



November 7, 2016

Ms. Jeannette Debartolomeo  
Maryland Department of the Environment  
Oil Control Program  
1800 Washington Boulevard, Suite 620  
Baltimore, MD 21230

Re: **LNAPL Recovery Work Plan – Tank Field -Addendum**  
Pilot Travel Center #290  
31 Heather Lane  
Perryville, Maryland  
MDE Case # 2016-0422-CE

Dear Ms. Debartolomeo:

Sovereign Consulting Inc. (Sovereign), on behalf of Pilot Travel Centers (Pilot), is submitting this addendum in response to the MDE's review of the LNAPL Recovery Work Plan addressing the product accumulation in the Tank Field located at Pilot Travel Center #290 in Perryville, Maryland. The proposed addendum is supplemental to the LNAPL Recovery Work Plan dated October 26, 2016.

#### **Addendum**

On October 31, 2016, Sovereign was contacted by Jeannette Debartolomeo from the MDE requesting clarification on two items with regards to the MDE's review of the submitted LNAPL Recovery Work Plan. The information provided below, and attached, provides clarification to the items in question.

- Skimmer specification and operation manual are attached with this addendum package for review- Geotech 4" PRC Passive Skimmer, 3 Liter, 16" vertical travel.
- LNAPL recovery endpoint is proposed as recovery accumulation  $\leq 2\%$  of the skimmer storage capacity for 3 consecutive months during the monthly monitoring & frequency events. The storage capacity is specified as  $\leq 2\%$  (approx. 60 ml) to occur in both skimmers, TF-1 and TF-2, for the 3 consecutive month period. Removal of the skimmer systems will be followed by monthly tank field well monitoring for 3 consecutive months. Gauging shall progress to quarterly in sync with quarterly GWS events if/when LNAPL thickness remains  $\leq 0.05'$  for 3 consecutive months. Quarterly gauging shall be supplemented with bailing or absorbent socks, if necessary following the first quarterly gauging period.
- Due to the intermittent occurrence of LPH within MW-9, monitoring and recovery efforts will be performed in conjunction with the monitoring frequencies set forth in TF-1 and TF-2. Recovery efforts will consist of bailing or absorbent socks at the time of discovery.
- The use of absorbent sock recovery methods will not exceed a 24 hour time frame within any monitoring well location.



SOVEREIGN CONSULTING INC.

Thank you for your guidance with submittal of this LNAPL Recovery Plan. Please do not hesitate to contact me or John Buttillo with any questions or concerns via email [Jbutillo@sovcon.com](mailto:Jbutillo@sovcon.com), [ewilliams@sovcon.com](mailto:ewilliams@sovcon.com), or office phone (610) 524-8124.

Sincerely,  
Sovereign Consulting Inc.

JR Williams  
Environmental Scientist/ Project Manager

Cc: Project files  
Joey Cupp, Keith Carlton/Pilot  
Scott Beals, John Buttillo/Sovereign

Attachments: Geotech PRC Passive Skimmer specification and operation manual

# Oil Skimmers

## Geotech PRC Passive Skimmer

The Geotech PRC (Product Recovery Canister) is a passive skimmer with a floating intake that separates and recovers light hydrocarbons from groundwater. The Geotech PRC collects floating product down to a sheen then is emptied through a discharge valve at the bottom of the canister after being raised to the surface.

