



August 18, 2021

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**Subject: Interim Action Work Plan Addendum  
Enbridge Line 13 MP 312, Blackhawk Island Rd Valve Site, Ft. Atkinson, WI  
WDNR BRRTS #02-28-586199**

Dear Mr. Beaster:

WSP USA Inc. (WSP) is pleased to submit the following Interim Action Work Plan Addendum for the Line 13 Milepost (MP) 312 Valve Site located at the intersection of Blackhawk Island Road and Westphal Lane near Fort Atkinson, Wisconsin (Site). During implementation of soil investigation activities proposed in the Supplemental Site Investigation Work Plan (SSIWP), dated May 4, 2021, light non-aqueous phase liquid (LNAPL; “free product”) was identified at the groundwater table in the vicinity of the Line 13 MP312 Valve Site. The Interim Action Work Plan (IAWP), dated May 14, 2021, proposed implementation of a vadose zone interim action using bioventing to facilitate biodegradation of petroleum hydrocarbons in the source area. The identification of free product at the water table necessitated a modification of the Interim Action approach for the Site. This document summarizes the free product identification and characterization activities, initial Interim Action completed to begin free product recovery, and details for a proposed Interim Action free product recovery system.

Between June 7 and 10, 2021, WSP oversaw the advancement of 33 in-situ direct-push High-Resolution Site Characterization (HRSC) soil borings utilizing an Ultra-Violet Optical Screening Tool (UVOST) combined with a Hydraulic Profiling Tool (HPT). In the initial soil borings advanced adjacent to the Line 13 valve, the UVOST detector response indicated the potential presence of free product at the water table at depths between approximately 24 and 28 feet below ground surface (ft bgs). Subsequent HRSC soil borings were advanced to complete the lateral delineation of the UVOST response at the water table and define the area where free product may be present. This area is shown in Figure 1. Between June 10 and 14, 2021, WSP oversaw the advancement of 30 soil confirmation borings, which included lithologic observations of soil cores, field screening of soil using a photoionization detector (PID), and soil sampling for laboratory analysis. The soil sampling results were reported to the Wisconsin Department of Natural Resources (WDNR) in a letter dated July 12, 2021.

The IAWP anticipated up to six vadose zone remediation wells with a maximum depth of 20 ft bgs. Based on the results of the HRSC borings and soil confirmation borings, the number and construction of the remediation wells was changed from what was presented in the IAWP. WSP oversaw the installation of nine remediation wells (RW-1 through RW-9) between June 15 and 17, 2021. The remediation wells were installed using hollow-stem auger drilling methods and

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constructed using 2-inch diameter Sch 40 polyvinyl chloride (PVC) screen and riser and a 15-foot screened interval across the water table from 17 to 32 ft bgs. The wells will provide access for future groundwater and vadose zone remediation and free product recovery activities. Figure 2 provides a schematic as-built diagram for remediation wells RW-1 through RW-9. Remediation well installation was attempted at two additional locations (RW-10 and RW-11) in June 2021 but encountered auger refusal prior to reaching the target depth. These two remediation wells were installed on August 13, 2021 using roto sonic drilling methods. RW-10 and RW-11 were constructed using 4-inch diameter PVC screen and casing with a 15-foot screened interval from 17 to 32 ft bgs.

The presence of free product at the water table was confirmed on June 16, 2021, and WSP began daily free product recovery efforts on June 21, 2021. Manual free product recovery activities consisted of WSP personnel measuring depth to free product and depth to water in the remediation wells and pumping free product from the remediation wells using submersible pumps. Recovered free product and segregated groundwater were stored in onsite storage containers with secondary containment. Through August 11, 2021, manual free product recovery efforts have recovered approximately 200 gallons of free product. Routine gauging of remediation wells RW-1 through RW-9 indicate free product thickness varying from approximately 0.5 to 2.1 feet with the depth to top of free product occurring at approximately 25 ft bgs.

On June 28 and 29, 2021, WSP conducted free product transmissivity testing at four remediation wells (RW-4, RW-6, RW-7, and RW-9), and on June 30, 2021, WSP collected a sample of recovered free product from RW-9 and submitted it for laboratory analysis to confirm product composition and physical characteristics and assess degree of product weathering.

In order to enhance free product recovery, WSP will install an automated free product recovery system. The proposed system consists of 10 QED AutoGenie Skimmer pumps deployed in 10 of the 11 the remediation wells. Based on the limited free product thickness and slow product recharge following manual product recovery, remediation well RW-3 will not be equipped with a product recovery pump. The pumps will be pneumatically operated with air supplied by an onsite air compressor and aboveground air supply tubing from the air compressor to a solar-powered controller for each of the 10 remediation wells with an installed free product recovery pump. Pump cycle frequency will be individually set for each remediation well to match free product recovery to the well recharge rate. Recovered free product will be pumped from the remediation wells and transferred via aboveground piping to an onsite storage container with secondary containment and automated system shut-off controls. Recovered free product will be transported offsite for reinjection into the pipeline system by Enbridge or disposal. Figure 1 shows the layout of proposed free product recovery system components, and Enclosure A provides manufacturer's specifications for the QED pumps.

