



Off-Base Drinking Water Sample Results, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 320-35320-1

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","17","ng/L","J M","7.1","DL","","TRG","","","42","LOQ","YES","-99","","240","1.00","17","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","13","ng/L","J","2.9","DL","","TRG","","","21","LOQ","YES","-99","","240","1.00","8.3","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.9","ng/L","J","5.7","DL","","TRG","","","31","LOQ","YES","-99","","240","1.00","13","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","38","ng/L","U","17","DL","","TRG","","","94","LOQ","YES","-99","","240","1.00","38","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.6","ng/L","J","2.0","DL","","TRG","","","10","LOQ","YES","-99","","240","1.00","4.2","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","21","ng/L","U","8.3","DL","","TRG","","","25","LOQ","YES","-99","","240","1.00","21","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","STL00993","13C2 PFHxA","43","ng/L","","-99","DL","","SURRE","103","","-99","LOQ","YES","41.7","","240","1.00","0","","
"NAWC-012318-RW-279","537","RES","320-35320-1","TALSAC","STL00996","13C2 PFDA","44","ng/L","","-99","DL","","SURRE","105","","-99","LOQ","YES","41.7","","240","1.00","0","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","19","ng/L","J M","7.0","DL","","TRG","","","41","LOQ","YES","-99","","244.4","1.00","16","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","21","ng/L","","2.9","DL","","TRG","","","20","LOQ","YES","-99","","244.4","1.00","8.2","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","J","5.6","DL","","TRG","","","31","LOQ","YES","-99","","244.4","1.00","12","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","37","ng/L","U","16","DL","","TRG","","","92","LOQ","YES","-99","","244.4","1.00","37","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.3","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","244.4","1.00","4.1","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES","-99","","244.4","1.00","20","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","STL00993","13C2 PFHxA","41","ng/L","","-99","DL","","SURRE","100","","-99","LOQ","YES","40.9","","244.4","1.00","0","","
"NAWC-012318-RW-082","537","RES","320-35320-10","TALSAC","STL00996","13C2 PFDA","38","ng/L","","-99","DL","","SURRE","92","","-99","LOQ","YES","40.9","","244.4","1.00","0","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.8","1.00","16","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.8","1.00","7.9","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.8","1.00","12","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","251.8","1.00","36","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","251.8","1.00","4.0","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","251.8","1.00","20","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","STL00993","13C2 PFHxA","41","ng/L","","-99","DL","","SURRE","104","","-99","LOQ","YES","39.7","","251.8","1.00","0","","
"NAWC-012318-FRB-082","537","RES","320-35320-11","TALSAC","STL00996","13C2 PFDA","40","ng/L","","-99","DL","","SURRE","102","","-99","LOQ","YES","39.7","","251.8","1.00","0","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","7.0","DL","","TRG","","","41","LOQ","YES","-99","","243.3","1.00","16","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.2","ng/L","U J1","2.9","DL","","TRG","","","21","LOQ","YES","-99","","243.3","1.00","8.2","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","12","ng/L","U","5.7","DL","","TRG","","","31","LOQ","YES",-99","","243.3","1.00","12","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","92","LOQ","YES",-99","","243.3","1.00","37","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U J1","2.0","DL","","TRG","","","10","LOQ","YES",-99","","243.3","1.00","4.1","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES",-99","","243.3","1.00","21","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURRE","101","","-99","LOQ","YES","41.1","","243.3","1.00","0","","
"NAWC-012318-RW-117","537","RES","320-35320-12","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","41.1","","243.3","1.00","0","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","168","ng/L","M","7.0","DL","","SPK","123","","41","LOQ","YES","137","NAWC-012318-RW-
117","244.2","1.00","16","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","101","ng/L","J1","2.9","DL","","SPK","148","","20","LOQ","YES","68.3","NAWC-012318-RW-
117","244.2","1.00","8.2","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","124","ng/L","","5.6","DL","","SPK","121","","31","LOQ","YES","102","NAWC-012318-RW-
117","244.2","1.00","12","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","314","ng/L","","16","DL","","SPK","102","","92","LOQ","YES","307","NAWC-012318-RW-
117","244.2","1.00","37","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","46.3","ng/L","J1","1.9","DL","","SPK","136","","10","LOQ","YES","34.1","NAWC-012318-RW-
117","244.2","1.00","4.1","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","75.6","ng/L","","8.2","DL","","SPK","111","","25","LOQ","YES","68.3","NAWC-012318-RW-
117","244.2","1.00","20","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","STL00993","13C2
PFHxA","41.9","ng/L","","-99","DL","","SURRE","102","","-99","LOQ","YES","41.0","NAWC-012318-RW-
117","244.2","1.00","0","","
"NAWC-012318-RW-117MS","537","RES","320-35320-12MS","TALSAC","STL00996","13C2
PFDA","40.5","ng/L","","-99","DL","","SURRE","99","","-99","LOQ","YES","41.0","NAWC-012318-RW-
117","244.2","1.00","0","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","166","ng/L","M","7.1","DL","","SPK","119","1","42","LOQ","YES","140","NAWC-012318-RW-
117","239","1.00","17","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","103","ng/L","J1","2.9","DL","","SPK","148","2","21","LOQ","YES","69.8","NAWC-012318-RW-
117","239","1.00","8.4","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","122","ng/L","","5.8","DL","","SPK","117","2","31","LOQ","YES","105","NAWC-012318-RW-
117","239","1.00","13","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","375-73-5","Perfluorobutanesulfonic
acid (PFBS)","325","ng/L","","17","DL","","SPK","103","3","94","LOQ","YES","314","NAWC-012318-RW-
117","239","1.00","38","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","45.5","ng/L","J1","2.0","DL","","SPK","131","2","10","LOQ","YES","34.9","NAWC-012318-RW-
117","239","1.00","4.2","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","76.3","ng/L","","8.4","DL","","SPK","109","1","25","LOQ","YES","69.8","NAWC-012318-RW-
117","239","1.00","21","","
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","STL00993","13C2