### FEATURES

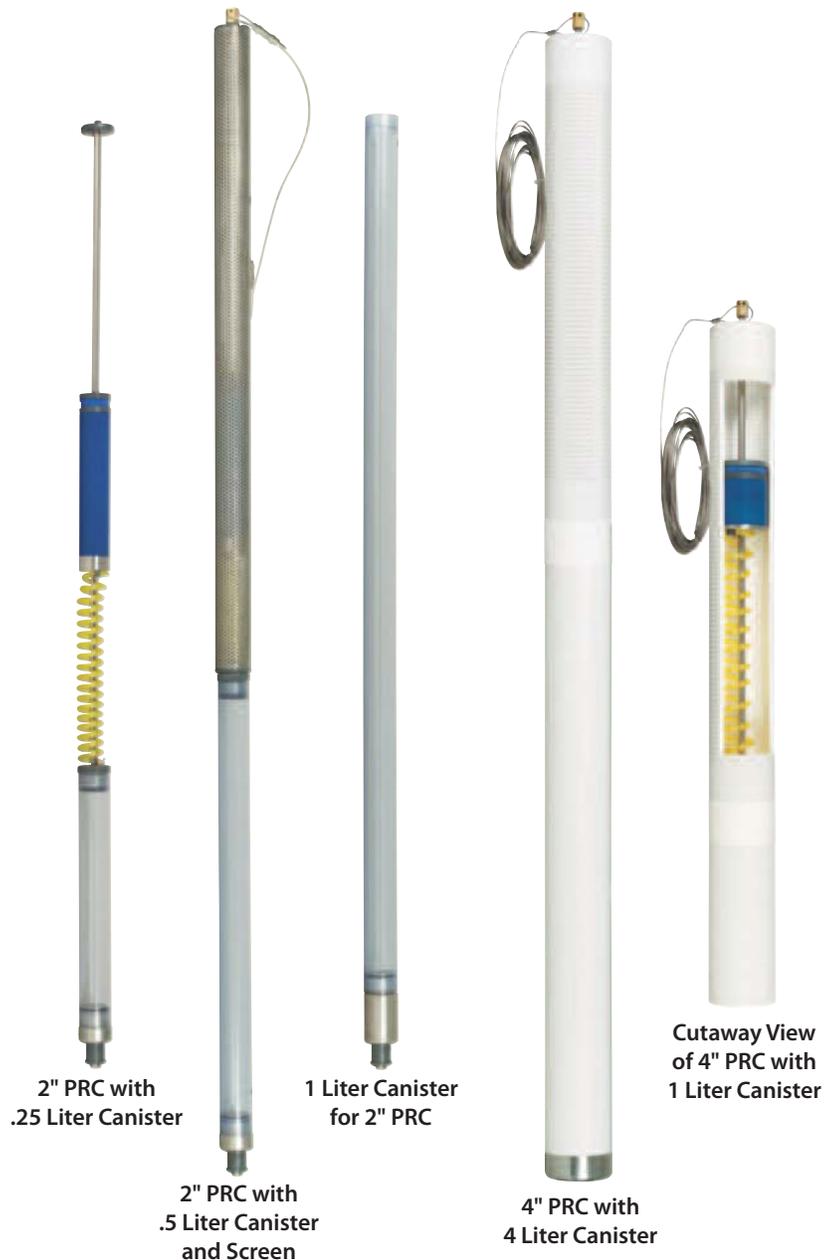
- Oleophilic/Hydrophobic filter buoy recovers product without taking in water
- Quick fill time – about 15 minutes with ample product
- Protected easy release drain valve
- Able to convert to active recovery systems

### 2" PRC

- 12" (30.5 cm) effective buoy travel
- 3 recovery capacities: .25, .5 and 1 liter
- Transparent recovery canister
- 2" (5 cm) or larger monitoring well applications
- Optional protective screen

### 4" PRC

- 16" (40.6 cm) effective buoy travel
- 3 recovery capacities: 1, 3 and 4 liter
- 4" (10 cm) or larger monitoring well applications
- Buoy protected in 0.020 (.5mm) slot PVC screen



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**Geotech Environmental Equipment, Inc.**

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email: sales@geotechenv.com website: www.geotechenv.com

## Geotech PRC Passive Skimmer

### 4" PRC SPECIFICATIONS

	1 Liter	3 Liter	4 Liter
<b>Dimensions:</b>	37.0" L x 3.5" OD (94cm x 9cm)	53.0" L x 3.5" OD (135cm x 9cm)	60.0" L x 3.5" OD (152cm x 9cm)
<b>Empty Weight:</b>	8 lbs. (3.7kg)	15 lbs. (6.8kg)	16 lbs. (8.2kg)
<b>Full Weight:</b>	9.5 lbs. (4.3kg)	19 lbs. (8.6kg)	25.5 lbs. (11.6kg)
<b>Capacity:</b>	.26 gal.	.8 gal.	1.06 gal.
<b>Min. Water Required:</b>	18.5" (47cm)	35.0" (89cm)	43.0" (109cm)
<b>Materials (All):</b>	Stainless steel, brass, and engineered plastics		

### 2" PRC SPECIFICATIONS

	.25 Liter	.5 Liter	1 Liter
<b>Dimensions:</b>	49.0" L x 1.75" OD (149cm x 4.4cm)	59.5" L x 1.75" OD (151cm x 4.4cm)	82.5" L x 1.75" OD (210cm x 4.4cm)
<b>Empty Weight:</b>	3.1 lbs. (1.4kg)	3.5 lbs. (1.6kg)	5.2 lbs. (2.4kg)
<b>With Screen:</b>	4.5 lbs. (2.0kg)	4.9 lbs. (2.2kg)	6.6 lbs. (3.0kg)
<b>Full Weight:</b>	3.5 lbs. (1.6kg)	4.3 lbs. (2.0kg)	6.7 lbs. (3.0kg)
<b>With Screen:</b>	4.9 lbs. (2.2kg)	5.7 lbs. (2.6kg)	8.1 lbs. (3.7kg)
<b>Capacity:</b>	.07 gal.	0.13 gal.	0.26 gal.
<b>Min. Water Required:</b>	29.0" (74cm)	39.5" (100cm)	62.0" (157cm)
<b>Materials (All):</b>	Stainless steel, brass, and engineered plastics		

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# Product Recovery Canister

Installation and Operation Manual





## Table of Contents

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## DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



**WARNING**

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



**CAUTION**

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



**NOTE**

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

## **Section 1: System Description**

### **Function and Theory**

The Geotech Product Recovery Canister (PRC) is a passive, skimmer device designed to recover light floating hydrocarbons (such as gasoline and diesel fuel) from the ground water in wells that are 2 inches (5cm) and larger.