WSP anticipates that the automated free product recovery system will be installed during the week of August 23, 2021. Following startup of the automated system, WSP will conduct daily Site visits for the first week to confirm system operation and free product recovery rates, twice weekly Site visits for the second and third weeks, and weekly Site visits starting on the fourth week through the first three months of system operation. Since the free product recovery system is being installed and operated as an Interim Action, it is not designed for continuous operation during the winter. As a result, WSP anticipates that the system will be shut down in November 2021 following approximately two to three months of operation (September through November).

In accordance with NR 712, Wis. Adm. Code., the certification of an engineer for this Interim Action Product Recovery Plan is included in Enclosure B.



Please do not hesitate to contact me if you have questions:

Kind regards,

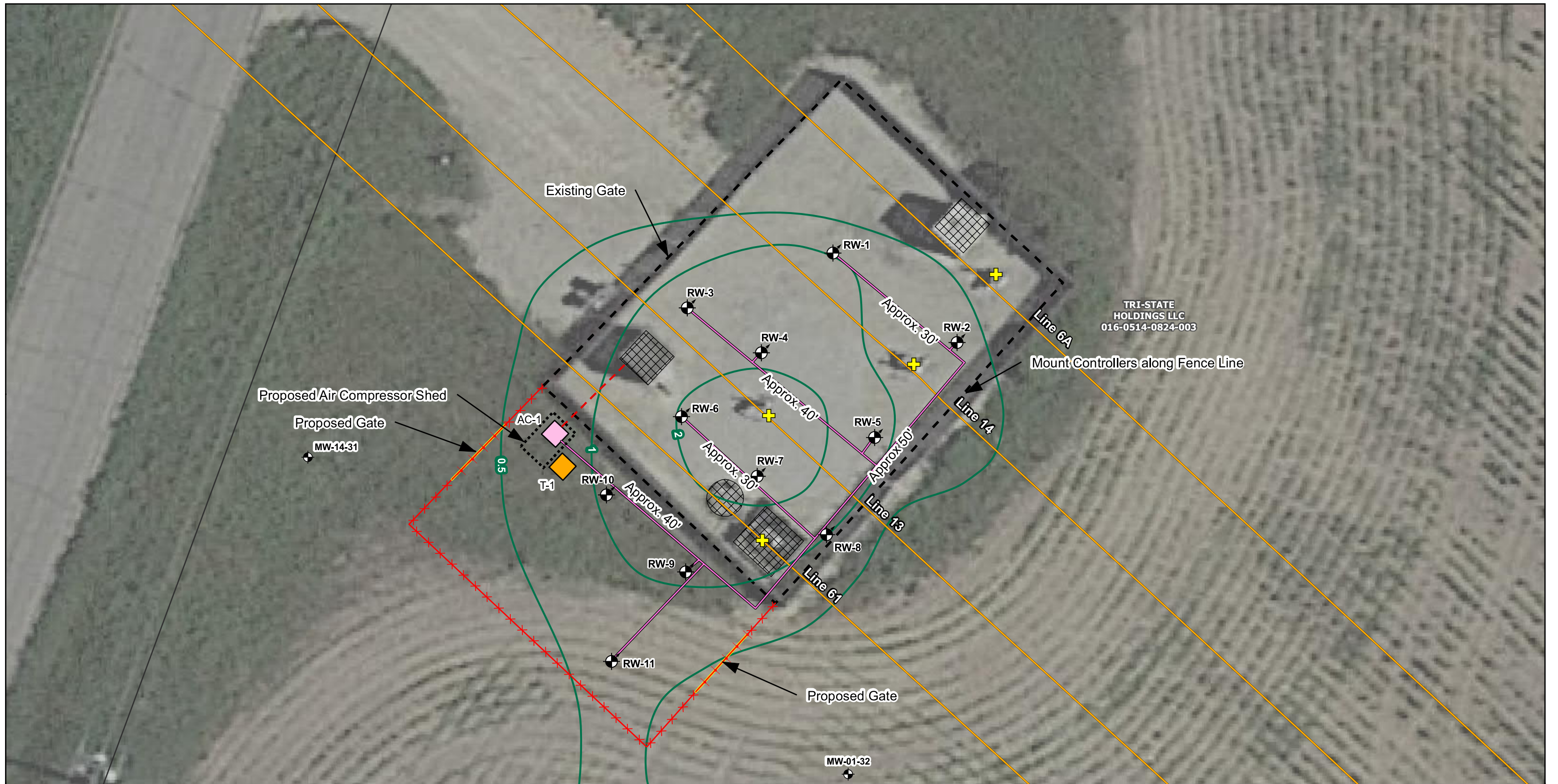
A handwritten signature in black ink that reads "Tim Huff". The signature is written in a cursive style.

