

4. Article Two, B.5- Water Quality Monitoring (“WQM”) Plan – Report on whether any of the semi-annual (or annual) WQM required under Article Two, B.5, was conducted during the quarter, and if so, in which sewer basins, and report the results of that monitoring (both BST and fecal coliform) for each such sewer basin.

The 2015 second semi-annual round of water quality monitoring was conducted on September 15, 2015. Twenty of the twenty-six sewer basins were sampled. Human source fecal bacteria were identified by library-based Polymerase Chain Reaction (PCR) testing in one or more samples from eighteen sewer basins. Using an independent verification test, discussed below, human sources were confirmed in twelve of these basins.

As part of continuing re-evaluation of the Water Quality Monitoring Plan and of the methodologies used, the Virginia Tech laboratory that provides the bacterial source tracking (BST) testing services now conducts a verification test for human bacterial sources using a library-independent analytical method (Human Bacteroides HF183) on all samples. These results of that verification are presented below.

The 2016 annual round of water quality sampling is planned for March, and results will be reported in the Second Quarter of 2016.

Basins Subject to Semi-Annual Monitoring and Reporting Requirements:

a. Broad Creek-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BRC001 – downstream (Henson Creek)	Human Bacteroides HF183: Too few bacteria for HF183 BOX-PCR Source Determination: Too few bacteria for BOX-PCR	<10
BRC002 – upstream (Henson Creek)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 14% Avian – 30% Canine – 10%	230

	Deer – 7% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 19%	
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b. Cabin John-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

CBJ001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 17% Avian – 29% Canine – 8% Deer – 11% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 11%	240
CBJ002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 7% Avian – 31% Canine – 6% Deer – 7% Horse – 0% Misc. Wildlife – 33% Non-human Unknown – 16%	183

c. Horsepen-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

HSP001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 18% Avian – 24% Canine – 6% Deer – 6% Horse – 8% Misc. Wildlife – 16% Non-human Unknown – 22%	408
HSP002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 4% Avian – 28% Canine – 9% Deer – 7% Horse – 13% Misc. Wildlife – 24% Non-human Unknown – 15%	125

d. Indian Creek-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

INC001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 28% Canine – 8% Deer – 9% Horse – 11% Misc. Wildlife – 21% Non-human Unknown – 23%	63
INC002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 29% Canine – 7% Deer – 8% Horse – 15% Misc. Wildlife – 19% Non-human Unknown – 22%	218

e. Little Falls-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

LFS001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 18% Avian – 34% Canine – 11% Deer – 13% Horse – 0% Misc. Wildlife – 6% Non-human Unknown – 18%	810
LFS002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 14% Avian – 30% Canine – 13% Deer – 12% Horse – 0% Misc. Wildlife – 14% Non-human Unknown – 17%	558

f. Lower Anacostia-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

ANA001 – downstream	Human Bacteroides HF183: Positive (Positive) BOX-PCR Source Determination: Human – 6 (7)% Avian – 36 (35)% Canine – 12 (11)% Deer – 4 (4)% Horse – 0 (0)% Misc. Wildlife – 22 (23)% Non-human Unknown – 20 (20)%	105 (85)
ANA002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 5% Avian – 39% Canine – 13% Deer – 2% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 17%	138

Note: Values in parentheses for station ANA001 are for field duplicate sample.

g. Lower Beaverdam Creek-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

LBD001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 9% Avian – 24% Canine – 9% Deer – 11% Horse – 0% Misc. Wildlife – 29% Non-human Unknown – 18%	140
LBD002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 16% Avian – 23% Canine – 3% Deer – 13% Horse – 0% Misc. Wildlife – 22% Non-human Unknown – 23%	285

h. Muddy Branch-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

MDB001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 3% Avian – 37% Canine – 14% Deer – 15% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 10%	278
MDB002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 6% Avian – 35% Canine – 11% Deer – 10% Horse – 0% Misc. Wildlife – 23% Non-human Unknown – 15%	215

i. Northeast Branch-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

NEB001 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 2% Avian – 31% Canine – 10% Deer – 1% Horse – 0% Misc. Wildlife – 43% Non-human Unknown – 13%	195
NEB002 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 2% Avian – 31% Canine – 11% Deer – 2% Horse – 0% Misc. Wildlife – 41% Non-human Unknown – 13%	23

j. Northwest Branch-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BST Results:		
NWA001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 35% Canine – 6% Deer – 9% Horse – 0% Misc. Wildlife – 23% Non-human Unknown – 27%	38
NWA002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 15% Avian – 29% Canine – 8% Deer – 12% Horse – 0% Misc. Wildlife – 18% Non-human Unknown – 18%	1,013