Featuring a floating oleophilic/hydrophobic intake assembly, the skimmer can automatically collect and skim floating product down to a sheen. Standard 2" skimmers provide 12" (30cm) of intake travel and standard 4" skimmers provide upto 16" (40cm) of intake travel, to accommodate water fluctuations. The unit is suspended in the well at the desired recovery depth by the 25 feet (7.6m) of supplied stainless steel suspension cable.

### **System Components**

A PRC consists of two (2) major components; a product skimmer assembly and a collection canister (as shown in Figures 1-1 through 1-3). On the 4" model, the skimmer assembly is protected by a slotted screen which pre-filters the incoming product and protects the intake assembly from damage. The skimmer assembly collects free product and passes it through a coiled hose to the collection canister. Recovered product is evacuated by removing the PRC from the well and opening the drain on the bottom of the device.

Increased capacity collection canisters are available and easily installed by simply unscrewing the collection canister section and replacing it with a larger collection canister and weight assembly. When going from smaller to larger collection canisters, consideration must be made for weight. Going from larger to smaller is not a problem.

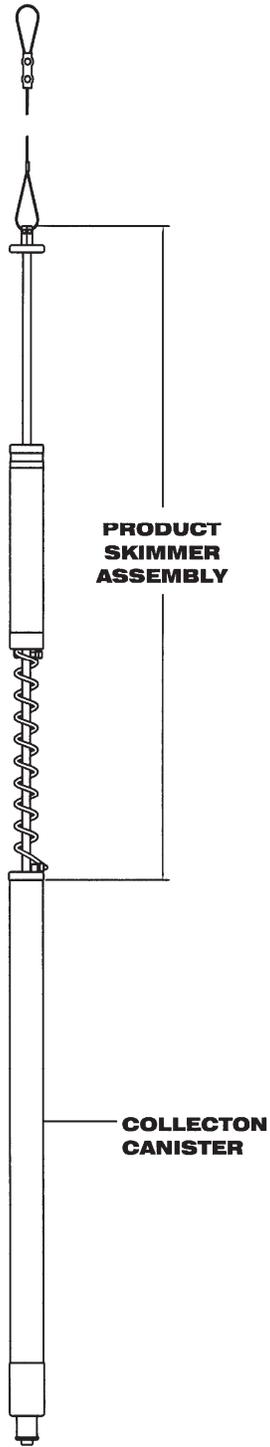


Figure 1-1 - 2" PRC Skimmer Assembly

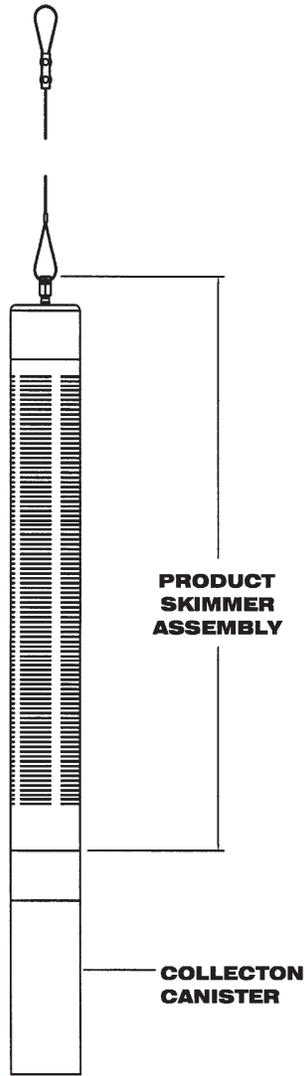


Figure 1-2 - 4" PRC Skimmer Assembly 1

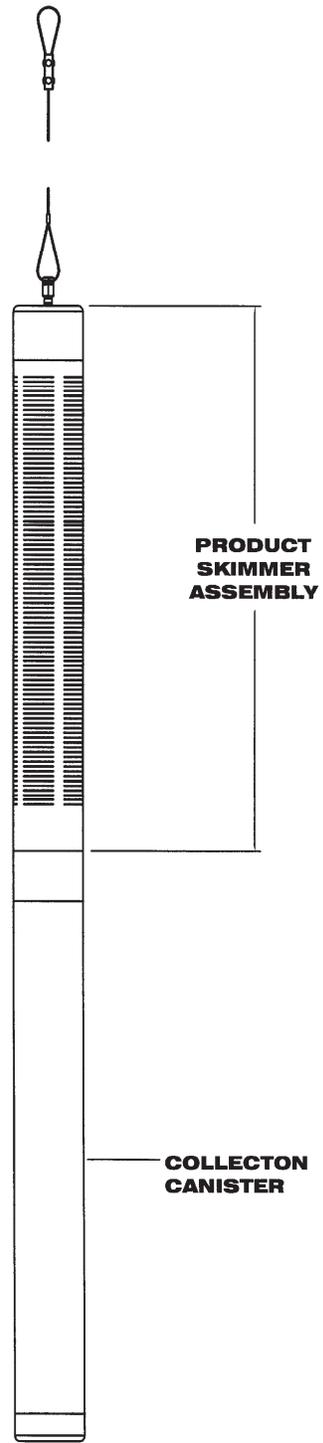
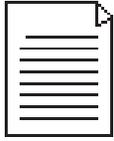


Figure 1-3 - 4" PRC Skimmer Assembly 3

## Section 2: System Installation and Operation



Prior to installation, the oleophilic/hydrophobic screen intake must be “conditioned”, or primed. To accomplish this, use diesel fuel or similar hydrocarbon to saturate the screen portion of the intake assembly (as shown in the figures found in Section 7). The optimum fluid would be the downwell hydrocarbons to be recovered. Take care to avoid damaging the intake assembly.