Timothy A. Huff  
Senior Lead Geologist

TAH :  
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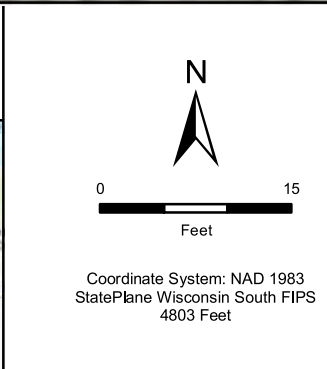
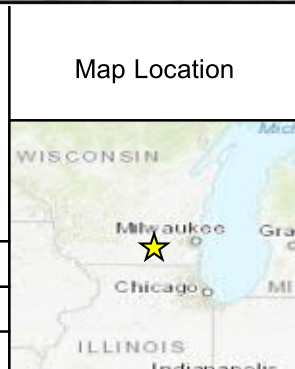
Encl.

## FIGURES



**ENBRIDGE**

Drawn: WSP 8/13/2021  
 Approved: WSP 8/13/2021  
 Project #: 31401967.705



**Legend**

- Remediation Well
- Existing Monitoring Well
- Pipeline Valve
- New Fence Line (Proposed)
- New Gate (Proposed)
- Compressed Air/Product Recovery Lines (Proposed)
- New Electrical Service (Proposed)
- Enbridge Pipeline (Below Grade)
- UVOST Response
- Approximate Thickness for Interval 24-30' bgs
- Product Recovery Tank with Secondary Containment (Proposed)
- Air Compressor Location (Proposed)
- Site Features
- Site Fence
- Property Parcels

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

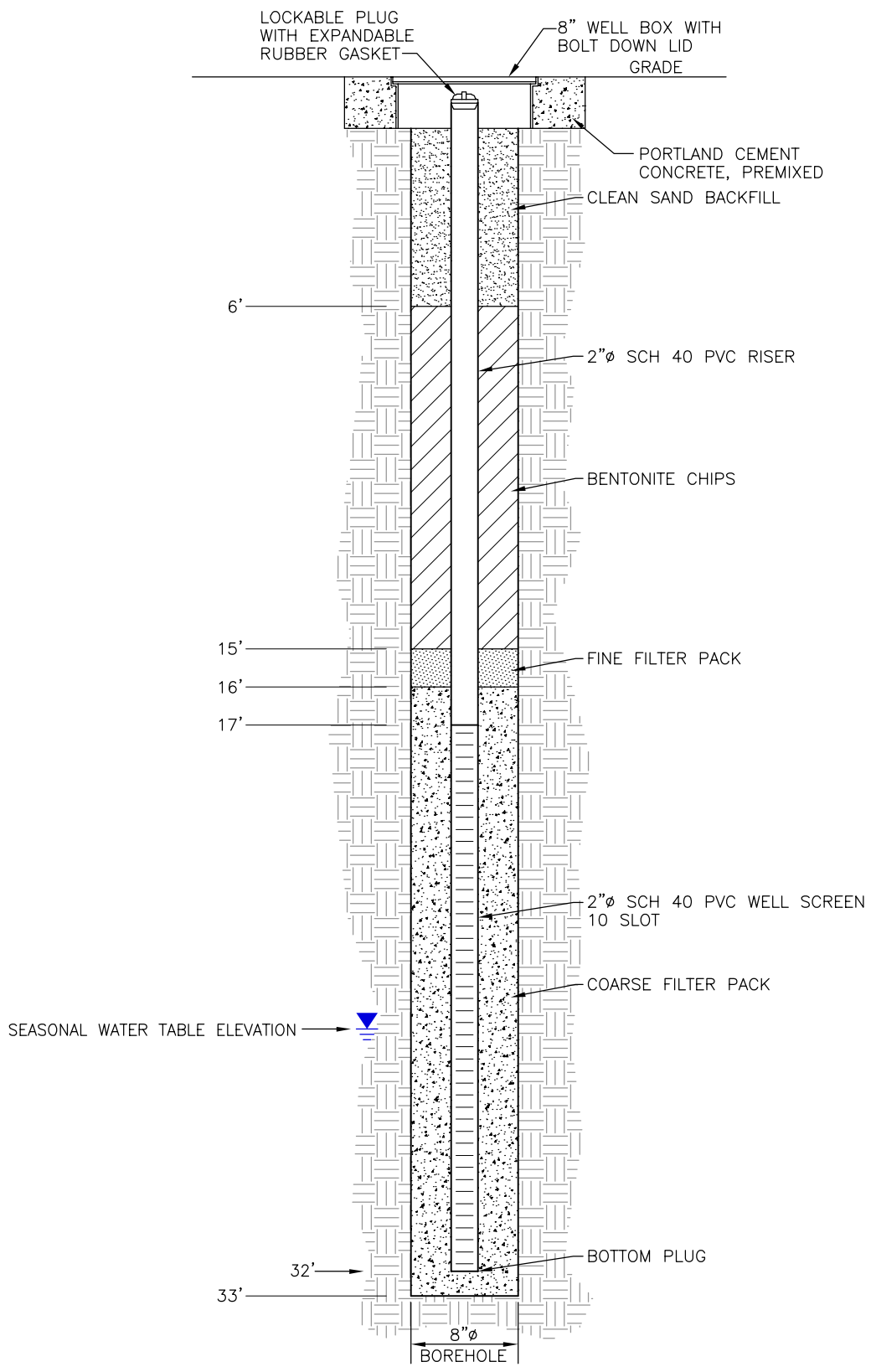
**FIGURE 1**  
 PROPOSED PRODUCT RECOVERY SYSTEM DIAGRAM

