pipe Class	40	
Transport Line Size	2.00	inches
Distributing Valve Model	6402	
Transport Length After Valve	70	feet
Transport Pipe Class	40	
Transport Pipe Size	2.00	inches
Max Elevation Lift	5	feet
Manifold Length	20	feet
Manifold Pipe Class	40	
Manifold Pipe Size	2.00	inches
Number of Laterals per Cell	8	
Lateral Length	70	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.50	inches
Orifice Size	1/8	inches
Orifice Spacing	3	feet
Residual Head	5	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Minimum Flow Rate per Orifice	0.43	gpm
Number of Orifices per Zone	96	
Total Flow Rate per Zone	41.7	gpm
Number of Laterals per Zone	4	
% Flow Differential 1st/Last Orifice	1.7	%
Transport Velocity Before Valve	4.0	fps
Transport Velocity After Valve	4.0	fps

Frictional Head Losses

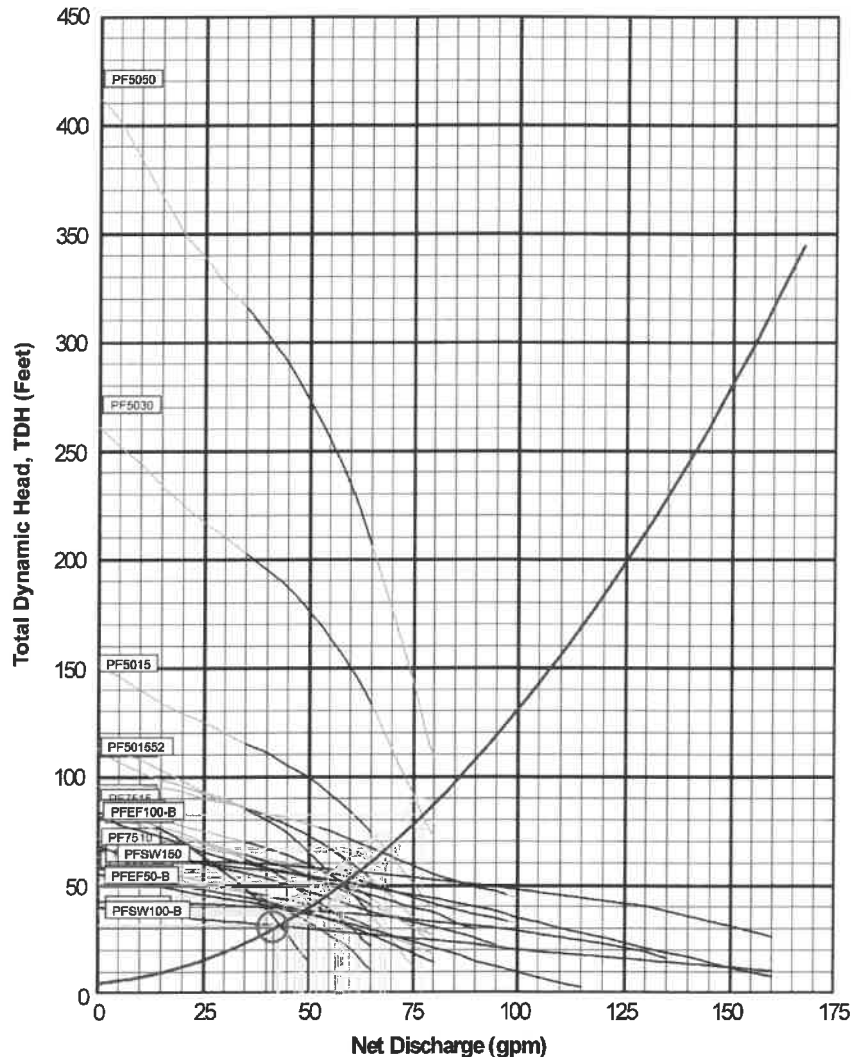
Loss through Discharge	3.5	feet
Loss in Transport Before Valve	3.4	feet
Loss through Valve	11.0	feet
Loss in Transport after Valve	2.0	feet
Loss in Manifold	0.2	feet
Loss in Laterals	0.2	feet
Loss through Flow meter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line Before Valve	20.9	gals
Vol of Transport Line After Valve	12.2	gals
Vol of Manifold	3.5	gals
Vol of Laterals per Zone	29.6	gals
Total Vol Before Valve	20.9	gals
Total Vol After Valve	45.3	gals

Minimum Pump Requirements

Design Flow Rate	41.7	gpm
Total Dynamic Head	30.3	feet



PumpData

PF5005 High Head Effluent Pump
50 GPM, 1/2HP
115/230V 1Ø 60Hz, 200/230V 3Ø 60Hz

PF5007 High Head Effluent Pump
50 GPM, 3/4HP
230V 1Ø 60Hz, 200/230/460V 3Ø 60Hz

PF5010 High Head Effluent Pump
50 GPM, 1HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF5015 High Head Effluent Pump
50 GPM, 1-1/2HP
230V 1Ø 60Hz, 200V 3Ø 60Hz

PF5030 High Head Effluent Pump
50 GPM, 3HP
230V 1Ø 60Hz, 200/230/460V 3Ø 60Hz
Capacitor pack required for single phase pumps

PF5050 High Head Effluent Pump
50 GPM, 5HP
230V 1Ø 60Hz, 230/460V 3Ø 60Hz
Capacitor pack required for single phase pumps

Legend

System Curve:	—
Pump Curve:	—
Pump Optimal Range:	—
Operating Point:	○
Design Point:	⊙



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