PFHxA","41.9","ng/L","","-99","DL","","SURRE","100","","-99","LOQ","YES","41.8","NAWC-012318-RW-117","239","1.00","0",""
"NAWC-012318-RW-117MSD","537","RES","320-35320-12MSD","TALSAC","STL00996","13C2
PFDA","43.8","ng/L","","-99","DL","","SURRE","105","","-99","LOQ","YES","41.8","NAWC-012318-RW-117","239","1.00","0",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","31","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.7","1.00","16",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","25","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.7","1.00","8.1",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","17","ng/L","J","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.7","1.00","12",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.7","1.00","36",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.3","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.7","1.00","4.1",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.7","1.00","20",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","STL00993","13C2
PFHxA","43","ng/L","","-99","DL","","SURRE","107","","-99","LOQ","YES","40.5","","246.7","1.00","0",""
"NAWC-012318-FRB-117","537","RES","320-35320-13","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURRE","105","","-99","LOQ","YES","40.5","","246.7","1.00","0",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","17","ng/L","J M","7.1","DL","","TRG","","","42","LOQ","YES","-99","","239.5","1.00","17",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","14","ng/L","J","2.9","DL","","TRG","","","21","LOQ","YES","-99","","239.5","1.00","8.4",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","6.8","ng/L","J","5.7","DL","","TRG","","","31","LOQ","YES","-99","","239.5","1.00","13",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","38","ng/L","U","17","DL","","TRG","","","94","LOQ","YES","-99","","239.5","1.00","38",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","5.0","ng/L","J","2.0","DL","","TRG","","","10","LOQ","YES","-99","","239.5","1.00","4.2",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","21","ng/L","U","8.4","DL","","TRG","","","25","LOQ","YES","-99","","239.5","1.00","21",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","STL00993","13C2
PFHxA","45","ng/L","","-99","DL","","SURRE","107","","-99","LOQ","YES","41.8","","239.5","1.00","0",""
"NAWC-012318-RW-170","537","RES","320-35320-14","TALSAC","STL00996","13C2
PFDA","48","ng/L","","-99","DL","","SURRE","114","","-99","LOQ","YES","41.8","","239.5","1.00","0",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.3","1.00","16",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.3","1.00","8.0",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.3","1.00","12",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.3","1.00","36",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","251.3","1.00","4.0",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.3","1.00","20",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURRE","105","","-99","LOQ","YES","39.8","","251.3","1.00","0",""
"NAWC-012318-FRB-170","537","RES","320-35320-15","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURRE","104","","-99","LOQ","YES","39.8","","251.3","1.00","0",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES",-99","","251.1","1.00","16",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","251.1","1.00","8.0",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES",-99","","251.1","1.00","12",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","251.1","1.00","36",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","251.1","1.00","4.0",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES",-99","","251.1","1.00","20",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-012318-FRB-279","537","RES","320-35320-2","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"17","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES",-99","","246.4","1.00","16",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"16","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES",-99","","246.4","1.00","8.1",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES",-99","","246.4","1.00","12",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","246.4","1.00","37",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.8","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES",-99","","246.4","1.00","4.1",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES",-99","","246.4","1.00","20",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.6","","246.4","1.00","0",""