LINE 13 MP 312 VALVE SITE  
 FORT ATKINSON, WISCONSIN

ENBRIDGE ENERGY LIMITED PARTNERSHIP

DWG Name: 314MN1967.705-004  
 Checked: Approved:  
 Drawn By: LS  
**A**

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NOT TO SCALE



FIGURE 2  
 REMEDIATION WELL AS-BUILT  
 RW-1 THROUGH RW-9

LINE 13 MP 312 VALVE SITE  
 FORT ATKINSON, WISCONSIN  
 PREPARED FOR  
 ENBRIDGE ENERGY LIMITED PARTNERSHIP  
 DULUTH, MINNESOTA

## ENCLOSURE A – QED AUTOGENIE PUMP SPECIFICATIONS

## 2" SPG2 AutoGenie™



### **2" SPG2 AutoGenie™ Skimmer**

The 2" SPG2 AutoGenie™ is a safe, reliable and complete system designed to remove free product from 2" or larger wells. The 2" SPG2 AutoGenie system consists of an air-powered pumping unit with a floating inlet that tracks changes in the water level. The SPG float uses specific gravity to avoid water intake, and includes multiple inlet hole positions to allow fine-tuning of the inlet level as the floating layer thickness is reduced. The special Genie bladder pump with high suction capacity delivers proven reliability and durability. The AutoGenie uses an integral pneumatic timer to control the bladder pump fill and discharge times. A complete line of accessories is available, including in-well tubing, well caps, LNAPL collection tank full shutoffs, and other items.

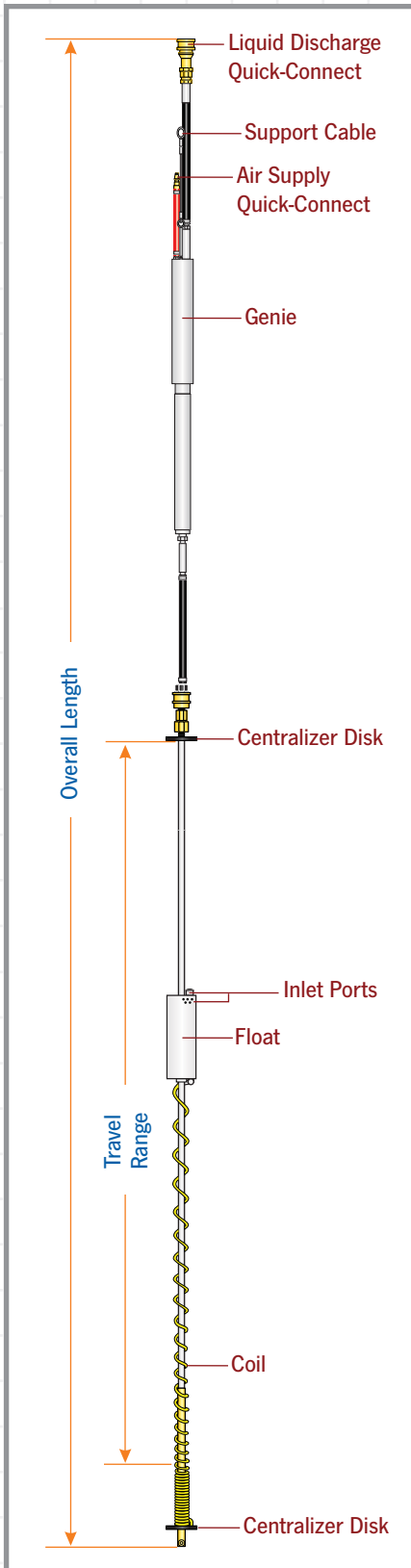
### **Warranty**

SPG2 AutoGenies are warranted for one (1) year.

