

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 second semi-annual round of water quality monitoring was conducted on September 18, 2013. 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 fifteen sewer basins. Using an independent verification test, discussed below, human sources were confirmed in thirteen 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 are presented below.

The 2014 annual round of water quality sampling is planned for March, and results will be reported in the Second Quarter of 2014.

Basins Subject to Semi-Annual Monitoring and Reporting Requirements:

a. Broad Creek- Fecal Bacteria Results:
BST Results: (Enterococcus CFU/100ml)

BRC001 – downstream (Henson Creek)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 36% Canine – 17% Deer – 14% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 13%	54
BRC002 – upstream (Henson Creek)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 35%	162

	Canine – 13% Deer – 13% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 15%	
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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 – 39% Canine – 10% Deer – 6% Horse – 0% Misc. Wildlife – 17% Non-human Unknown – 11%	352
CBJ002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 12% Avian – 34% Canine – 7% Deer – 14% Horse – 0% Misc. Wildlife – 19% Non-human Unknown – 14%	160

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

HSP001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 24% Avian – 21% Canine – 9% Deer – 5% Horse – 18% Misc. Wildlife – 13% Non-human Unknown – 10%	650
HSP002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 9% Avian – 25% Canine – 11% Deer – 9% Horse – 13%	225

	Misc. Wildlife – 19% Non-human Unknown – 14%	
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d. Indian Creek-**Fecal Bacteria Results:****BST Results:***(Enterococcus CFU/100ml)*

INC001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 36% Canine – 6% Deer – 9% Horse – 21% Misc. Wildlife – 15% Non-human Unknown – 13%	50
INC002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 32% Canine – 11% Deer – 10% Horse – 17% Misc. Wildlife – 16% Non-human Unknown – 14%	192

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

LFS001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 26% Avian – 26% Canine – 9% Deer – 11% Horse – 0% Misc. Wildlife – 15% Non-human Unknown – 13%	540
LFS002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 16% Avian – 28% Canine – 11% Deer – 13% Horse – 0% Misc. Wildlife – 17% Non-human Unknown – 15%	96

f. Lower Anacostia-	BST Results:	Fecal Bacteria Results:
		<i>(Enterococcus CFU/100ml)</i>
ANA001 – downstream	Human Bacteroides HF183: Positive (Positive) BOX-PCR Source Determination: Human – 14 (14)% Avian – 36 (35)% Canine – 11 (12)% Deer – 12 (13)% Horse – 0 (0)% Misc. Wildlife – 17 (16)% Non-human Unknown – 10 (10)%	142 (154)
ANA002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 5% Avian – 39% Canine – 9% Deer – 8% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 15%	130

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

g. Lower Beaverdam Creek-	BST Results:	Fecal Bacteria Results:
		<i>(Enterococcus CFU/100ml)</i>
LBD001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 14% Avian – 30% Canine – 16% Deer – 9% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 10%	190
LBD002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 18% Avian – 29% Canine – 17% Deer – 10% Horse – 0% Misc. Wildlife – 14% Non-human Unknown – 12%	215

h. Muddy Branch-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
MDB001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 33% Canine – 18% Deer – 11% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 18%	142
MDB002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 7% Avian – 31% Canine – 13% Deer – 9% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 16%	315

i. Northeast Branch-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
NEB001 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 39% Canine – 12% Deer – 13% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 16%	20
NEB002 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 36% Canine – 11% Deer – 8% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 24%	12

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 – 34% Canine – 8% Deer – 12% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 22%	45
NWA002 – upstream	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 7 (8)% Avian – 35 (33)% Canine – 12 (13)% Deer – 8 (8)% Horse – 0 (0)% Misc. Wildlife – 18 (19)% Non-human Unknown – 20 (19)%	295 (263)

Note: Values in parentheses for station NWA002 are for field duplicate sample.

k. Oxon Run-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
BST Results:		
OXN001 – downstream (Oxon Run)	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 7 (7)% Avian – 31 (32)% Canine – 14 (15)% Deer – 9 (10)% Horse – 0 (0)% Misc. Wildlife – 23 (21)% Non-human Unknown – 16 (15)%	235 (231)
OXN002 – upstream (Watts Branch, tributary to Anacostia River)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 28% Avian – 27% Canine – 5% Deer – 6% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 13%	817

Note: Values in parentheses for station OXN001 are for field duplicate sample.