"NAWC-012318-RW-166","537","RES","320-35320-3","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.6","","246.4","1.00","0",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES",-99","","257.6","1.00","16",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES",-99","","257.6","1.00","7.8",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","257.6","1.00","12",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","257.6","1.00","35",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES",-99","","257.6","1.00","3.9",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES",-99","","257.6","1.00","19",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","STL00993","13C2
PFHxA","40","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","38.8","","257.6","1.00","0",""
"NAWC-012318-FRB-166","537","RES","320-35320-4","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","106","","-99","LOQ","YES","38.8","","257.6","1.00","0",""
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"17","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES",-99","","246.5","1.00","16",""
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"16","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES",-99","","246.5","1.00","8.1",""
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES",-99","","246.5","1.00","12",""
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","37","ng/L","U","16","DL","","","TRG","","","91","LOQ","YES","-99","","","246.5","1.00","37","","
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.8","ng/L","J","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","246.5","1.00","4.1","","
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","","TRG","","","24","LOQ","YES","-99","","","246.5","1.00","20","","
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","","-99","DL","","","SURR","95","","","-99","LOQ","YES","40.6","","","246.5","1.00","0","","
"WGNA-012318-DUP-22","537","RES","320-35320-5","TALSAC","STL00996","13C2
PFDA","40","ng/L","","","-99","DL","","","SURR","98","","","-99","LOQ","YES","40.6","","","246.5","1.00","0","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","J M","7.0","DL","","","TRG","","","41","LOQ","YES","-99","","","241.5","1.00","17","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","15","ng/L","J","2.9","DL","","","TRG","","","21","LOQ","YES","-99","","","241.5","1.00","8.3","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","6.0","ng/L","J","5.7","DL","","","TRG","","","31","LOQ","YES","-99","","","241.5","1.00","12","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","","TRG","","","93","LOQ","YES","-99","","","241.5","1.00","37","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.6","ng/L","J","2.0","DL","","","TRG","","","10","LOQ","YES","-99","","","241.5","1.00","4.1","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.3","DL","","","TRG","","","25","LOQ","YES","-99","","","241.5","1.00","21","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","","-99","DL","","","SURR","101","","","-99","LOQ","YES","41.4","","","241.5","1.00","0","","
"NAWC-012318-RW-159","537","RES","320-35320-6","TALSAC","STL00996","13C2
PFDA","43","ng/L","","","-99","DL","","","SURR","104","","","-99","LOQ","YES","41.4","","","241.5","1.00","0","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","","TRG","","","41","LOQ","YES","-99","","","245.5","1.00","16","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.9","DL","","","TRG","","","20","LOQ","YES","-99","","","245.5","1.00","8.1","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","","TRG","","","31","LOQ","YES","-99","","","245.5","1.00","12","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","","TRG","","","92","LOQ","YES","-99","","","245.5","1.00","37","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","245.5","1.00","4.1","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","","TRG","","","24","LOQ","YES","-99","","","245.5","1.00","20","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","STL00993","13C2
PFHxA","43","ng/L","","","-99","DL","","","SURR","105","","","-99","LOQ","YES","40.7","","","245.5","1.00","0","","
"NAWC-012318-FRB-159","537","RES","320-35320-7","TALSAC","STL00996","13C2
PFDA","42","ng/L","","","-99","DL","","","SURR","103","","","-99","LOQ","YES","40.7","","","245.5","1.00","0","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","22","ng/L","J M","6.9","DL","","","TRG","","","40","LOQ","YES","-99","","","247.1","1.00","16","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19","ng/L","J","2.8","DL","","","TRG","","","20","LOQ","YES","-99","","","247.1","1.00","8.1","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","J","5.6","DL","","","TRG","","","30","LOQ","YES","-99","","","247.1","1.00","12","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","91","LOQ","YES","-99","","","247.1","1.00","36","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.9","ng/L","J","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","247.1","1.00","4.0","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","","TRG","","","24","LOQ","YES","-99","","","247.1","1.00","20","","
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","STL00993","13C2