### **Advantages**

- 1. Specialized bladder pump is extremely durable, provides high suction to maintain flow, and eliminates contact of drive air with pumped fluid.**
- 2. Continuous, automatic operation that is 100% air powered.**
- 3. Available in a range of flow rates and float travel ranges to best fit site needs.**
- 4. Low air consumption.**





The 2" SPG2 AutoGenie™ is available in 6 different models with varying inlet float travel ranges and pumping rates. Why so many options? QED has found that each free product site and well can have its own challenges in terms of well depth, liquid column depth, water level fluctuation and desired LNAPL pumping rate. For example, the model with the longest pump and float travel range may be too long for some wells. Check the dimensions and flow rates below, or just call QED's application specialists to help select the best match for your project.

### Specifications

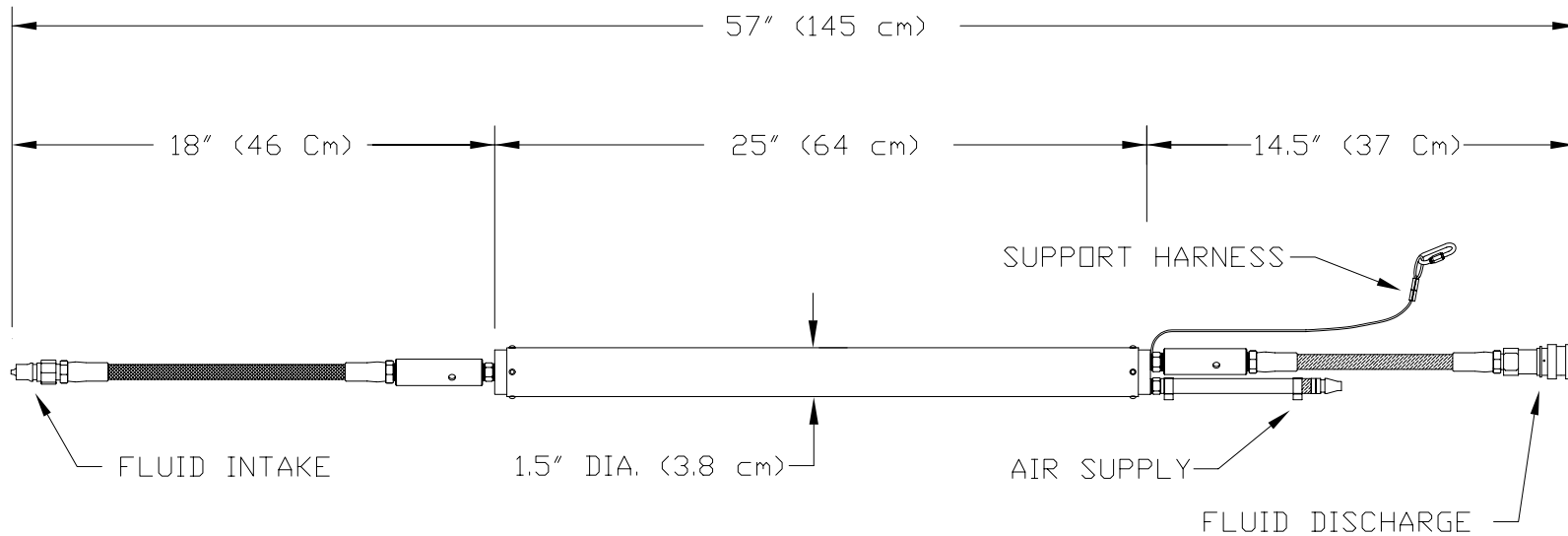
AutoGenie Model	Maximum LNAPL Recovery Rate*	Float Travel Range	Overall Length	Minimum Liquid Column
AG2415 SPG2	160 gpd (605 Lpd)	15 in. (38 cm)	95 in. (241 cm)	6 in. (15 cm)
AG2424 SPG2	160 gpd (605 Lpd)	24 in. (61 cm)	105 in. (267 cm)	12 in. (30 cm)
AG2445 SPG2	160 gpd (605 Lpd)	45 in. (114 cm)	130 in. (330 cm)	15 in. (38 cm)
AG4815 SPG2	320 gpd (1,211 Lpd)	15 in. (38 cm)	118 in. (300 cm)	6 in. (15 cm)
AG4824 SPG2	320 gpd (1,211 Lpd)	24 in. (61 cm)	129 in. (328 cm)	12 in. (30 cm)
AG4845 SPG2	320 gpd (1,211 Lpd)	45 in. (114 cm)	153 in. (389 cm)	15 in. (38 cm)

Minimum Well ID	2 in. (5 cm)
Maximum OD	1.92 in. (4.88 cm)
Maximum Depth	150 ft. (45.7 m)
Air Supply Pressure (min/max)	40/100 psi (2.7/6.9 bar)
LNAPL Fluid Density	< .85 SG
Kinematic Viscosity	1-1000 centistokes
Recommended Initial LNAPL Layer	> 3 in. (> 7.6 cm)
Residual LNAPL Layer	≥ 0.25 in. (.64 cm)
Suitable Types of LNAPL	Gasoline, diesel, jet fuels, kerosene, #2 - #5 fuel oils, light weight motor oil and hydraulic fluid
Materials	Brass, Tygon®, stainless steel, Viton®, Teflon®
Fitting Type	Quick-connect
Hose or Tubing	Both are available

Tygon is a registered trademark of Saint Gobain - Norton. Viton is registered trademark of DuPont Dow Elastomers.