k. Oxon Run-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BST Results:		
OXN001 – downstream (Oxon Run)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 11% Avian – 31% Canine – 10% Deer – 7% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 21%	475
OXN002 – upstream (Watts Branch, tributary to Anacostia River)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 21% Avian – 23% Canine – 7% Deer – 6% Horse – 0% Misc. Wildlife – 19% Non-human Unknown – 24%	825

l. Paint Branch-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
PNT001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 33% Canine – 15% Deer – 5% Horse – 0% Misc. Wildlife – 25% Non-human Unknown – 22%	188
PNT002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 27% Canine – 8% Deer – 10% Horse – 0% Misc. Wildlife – 32% Non-human Unknown – 23%	248

m. Parkway-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
PKY001 – downstream (Bear Branch)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 7% Avian – 25% Canine – 12% Deer – 2% Horse – 0% Misc. Wildlife – 27% Non-human Unknown – 27%	650
PKY002 – upstream (Walker Branch)	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 2 (4)% Avian – 32 (34)% Canine – 8 (10)% Deer – 6 (7)% Horse – 0 (0)% Misc. Wildlife – 34 (31)% Non-human Unknown – 18 (14)%	523 (470)

Note: Values in parentheses for station PKY002 are for field duplicate sample.

n. Piscataway-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

PSW001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 2% Avian – 32% Canine – 7% Deer – 15% Horse – 0% Misc. Wildlife – 34% Non-human Unknown – 10%	218
PSW002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 1% Avian – 33% Canine – 9% Deer – 8% Horse – 0% Misc. Wildlife – 37% Non-human Unknown – 12%	483

o. Rock Creek-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

RKC001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 9% Avian – 34% Canine – 11% Deer – 5% Horse – 0% Misc. Wildlife – 26% Non-human Unknown – 15%	255
RKC002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 8% Avian – 41% Canine – 7% Deer – 15% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 8%	1,003

p. Seneca Creek-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
SNC001 – downstream (Seneca Creek)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 10% Avian – 32% Canine – 5% Deer – 16% Horse – 2% Misc. Wildlife – 22% Non-human Unknown – 13%	170
SNC002 – upstream (Dry Seneca Creek)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 9% Avian – 28% Canine – 4% Deer – 18% Horse – 0% Misc. Wildlife – 29% Non-human Unknown – 12%	648

q. Sligo Creek-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
SLC001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 3% Avian – 35% Canine – 14% Deer – 3% Horse – 0% Misc. Wildlife – 32% Non-human Unknown – 13%	283
SLC002 – upstream	Human Bacteroides HF183: Positive (Positive) BOX-PCR Source Determination: Human – 8 (6)% Avian – 35 (33)% Canine – 12 (12)% Deer – 6 (9)% Horse – 0 (0)% Misc. Wildlife – 29 (27)% Non-human Unknown – 10 (13)%	510 (440)

Note: Values in parentheses for station SLC002 are for field duplicate sample.

r. Upper Beaverdam Creek-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BST Results:		
UBD001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 8% Avian – 29% Canine – 8% Deer – 14% Horse – 1% Misc. Wildlife – 27% Non-human Unknown – 13%	268
UBD002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 2% Avian – 28% Canine – 3% Deer – 17% Horse – 0% Misc. Wildlife – 35% Non-human Unknown – 15%	315

s. Watts Branch-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BST Results:		
WTB001 – downstream (Watts Branch)	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 3 (4)% Avian – 28 (29)% Canine – 5 (6)% Deer – 9 (10)% Horse – 0 (0)% Misc. Wildlife – 30 (33)% Non-human Unknown – 25 (18)%	193 (200)
WTB002 – upstream (Sandy Branch)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 4% Avian – 33% Canine – 7% Deer – 9% Horse – 0% Misc. Wildlife – 28% Non-human Unknown – 19%	240

Note: Values in parentheses for station WTB001 are for field duplicate sample.

t. Western Branch-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
WNB001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 6% Avian – 22% Canine – 12% Deer – 12% Horse – 0% Misc. Wildlife – 33% Non-human Unknown – 15%	338
WNB002 – upstream	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 4 (5)% Avian – 32 (32)% Canine – 9 (8)% Deer – 13 (12)% Horse – 0 (0)% Misc. Wildlife – 31 (28)% Non-human Unknown – 11 (15)%	240 (230)

Note: Values in parentheses for station WNB002 are for field duplicate sample.

Basins Subject to Annual Monitoring and Reporting Requirements-

	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
a. Dulles Interceptor-		
b. Mattawoman-		
c. Monocacy-		
d. Patuxent Center-		
e. Patuxent North-		
f. Rock Run-		