To install the PRC first measure the water and product levels with an Interface Probe (Geotech can provide you with a variety of Interface Probes for all applications).

Typically, the PRC is set so that the intake assembly is placed at the midpoint of its travel to allow for water table fluctuation in both directions (see Section 6 for an example of a PRC in the well). To set the intake assembly at the midpoint of travel, measure from the top centralizer (2” skimmer), or top cap (4” skimmer) on the PRC and along the suspension cord, the same distance as the water level reading taken with an Interface Probe, then subtract 6 inches (15cm). Suspend the PRC from the wellhead to this point.

To empty the collection canister, simply pull the PRC up from the well, open the drain valve (by applying a downward pulling force on the valve sleeve – like a water bottle) and transfer the recovered product into an approved container.

When re-installing, verify that the intake assembly will be set within its range of travel (as describe above), and that the drain valve is completely closed to avoid the possibility of water entering the canister. Figure 2-1 shows an example of the drain valve open and closed.



Figure 2-1 Drain valve operation

### **Section 3: System Maintenance**

With proper maintenance the Geotech PRC will provide years of reliable service. When emptying the canister, these simple maintenance steps can be taken to assure its reliability.

1. Inspect the product skimmer assembly for signs of physical damage. Scrapes or dents in the screen intake may cause the skimmer to take on water. If such damage is found, a new replacement intake assembly may be necessary.
2. Inspect the tubing coil for physical damage or obstructions, such as kinks. Replace the tubing coil as necessary.
3. Inspect the collection canister for physical damage such as cracks. Replace as necessary.
4. To clean the intake assembly screen intake, use a very soft bristle paint brush and fresh diesel fuel or the type of product being recovered. Typically, this type of maintenance should only be performed when the screen is obstructed with emulsified product or other debris. Take care not to dent or scratch the screen intake.
5. Use diesel fuel or similar hydrocarbon to saturate the screen portion of the intake. The optimum fluid would be the downwell hydrocarbons to be recovered. Take care to avoid damaging the screen intake.

## Section 4: System Troubleshooting

**Problem:** The PRC recovers only water.

**Solutions:**

1. The PRC is set too low in the well restricting the travel of the intake assembly.
2. Drain the collection canister completely, allow the screen intake to dry, re-prime the screen, then reset the PRC so that the water level fluctuation is within the travel range of the intake assembly.

**Problem:** The water level has risen past the top of the travel range of the intake assembly.

**Solution:**

Drain the collection canister completely, allow the screen intake to dry, re-prime the screen, then reset the PRC so that the water level fluctuation is within the travel range of the intake assembly.



If the water level has risen above the travel range of the intake assembly at any time between site visits, the skimmer assembly and collection canister will fill up with water and displace any collected product. It will remain this way until reset, even if the water level falls back within the travel range of the intake assembly.

**Problem:** The drain valve is not fully closed.

**Solution:**

Empty the collection canister (as described in Section 2), and then close the drain valve by pushing up on the outer sleeve of the drain valve until it stops.

**Problem:** There is a mechanical malfunction or a leak has developed.

**Solution:**

Call Geotech Environmental Equipment Inc. at 1-800-833-7958 for assistance.

**Problem:** The skimmer intake is not recovering product.

**Solutions:**

1. There is no product to recover.
2. Check, and periodically monitor, the product layer thickness.

**Problem:** The skimmer is set too high.

**Solution:**

Recheck the water and product levels and reset the skimmer assembly (use the installation procedures described in Section 2).

**Problem:** The canister vent is blocked.

**Solution:**

Make sure that the holes in the suspension fitting are clear of debris. The PRC will not operate if these holes are plugged.

**Problem:** The intake assembly is obstructed or the coiled product hose is kinked.

**Solution:**

Refer to Section 3, "System Maintenance".