Teflon is a registered trademark of Dupont.

\* gpd = gallons per day, Lpd = liters per day



WEIGHT = 5 Lb (2.27 Kg)

MAXIMUM DEPTH = 150 FT (45.7 M)

MAXIMUM FLUID PER CYCLE = 120 cc

SCF AIR USE PER CYCLE			
AIR PSI	PUMP BODY	1/4" ID X 100 FT AIR LINE	PUMP AND 100 FT 1/4" HOSE
100	0.119	0.232	0.351
80	0.092	0.185	0.277
60	0.071	0.139	0.210

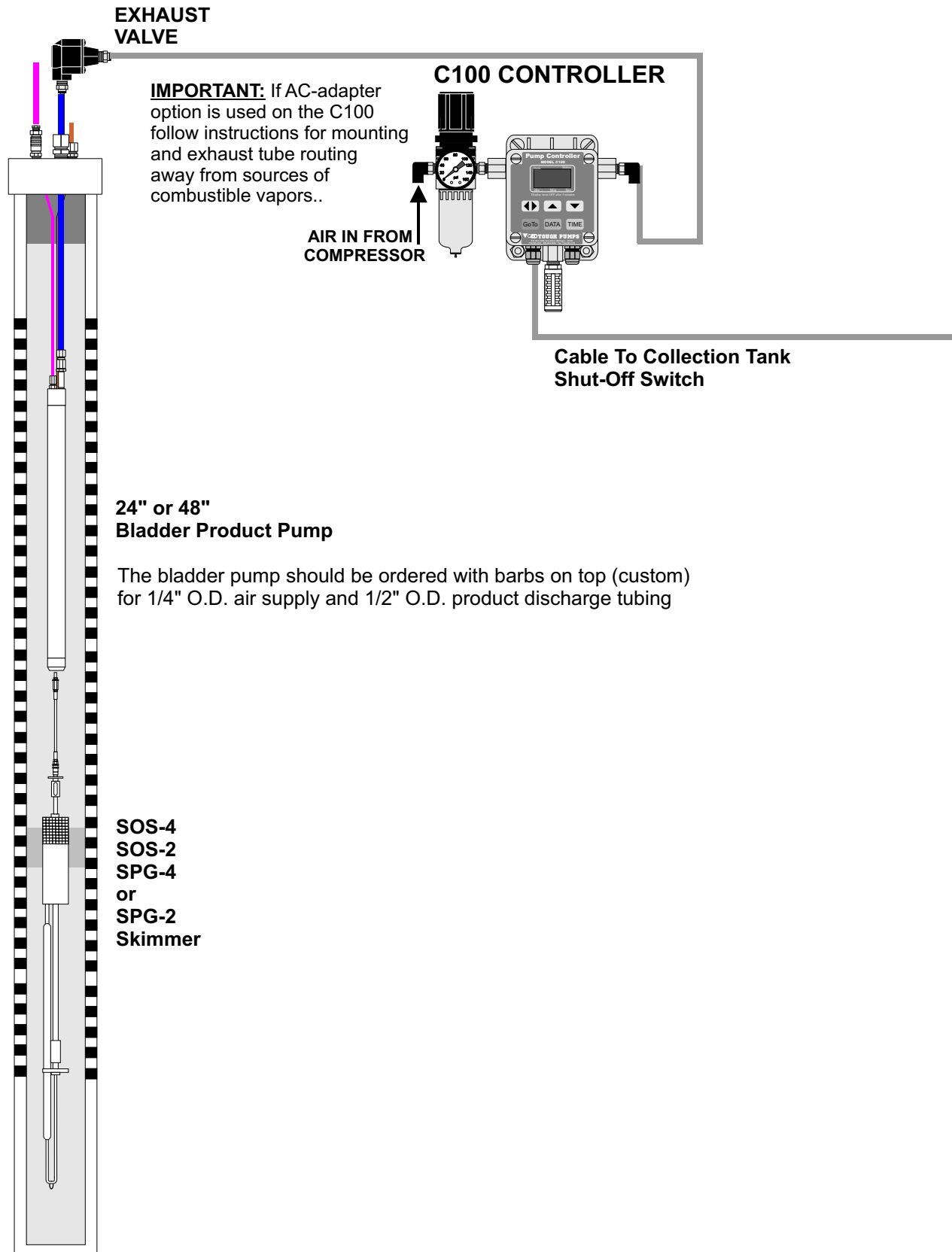


