

3225 MAIN STREET • P.O. BOX 226
BARNSTABLE, MASSACHUSETTS 02630

(508) 362-3828 • Fax (508) 362-3136 • www.capecodcommission.org



CAPE COD
COMMISSION

December 21, 2017

Angela Gallagher
Site Remediation Section
Southeast Regional Office
Department of Environmental Protection
20 Riverside Drive
Lakeville, MA 02347

Re: WSA-4-26179
Immediate Response Action
PFOS/PFOA in Groundwater

Dear Ms. Gallagher:

This is the 12th IRA monthly remedial monitoring and status report for the IRA approved by the Department in a letter dated November 10, 2016. This report includes a status report on the pump and treat system for the month of November 2017.

Pump and Treat System

The pump and treat system operated continuously throughout the month except for normal backwash and operations. The influent PFOS and PFOA concentrations for this month decreased from the high last of last October to 2000 ng/l (PFOS) and 64 ng/l (PFOA) respectively. The PFOS influent concentration is the lowest sustained concentration observed since PFAS recovery began. This is due to a combination of lower concentrations in groundwater and potentially a lower pump rate which has dropped to approximately 30 gpm. The mid-vessel concentration was 520 ng/l (PFOS) and below the MRL or Non-Detect for both PFOS and PFOA in the lag vessel. The

BFTA

1

Immediate Response Action
December 21 2017

system operator has included additional maintenance task of cleaning out the iron fouled material that accumulates on top of the carbon. This relieves the system of back pressure and appears to allow better removal in the lead vessel. The decrease of mid vessel PFOS concentration combined with the low temperature (which delays iron bacteria growth) and vessel clean-outs has delayed the expected breakthrough in the lag vessel. The monthly pump volume was 1.65 Million Gallons with an estimated removal of 0.013 kilograms of PFOS, which is the lowest monthly amount removed since recovery began and half of the amount of last month. Recommendations have been made to the County to clean the force mains to increase the pumping rate and for optimization assessment of the treatment system.