## Section 5: System Specifications

Overall Dimensions		
Size	Volume (L)	Dimensions
2"	0.25	49.0"L (149cm) x 1.75" OD (4.4cm)
	0.5	59.5"L (151cm) x 1.75" OD (4.4cm)
	1	82.5"L (210cm) x 1.75" OD (4.4cm)
2" (With Screen)	0.25	49.0"L (149cm) x 1.88" OD (4.8cm)
	0.5	59.5"L (151cm) x 1.88" OD (4.8cm)
	1	82.5"L (210cm) x 1.88" OD (4.8cm)
4"	1	37"L (94cm) x 3.5" OD (9cm)
	3	53.0"L (135cm) x 3.5" OD (9cm)
	4	60.0"L (152cm) x 3.5" OD (9cm)

Weight			
Size	Volume (L)	Empty Weight	Full Weight
2"	0.25	3.1lbs (1.4kg)	3.5lbs (1.6kg)
	0.5	3.5lbs (1.6kg)	4.3lbs (2.0kg)
	1	5.2lbs (2.4kg)	6.7lbs (3.0kg)
2" (With Screen)	0.25	4.5lbs (2.0kg)	4.9 lbs (2.2kg)
	0.5	4.9lbs (2.2kg)	5.7lbs (2.6kg)
	1	6.6lbs (3.0kg)	8.1lbs (3.7kg)
4"	1	8.0lbs (3.7kg)	9.5 lbs (4.3kg)
	3	15.0lbs (6.8kg)	19.0lbs (8.6kg)
	4	18.0lbs (8.2kg)	25.5lbs (11.6kg)

Overall Dimensions		
Size	Volume (L)	Capacity (gallons)
2"	0.25	0.07
	0.5	0.13
	1	0.26
4"	1	0.26
	3	0.8
	4	1.06

Minimum Water Required		
Size	Volume (L)	Depth
2"	0.25	29.0" (74cm)
	0.5	39.5" (100cm)
	1	62.0" (157cm)
4"	1	18.5" (47cm)
	3	35.0" (89cm)
	4	43.0" (109cm)

