Addendum #12 to
Field Sample Plan for Part 2 of the Supplemental Groundwater Remedial Investigation
Former York Naval Ordnance Plant
1425 Eden Road, Springettsbury Township
York, Pennsylvania

Prepared for Harley-Davidson Motor Company Operations, Inc.
February 21, 2014

Prepared by:

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Use of Granular Activated Carbon to Treat Purge Water

Subsection 4.2.5 of the Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation (FSP) (GSC, April 2012) describes the management of wastes for field activities at the former York Naval Ordnance Plant (fYNOP, or Site). The FSP states that water generated during groundwater sampling and all decontamination fluids will be containerized and transported to the Groundwater Treatment Plant (GWTP) for proper disposal. The area west of the Site along the Codorus Creek levee has become inaccessible to pickup trucks due to wet/muddy ground conditions. Transport of purge water from the wells during sampling is not feasible given the poor ground conditions, and for the foreseeable future, a utility terrain vehicle (UTV) is being used to transport field equipment and supplies used for sampling activities to locations at the levee area. Therefore, an alternative method of treating purge water will be used so that the purge water does not have to be containerized and transported to the GWTP from the levee area.

Purge water will be treated using 5-gallon containers filled with granular activated carbon (GAC) then the treated water will be discharged to the ground surface at the levee area. The GAC units treat the water by adsorbing organic compounds from the water. The GAC unit consists of a 5-gallon container filled with GAC, and a bag filter attached to the side of container. Purge water is pumped into and passes through the bag filter, then into the bucket with the granular activated carbon. As the bucket fills with water, organic compounds are adsorbed by the carbon, and the

treated water discharges from a port located near the top of the 5-gallon bucket. GAC specifications and assembly instructions are attached.

GAC units will be numbered, and each use will be recorded in the field log books, including the number of gallons treated. After each sampling event, a calculation of the number of gallons treated will be made. When the cumulative gallons treated reaches 55, the GAC unit will be replaced. Fifty-five gallons is based on the assumption that purge water will have 500 µg/l each of trichloroethylene (TCE), tetrachloroethylene (PCE), and cis 1,2- dichloroethylene (DCE). If the influent is significantly different, the volume treated can be modified using appropriate carbon isotherms and assumptions. The following assumptions were used for the default concentrations:

> Using isotherms for Calgon Carbsorb 30, 8x30 mesh aqueous phase carbon (a standard carbon type), 55 gallons of water could be treated in a 5 gallon pail containing approximately 23 pounds of GAC. This assumes 96% use of the bucket's capacity and a carbon density of 0.58 g/cc. The usage rate is driven by the cis-1,2-DCE concentration because it has the lowest adsorption rate of the three constituents. The adsorption rates for TCE and PCE are 30 and 100 times higher, respectively.

Prepared by:

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Attachments

To

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York, PA

GAC Specifications

GAC Bucket Assembly Instructions

GENERAL CARBON CORP.

GC 8 X 30

granular activated carbon

GC 8x30 is a virgin activated carbon derived from bituminous coal. Granular in form, it is ideal for many liquid phase applications including the removal of organics from water streams. It is particularly attractive for the removal of organics from wastewater and its size makes it appealing where low pressure drop is needed. NSF approved, it is suitable for drinking water and food grade applications.

Specifications

Mesh size - 8x30, %:	90 (min)
Less than No. 8, %:	5 (max)
Greater than No. 30, %:	5 (max)
Iodine Number, mg/g:	1000 (min)
Surface Area, sq.m/g:	1000 (min)
Hardness, %:	90 (min)
Abrasion Number:	80 (min)
Moisture, % (as packaged)	5.0 (max)
Typical Density, lbs/cu. ft.:	27-30
g/cc:	0.43-0.48

*Standard packaging is in 25 kg. vinyl bags. Other packaging is available upon request.

Caution!

Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space/low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable Local, State and Federal guidelines.

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e-mail: sales@generalcarbon.com www.generalcarbon.com

GAC Bucket Assembly Asset #11203

Parts

17568 – 1- BUCKET LID, 5-GAL, STANDARD TEAR-TAB
18872 – 1- BUCKET NEW 5 GAL POLY,HDPE WHITE
17815 – 1- PVC S/40 4” SLIP CAP
19289 – 1- PVC S/40 THREADED PLUG, 4"
17780 – 1- PVC S/40 FEMALE ADPT, 4"
18702 – 1- SPLIT RING HANGER, 4"
17998 – 2- LEGRIS, ADAPT 1/2 X 1/2, PUSH-TO-CONNECT FITTING, BRASS
18028 – 1- BUSHING, RED., GALV., 3/4" X 1/2"
18187 – 2- GARDEN HOSE ADPT, BRASS, 3/4" MH X 3/4" MP
18190 – 1- GARDEN HOSE SWIVEL ADPT, BRASS, 3/4 FGH
18105 – 2- PVC, BULKHEAD, 3/4", SCH 80 T X T
17816 – 3- PVC S/40 CAP, 3/4", SLIP CAP
17888 – 2- PVC S/40 90, 3/4", ELS, SXS (Elbows)
18097 – 1- PVC S/40 TEE, 3/4"
17783 – 2- PVC S/40 MALE ADPT, 3/4"
18622 – 1- BAG FILTER (SOCK), 100 MICRON POLYESTER, 4.25" X 14.5"

1 piece of 4” PVC pipe cut to 14”

1 piece of ¾” Screened PVC pipe cut to 5 ¼”

3 pieces of ¾” Screened PVC pipe cut to 5 ½”

1 compression ring inside of 4” tube(custom made)