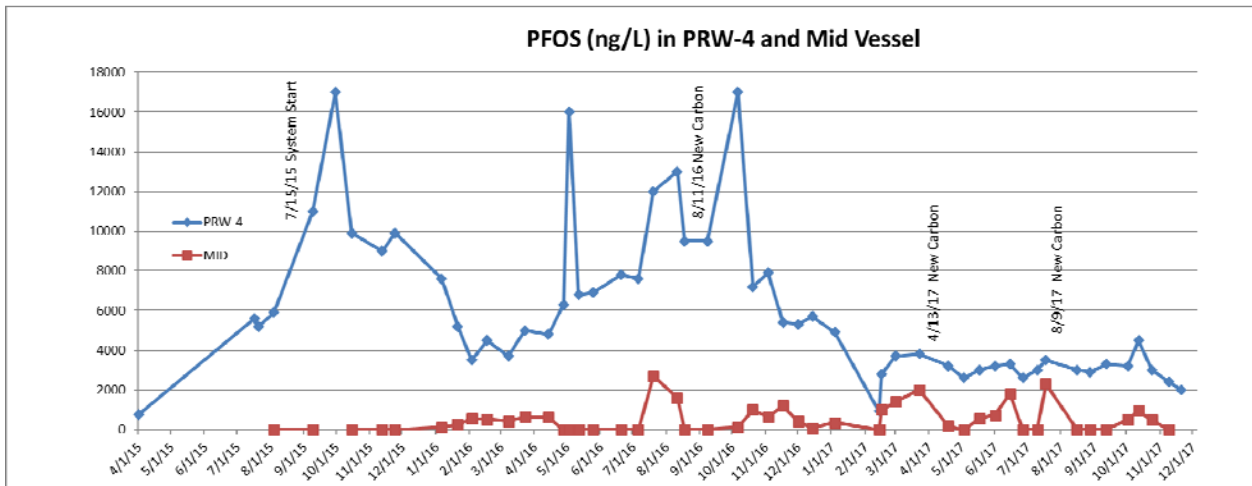


Figure 1 PFOS in Recovery Wells and the Lead Treatment Vessel

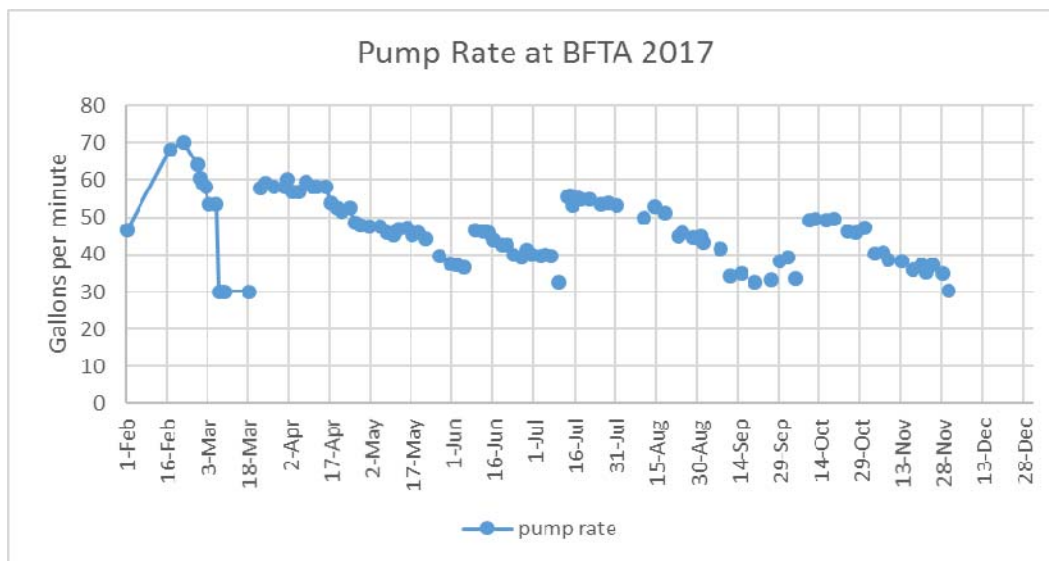


Figure 2 Pump Rate of Recovery Well BFTA

Soil Removal Hot Spot Monitoring and other Hot Spots

This month staff collected samples from the array of 3 monitoring wells at the Hot Spot removal area and Flintrock Pond. The PFOS concentrations in the Hot Spot wells are maintaining an order of magnitude lower concentrations than prior to the soil removal. And the rebound effect at HS-2a. The PFOS concentrations however range from 25,000 to 45,000 ng/l which is indicative of residual PFAS contamination in the lower sediments that are still in place below the soil removal. Recommendations have been made to the County to evaluate several pilot ideas for in-situ treatment and/or budget further soil removal. A Hot Spot plume sample collection round to evaluate downgradient PFAS concentrations will be scheduled later this winter.