Section 6: System Schematic

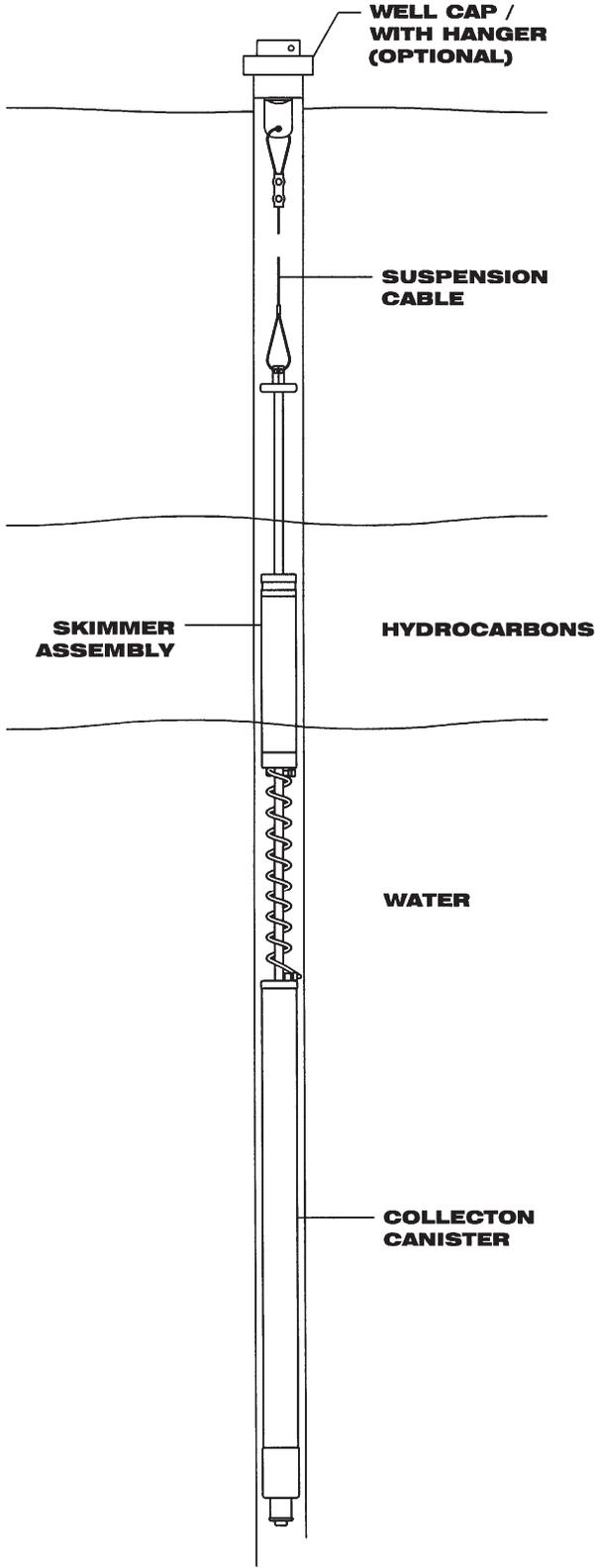


Figure 6-1 – PRC Skimmer deployed in well

## Section 7: Replacement Parts List

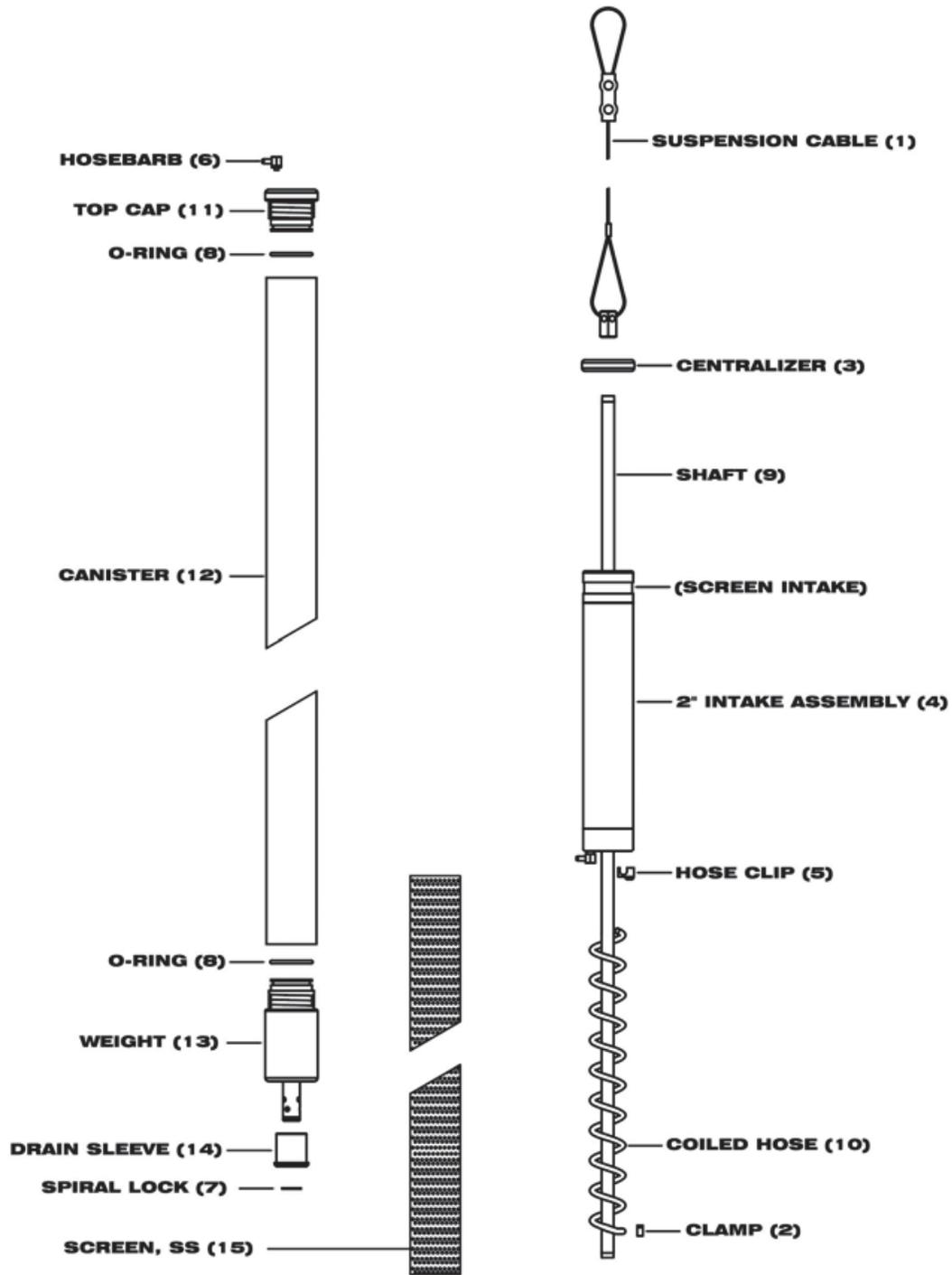


Figure 7-1 – Standard 2" PRC Skimmer Assembly

Part numbers for the Standard 2" PRC Skimmer Assembly

Item #	Parts Description	Parts List
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	CLAMP,SS,STEPLESS EAR,7MM	16600005
3	CENTRALIZER,PVC,SKIMMER,2"	26650306
	CENTRALIZER,PVC,SCREENED PR2	26600186
4	ASSY,BUOY,SKIMMER,2"100MESH	56650309
	ASSY,BUOY,SKIMMER,2" 60 MESH	56650312
5	HOSE CLIP,SKIMMER FLOAT	26650028
6	HOSEBARB,BRS,1/8"X10-32,90DEG	17500149
7	LOCK,SS,9/16",SPIRAL	16650304
8	O-RING,VITON,#123 (BROWN)	11200299
9	SHAFT,SS,SKIMMER,33.5",PRC	26600002
10	HOSE,COILED,PR2	26650304
11	CAP,PVC,TOP,PRC2	26650315
12	BODY,PVC,CANISTER,0.125L,PRC	26650321
	BODY,PVC,CANISTER,0.25L,PRC	26650307
	BODY,PVC,CANISTER,0.5L,PRC	26650311
	BODY,PVC,CANISTER,1LITER,PRC	26650313
13	ASSY,WEIGHT,SKIMMER,2",.125L PRC,	56650303
	ASSY,WEIGHT,SKIMMER,2",.25/.5L PRC,	56650302
	ASSY,WEIGHT,SKIMMER,2",1L PRC	56650301
14	ASSY,SLEEVE,DRAIN,W/ O-RINGS	56650308
15	SCREEN,SS,1.88"ODX32.7" STRAIGHT WELD	26600188