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800-624-2026 -NORTH AMERICA TOLL FREE  
WWW.QEDENV.COM -WEB PAGE

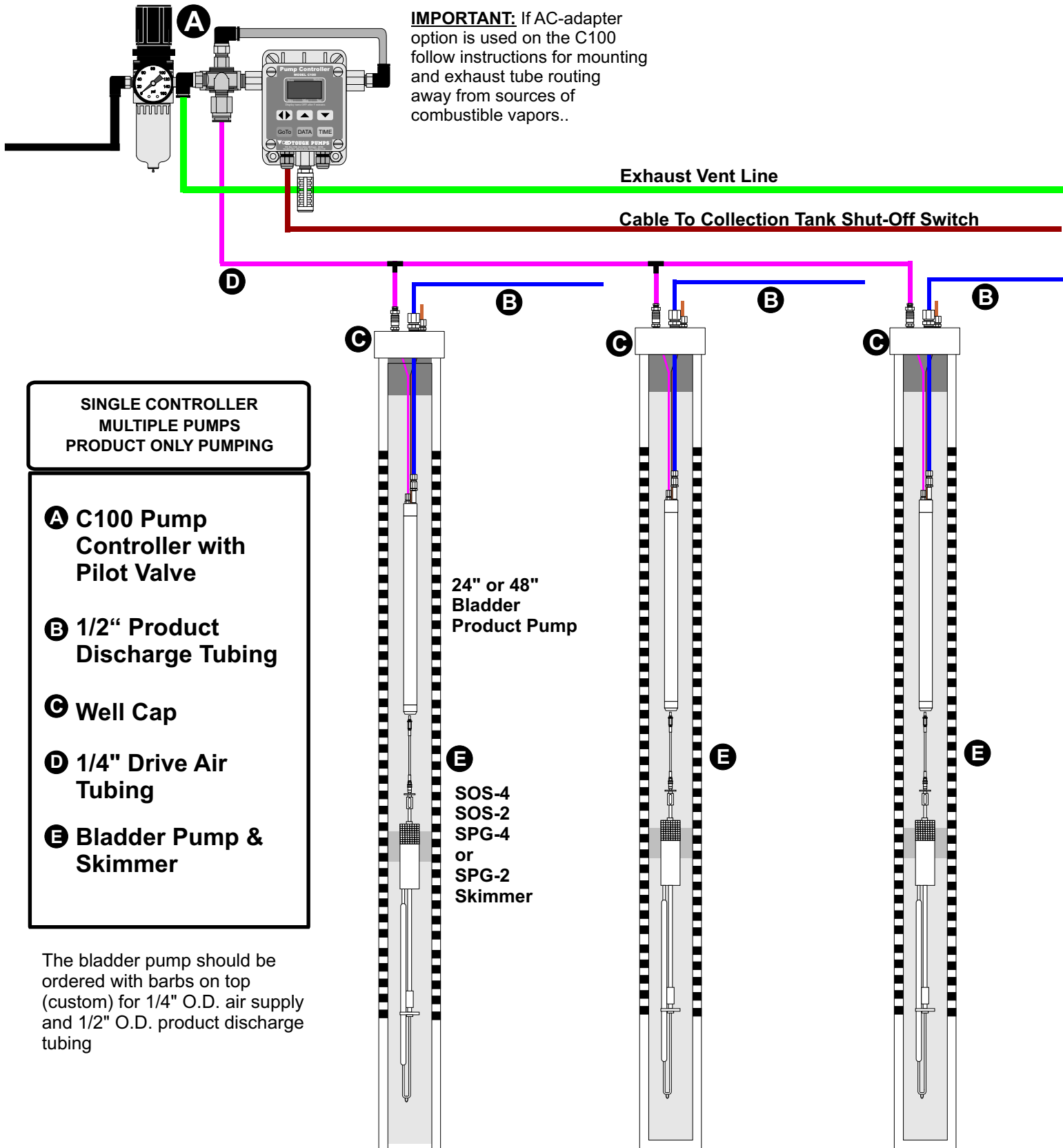
TOLERANCES UNLESS OTHERWISE SPECIFIED	APPROVALS	DATE	TITLE	
ANGULAR : .5°	DRAWN TONY RAMIREZ	1-14-07	24-INCH PROGRAMMABLE GENIE	
FRAC : .XXX : .005	DESIGNER R/W	1-14-07	PART No. 301310	
.XX : .01 .XXXX : .0005	CHECKED R/W/RH	1-14-07	DRAWING No. 602152	REV 02
MATERIAL	APPROVED R/W/RH	1-14-07	SCALE NONE	SHT OF