I. 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 – 12% Deer – 10% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 21%	43
PNT002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 28% Canine – 17% Deer – 7% Horse – 0% Misc. Wildlife – 23% Non-human Unknown – 25%	110

m. Parkway-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
PKY001 – downstream (Bear Branch)	Human Bacteroides HF183: Positive (Positive) BOX-PCR Source Determination: Human – 16 (16)% Avian – 26 (25)% Canine – 10 (11)% Deer – 9 (9)% Horse – 0 (0)% Misc. Wildlife – 25 (24)% Non-human Unknown – 14 (15)%	507 (522)
PKY002 – upstream (Walker Branch)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 11% Avian – 33% Canine – 12% Deer – 11% Horse – 0% Misc. Wildlife – 18% Non-human Unknown – 15%	260

Note: Values in parentheses for station PKY001 are for field duplicate sample.

n. Piscataway-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
	BST Results:	
PSW001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 30% Canine – 14% Deer – 12% Horse – 0% Misc. Wildlife – 23% Non-human Unknown – 21%	48
PSW002 – upstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 0% Avian – 32% Canine – 16% Deer – 10% Horse – 0% Misc. Wildlife – 24% Non-human Unknown – 18%	37

o. Rock Creek-		Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
	BST Results:	
RKC001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 16% Avian – 29% Canine – 14% Deer – 8% Horse – 0% Misc. Wildlife – 21% Non-human Unknown – 12%	267
RKC002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 9% Avian – 27% Canine – 17% Deer – 12% Horse – 0% Misc. Wildlife – 19% Non-human Unknown – 16%	98

p. Seneca Creek-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
SNC001 – downstream (Seneca Creek)	Human Bacteroides HF183: Negative (Negative) BOX-PCR Source Determination: Human – 4 (5)% Avian – 28 (27)% Canine – 10 (9)% Deer – 9 (11)% Horse – 0 (0)% Misc. Wildlife – 24 (23)% Non-human Unknown – 25 (25)%	140 (168)
SNC002 – upstream (Dry Seneca Creek)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 23% Avian – 25% Canine – 9% Deer – 10% Horse – 0% Misc. Wildlife – 15% Non-human Unknown – 18%	960

Note: Values in parentheses for station SNC001 are for field duplicate sample.

q. Sligo Creek-	BST Results:	Fecal Bacteria Results: (<i>Enterococcus</i> CFU/100ml)
SLC001 – downstream	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 6% Avian – 27% Canine – 11% Deer – 5% Horse – 0% Misc. Wildlife – 27% Non-human Unknown – 24%	85
SLC002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 14% Avian – 23% Canine – 10% Deer – 8% Horse – 0% Misc. Wildlife – 22% Non-human Unknown – 23%	952

r. Upper Beaverdam Creek-		Fecal Bacteria Results:
BST Results:		<i>(Enterococcus CFU/100ml)</i>
UBD001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 18% Avian – 27% Canine – 12% Deer – 7% Horse – 0% Misc. Wildlife – 20% Non-human Unknown – 16%	702
UBD002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 34% Avian – 24% Canine – 7% Deer – 4% Horse – 0% Misc. Wildlife – 18% Non-human Unknown – 13%	1,812

s. Watts Branch-		Fecal Bacteria Results:
BST Results:		<i>(Enterococcus CFU/100ml)</i>
WTB001 – downstream (Watts Branch)	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 9% Avian – 31% Canine – 11% Deer – 7% Horse – 0% Misc. Wildlife – 19% Non-human Unknown – 23%	190
WTB002 – upstream (Sandy Branch)	Human Bacteroides HF183: Negative BOX-PCR Source Determination: Human – 6% Avian – 29% Canine – 13% Deer – 10% Horse – 0% Misc. Wildlife – 25% Non-human Unknown – 17%	157

t. Western Branch-	BST Results:	Fecal Bacteria Results: <i>(Enterococcus CFU/100ml)</i>
WNB001 – downstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 32% Avian – 21% Canine – 9% Deer – 10% Horse – 0% Misc. Wildlife – 11% Non-human Unknown – 17%	640
WNB002 – upstream	Human Bacteroides HF183: Positive BOX-PCR Source Determination: Human – 13% Avian – 27% Canine – 12% Deer – 11% Horse – 0% Misc. Wildlife – 18% Non-human Unknown – 19%	165

Basins Subject to Annual Monitoring and Reporting Requirements-

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