PFHxA","40","ng/L","",-99","DL","","SURRE","99","","-99","LOQ","YES","40.5","","247.1","1.00","0",""
"NAWC-012318-RW-081","537","RES","320-35320-8","TALSAC","STL00996","13C2
PFDA","39","ng/L","",-99","DL","","SURRE","96","","-99","LOQ","YES","40.5","","247.1","1.00","0",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246","1.00","16",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246","1.00","8.1",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246","1.00","12",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246","1.00","37",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246","1.00","4.1",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246","1.00","20",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","STL00993","13C2
PFHxA","41","ng/L","",-99","DL","","SURRE","101","","-99","LOQ","YES","40.7","","246","1.00","0",""
"NAWC-012318-FRB-081","537","RES","320-35320-9","TALSAC","STL00996","13C2
PFDA","40","ng/L","",-99","DL","","SURRE","97","","-99","LOQ","YES","40.7","","246","1.00","0",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","133","ng/L","M","6.8","DL","","SPK","100","","40","LOQ","YES","133","","250","1.00","16",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","74.7","ng/L","","2.8","DL","","SPK","112","","20","LOQ","YES","66.7","","250","1.00","8.0",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","110","ng/L","","5.5","DL","","SPK","110","","30","LOQ","YES","100","","250","1.00","12",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","316","ng/L","","16","DL","","SPK","105","","90","LOQ","YES","300","","250","1.00","36",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","40.3","ng/L","","1.9","DL","","SPK","121","","10","LOQ","YES","33.3","","250","1.00","4.0",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","69.6","ng/L","","8.0","DL","","SPK","104","","24","LOQ","YES","66.7","","250","1.00","20",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","STL00993","13C2
PFHxA","39.2","ng/L","",-99","DL","","SURRE","98","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCS 320-206404/2-A","537","RES","LCS 320-206404/2-A","TALSAC","STL00996","13C2
PFDA","37.5","ng/L","",-99","DL","","SURRE","94","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.00","16",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.00","8.0",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.00","12",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.00","4.0",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.00","20",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","STL00993","13C2
PFHxA","42.1","ng/L","",-99","DL","","SURRE","105","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-206404/1-A","537","RES","MB 320-206404/1-A","TALSAC","STL00996","13C2
PFDA","39.9","ng/L","",-99","DL","","SURRE","100","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","NAWC-012318-RW-279","01/23/2018 08:10","AQ","320-35320-
1","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
15:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-