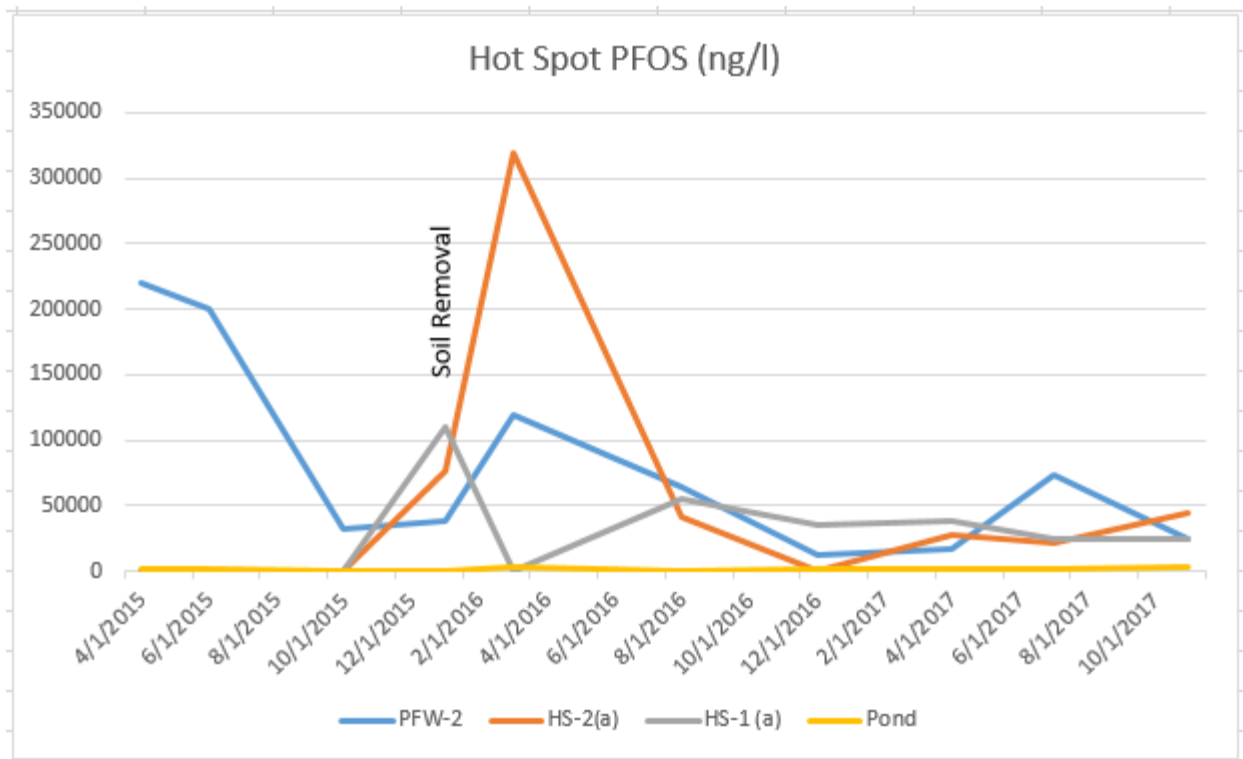
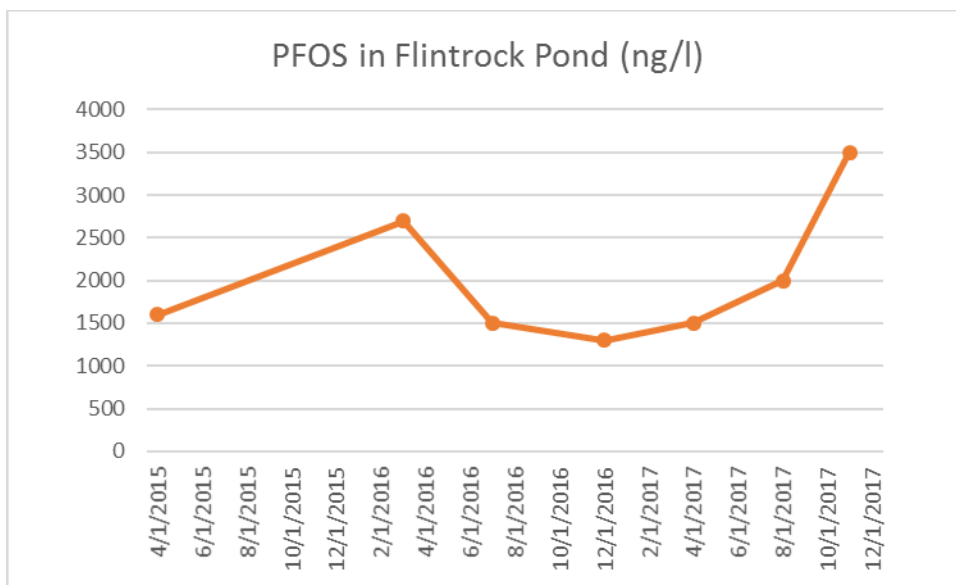


Figure 3 PFOS in Hot Spot Monitoring Wells

The sampling on Flintrock Pond indicates that the pond is maintaining rather high PFOS concentrations; increasing to 3,500 ng/l or 3.5 ppb. Recommendations have been made to the County for a more detailed assessment of the pond and its sediments as a basis of evaluating potential comprehensive remedial response actions.



Staff also collected samples from on-site monitoring wells with high detections of PFAS (PFW-3 and PFW-4) that are located along the Flintrock Shoreline just north of the drive to the abandoned shed. Straw used for training purposes was stockpiled at this location for an extended period and likely leached PFAS to the ground. The “Straw Pile” concentrations in groundwater are above the broader area of site and downgradient PFOS concentrations of 1,000 and require further evaluation.

| | PFOS (ng/l) | |
|------------|-------------|-------|
| | PFW-3 | PFW-4 |
| 4/1/2015 | 2700 | 3300 |
| 10/15/2015 | 3800 | |
| 4/11/2017 | | 4700 |
| 4/18/2017 | 3400 | |
| 11/17/2017 | 4500 | 2300 |

Table 1 PFOS Concentrations at the "Straw Pile"

Recommendations have been made to the County for additional assessment, piloting and optimization and budgeting for contingencies for the coming year and next fiscal year.

Please contact me if you have any questions on this submittal.

Sincerely,

Tom Cambareri
 Technical Services Director for Water Resources
 LSP #3788

Cc: Gerard Martin, DEP-SERO
 Jack Yunits, County Administrator