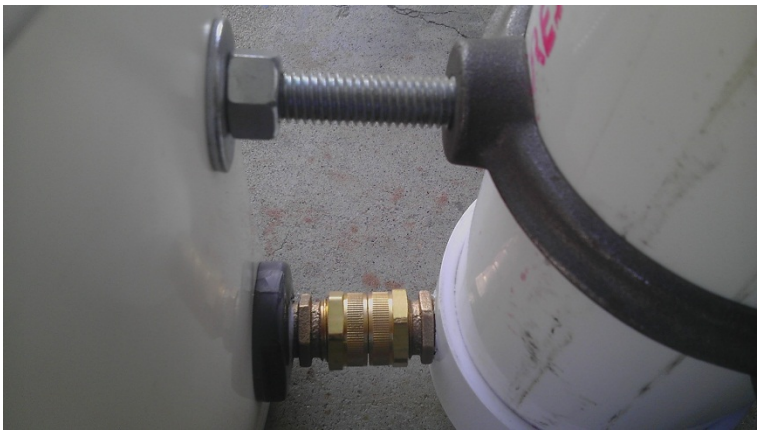
2 metal washers

1 piece of 4” all thread

1 rubber washer

Build

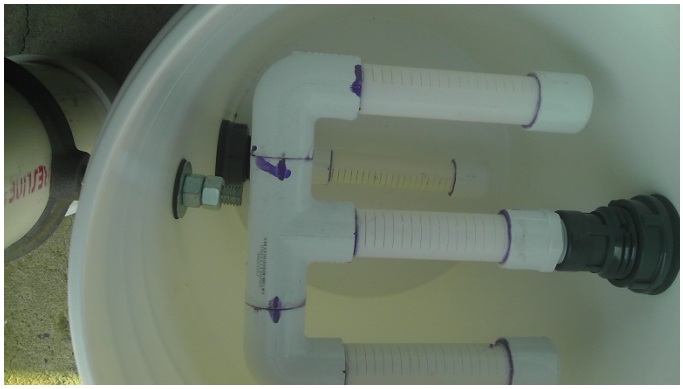
1. Assemble the “Bag filter assembly” (BFA) first. 4” slip cap, 4”x14” PVC pipe, 4” female adapter.
2. Drill 15/16 hole in base of tube.
3. Tap hole and screw in 18187 garden hose adapter. Attach garden hose swivel adapter.



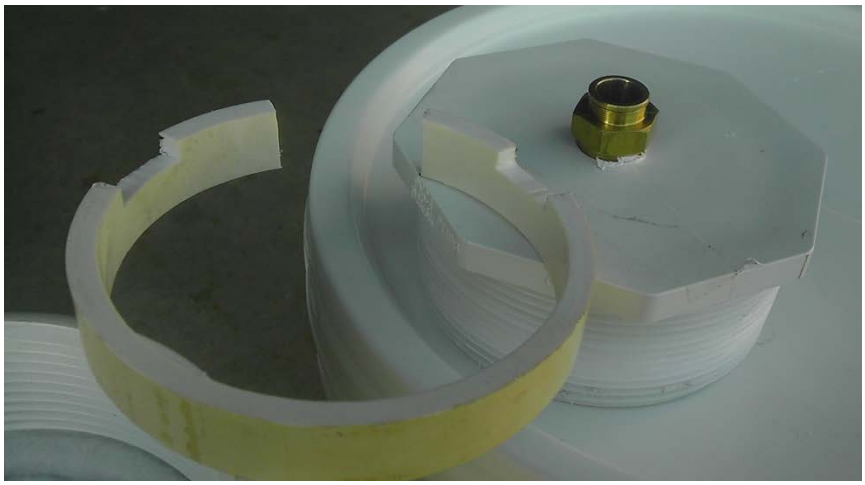
4. Align garden hose adapter to the side of the 5gal bucket while BFA and bucket are upright and on a flat surface. Mark center of hole. Use handle to find center placement of BFA on bucket.
5. Drill hole to attach bulkhead snuggly.
6. Drill a hole approximately ½” so that the all-thread is tight going through it. You can use in the order, 1 rubber washer, 1 metal washer, and 1 nut on the inside of the all-thread. On the outside place a metal washer followed by a nut.
7. On the opposite side of this hole and roughly 2” below the bottom lip of the bucket, drill a matching hole. To place the other bulkhead into. Screw in ¾” Reducer Bushing and legris.

8. Next assemble the screen pieces.
9. Bottom screen is one 5 ½” screen pipe with a slip cap on one end and threaded male adapter on the other. This attaches to the inside of the bottom bulkhead.
10. Top screen consist of 2- 5 ½” screen pipe on the outside with a 5 ¼” screened pipe in the center. Attach these with 2 elbows, a female t adapter, 2 slip caps, 1 ½” spacer pipe, and threaded male

adapter. Will for a “W” with the threaded male adapter in the middle to attach to the upper bulkhead.



11. For the split ring hole, you will need to mark the center of the bottom bulkhead and just below the “W” screened piece.
12.
13. Now for the 4” threaded cap on the BFA. Use the drill press if handy to drill an 11/16” hole in the center of the cap. Tap the hole and screw in a legris.
14. To make the compression ring, cut a 5/8” wide piece of 4” PVC. Cut a 1 ½” hole in one side. One either side of this hole, notch half of the width of the ring to be able to pinch and squeeze the ring with your fingers.



15. Place bag inside BFA, place ring on top of bag, and then screw 4” threaded male cap on top.
16. After complete assembly, fill bucket with carbon to an inch over the top screened “W”