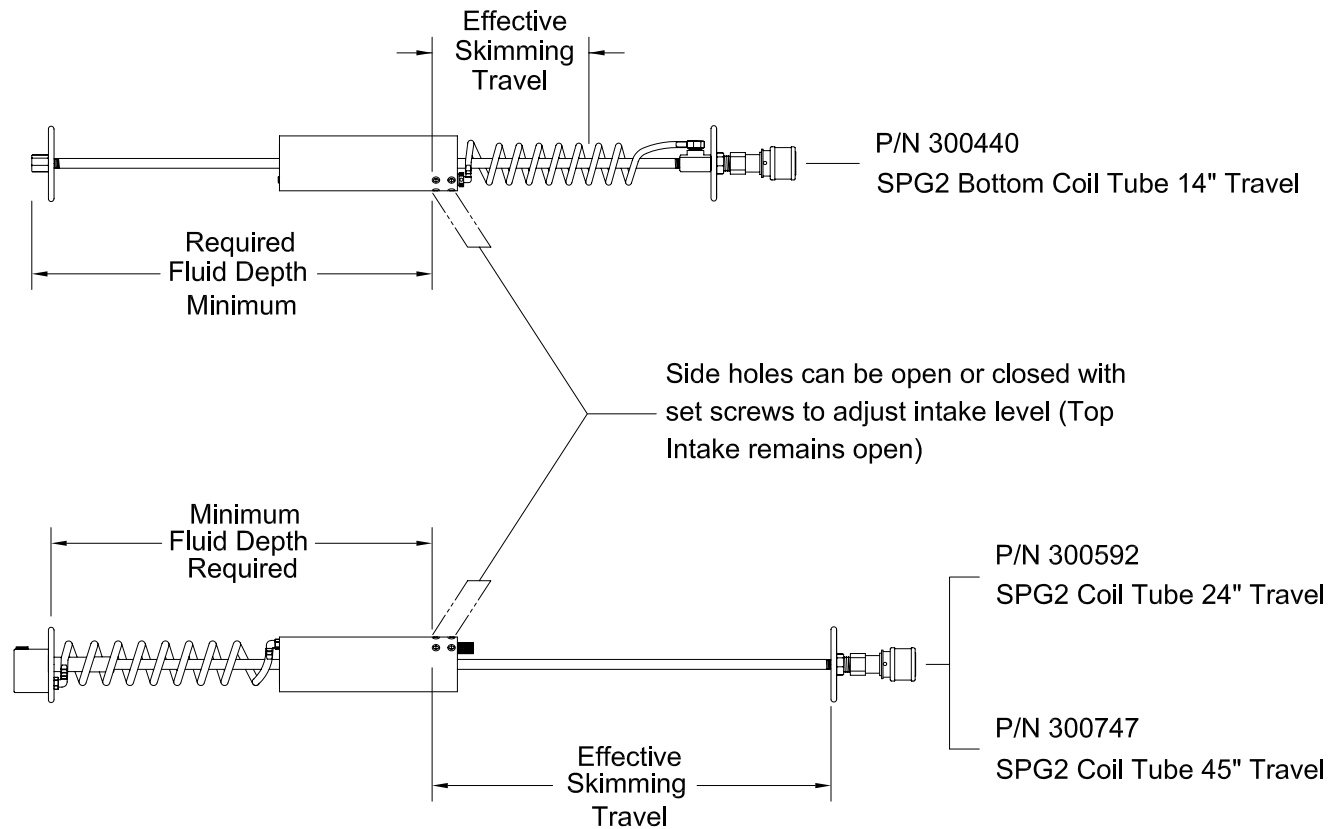
## Single Pump Installation

The drawing below shows a single pump being controlled by a single controller..



## Multiple Pump System with a Pilot Valve



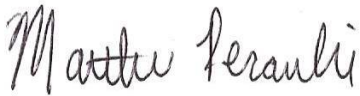


PART #	300440	300592	300747
SPECIFICATIONS			
Minimum Fluid Depth Required	6.3" (16 cm)	12.5" (32 cm)	16" (41 cm)
Effective Skimming Travel	14" (36 cm)	24" (61 cm)	45" (114 cm)
Total Length	28.5" (72 cm)	40.3" (102 cm)	64" (163 cm)
Outside Diameter	1.9" (4.8 cm)	1.9" (4.8 cm)	1.9" (4.8 cm)
Weight	1.4 lbs (.6 Kg)	1.7 lbs (.8 Kg)	2.2 lbs (1.0 Kg)

## ENCLOSURE B – ENGINEER CERTIFICATION

Interim Action Work Plan Addendum  
Enbridge Line 13 MP 312 Valve Site  
Blackhawk Island Road  
Fort Atkinson, Wisconsin  
BRRTS Number: 02-28-586199

I, Matthew Peramaki, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



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Matthew Peramaki, P.E.  
Assistant Vice President, Wisconsin P.E. #31636-006

8/18/2021

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Date