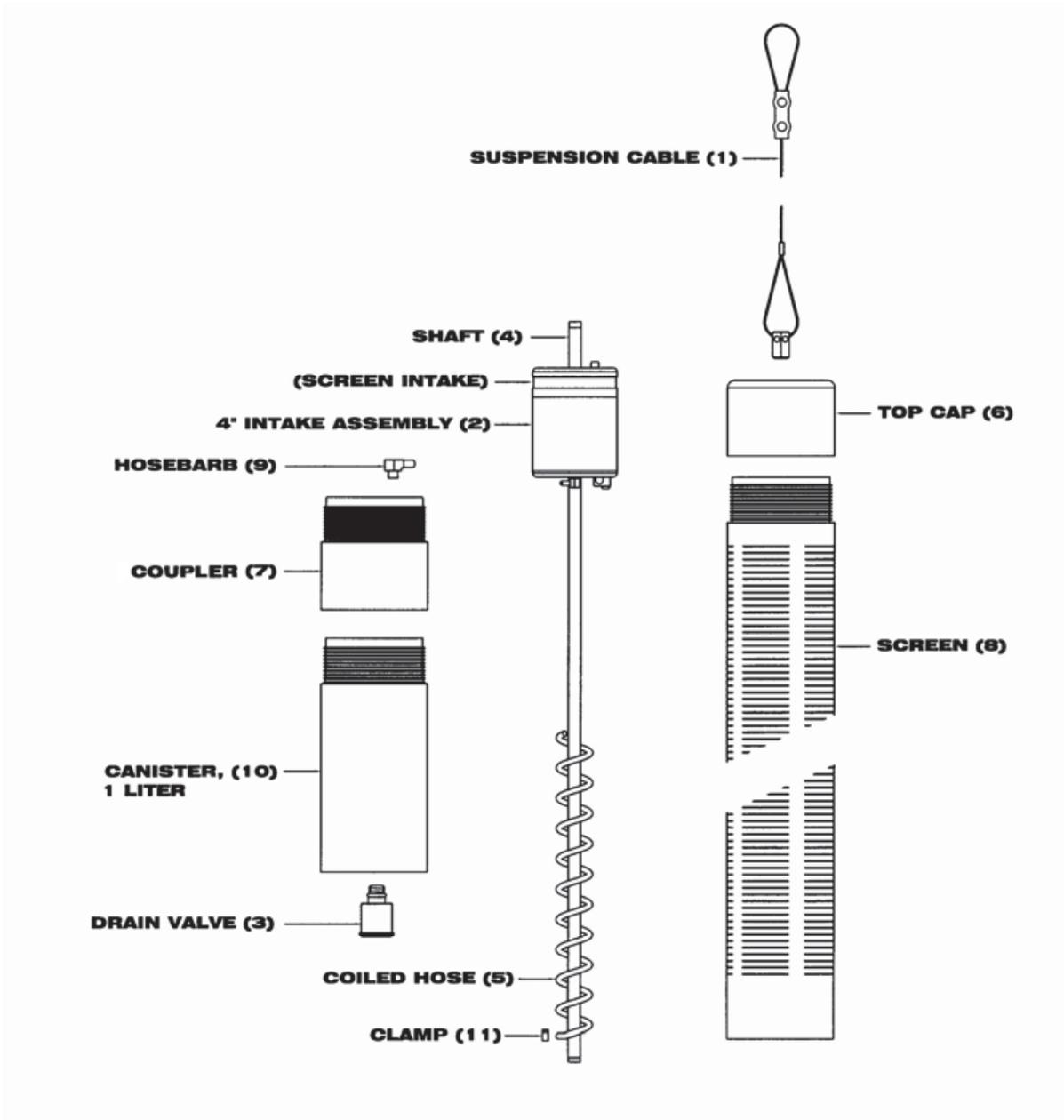


Figure 7-2 – Standard 4” PRC Skimmer Assembly (1 Liter)

Part numbers for the Standard 4" PRC Skimmer Assembly (1 Liter)

<b>Item #</b>	<b>Parts Description</b>	<b>Parts List</b>
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	ASSY,BUOY,SKIMMER,4"100 MESH	56650310
3	ASSY,DRAIN VALVE,SKIMMER,4" PR4,	56650307
4	SHAFT,SS,SKIMMER,24.5" 2065 REV A	26650305
5	HOSE,COILED,PR4	16650312
6	CAP,PVC,TOP,PRC4	16650313
7	COUPLER,PVC,PRC4	16650316
8	SCREEN,PVC,PRC4	16650317
9	HOSEBARB,BRS,.170"X1/8MPT,90D	17500148
10	CANISTER,1L,PRC4,W/ BTM PLATE	56650311
11	CLAMP,SS,STEPLESS EAR,7MM	16600005

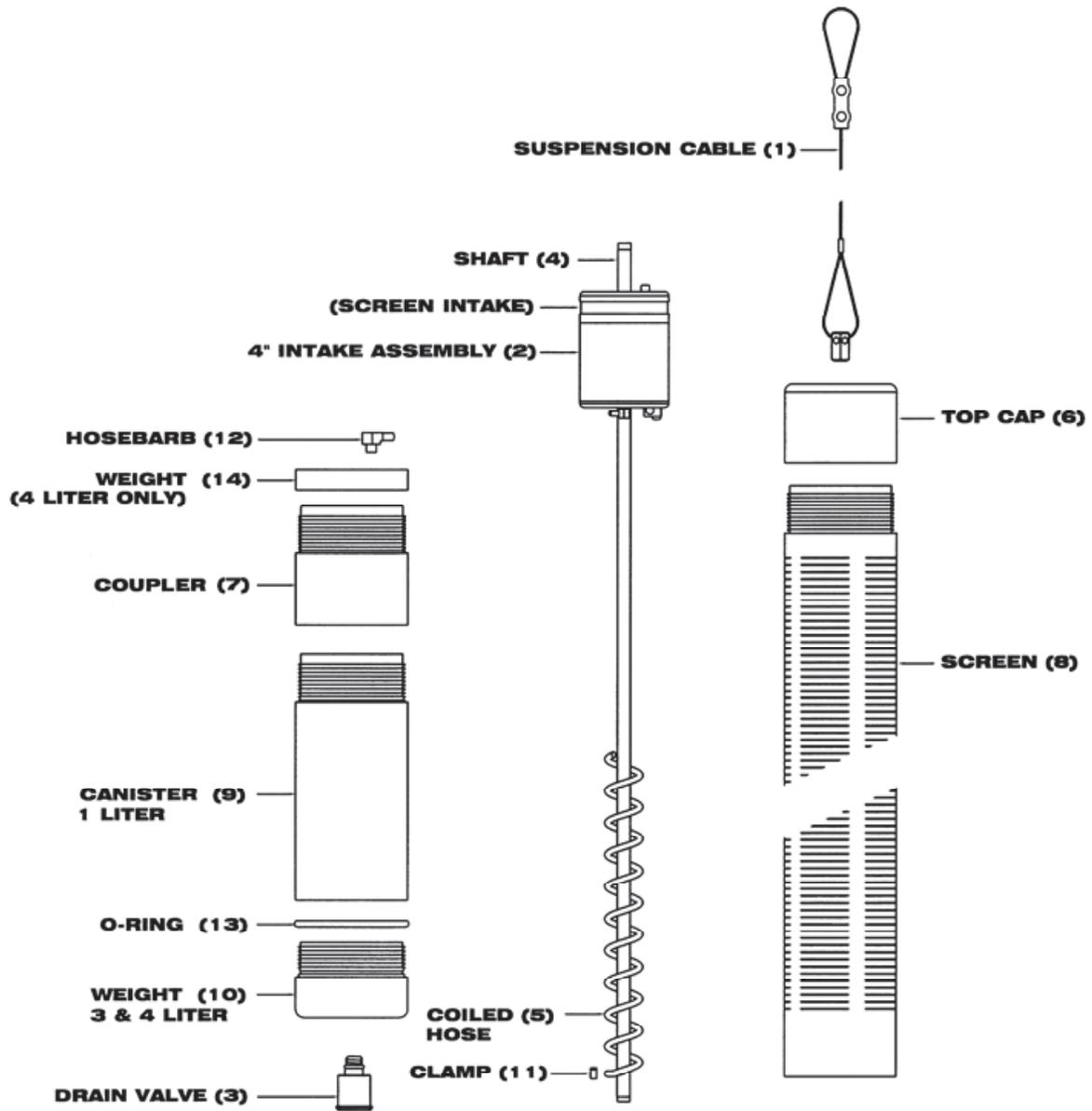


Figure 7-3 – Standard 4" PRC Skimmer Assembly (3 & 4 Liter)

Part numbers for the Standard 4" PRC Skimmer Assembly (3 & 4 Liter)

<b>Item #</b>	<b>Parts Description</b>	<b>Parts List</b>
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	ASSY,BUOY,SKIMMER,4"100 MESH	56650310
3	ASSY,DRAIN VALVE,SKIMMER,4" PR4,	56650307
4	SHAFT,SS,SKIMMER,24.5" 2065 REV A	26650305
5	HOSE,COILED,PR4	16650312
6	CAP,PVC,TOP,PRC4	16650313
7	COUPLER,PVC,PRC4	16650316
8	SCREEN,PVC,PRC4	16650317
9	CANISTER,PVC,3L,PRC4	16650318
	CANISTER,PVC,4L,PRC4	16650320
10	WEIGHT,SS4,3L&4L,PRC4	16650319
11	CLAMP,SS,STEPLESS EAR,7MM	16600005
12	HOSEBARB,BRS,.170"X1/8MPT,90D	17500148
13	O-RING,VITON,#041	16650321
14	WEIGHT,SS4,4L,PRC4	26650318

# NOTES

# NOTES

## The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

## Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR  
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

## Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.



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