207276","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-082","01/23/2018 10:10","AQ","320-35320-
10","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-082","01/23/2018 10:05","AQ","320-35320-
11","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-117","01/23/2018 11:10","AQ","320-35320-
12","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-117MS","01/23/2018 11:10","AQ","320-35320-
12MS","MS","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-117MSD","01/23/2018 11:10","AQ","320-35320-
12MSD","MSD","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-117","01/23/2018 11:05","AQ","320-35320-
13","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
18:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-170","01/23/2018 09:25","AQ","320-35320-
14","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
18:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-170","01/23/2018 09:20","AQ","320-35320-
15","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
18:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-279","01/23/2018 08:05","AQ","320-35320-
2","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
16:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207276","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-166","01/23/2018 08:40","AQ","320-35320-
3","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
16:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207276","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-166","01/23/2018 08:35","AQ","320-35320-
4","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
16:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207286","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","WGNA-012318-DUP-22","01/23/2018 07:00","AQ","320-35320-
5","FD","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207286","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-159","01/23/2018 09:10","AQ","320-35320-
6","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:08","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207286","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-159","01/23/2018 09:05","AQ","320-35320-

7","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207286","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-RW-081","01/23/2018 09:40","AQ","320-35320-
8","NM","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207286","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","NAWC-012318-FRB-081","01/23/2018 09:35","AQ","320-35320-
9","FB","","1.00","537","METHOD","RES","01/31/2018 14:41","02/06/2018
17:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207288","320-35320-1","01/24/2018 09:55","02/13/2018 13:14",""
"Unknown","Unknown","LCS 320-206404/2-A","","AQ","LCS 320-206404/2-
A","LCS","","-99","537","METHOD","RES","01/31/2018 14:41","02/06/2018
15:50","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207276","320-35320-1","01/31/2018 14:41","02/13/2018 13:14",""
"Unknown","Unknown","MB 320-206404/1-A","","AQ","MB 320-206404/1-
A","MB","","-99","537","METHOD","RES","01/31/2018 14:41","02/06/2018
15:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-206404","320-206404","NA","320-
207276","320-35320-1","01/31/2018 14:41","02/13/2018 13:14",""



TO: A. FREBOWITZ **DATE:** MARCH 8, 2018

FROM: TERRI L. SOLOMON **COPIES:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-35320-1

It was noted that samples NAWC-012318-RW-279, WGNA-012318-DUP-22 and NAWC-012318-RW-170 had a pH of 9. No validation actions were required.

TO: A. FREBOWITZ
SDG: 320-35320-1

PAGE 2

Sample NAWC-012318-RW-117 is listed on the chain of custody as a field sample and NAWC-012318-FRB-117 is listed as the corresponding field reagent blank. It was noticed that sample NAWC-012318-RW-117 was reported with all nondetected results and sample NAWC-012318-FRB-117 had detected results for several compounds. The laboratory was contacted and noted that the labels were re-verified on back-up bottles and both samples and the associated MS/MSD were reextracted and reanalyzed with similar results. Also, the original MS/MSD recoveries were outside the quality control limits for PFOA and PFHpA and all other recoveries were greater than 100%. The validator recalculated the MS/MSD results correcting for the detected results from sample NAWC-012318-FRB-117 and all MS/MSD results were within quality control limits. Based on the evidence of the MS/MSD recoveries and the associated FRB sample which is usually free of contamination, it appears that samples NAWC-012318-RW-117 and NAWC-012318-FRB-117 had been switched in the field. The project manager was contacted and the sample IDs on the Form Is and the electronic deliverable were changed to reflect the detected results reported NAWC-012318-RW-117 and the nondetected results reported for sample NAWC-012318-FRB-117.

Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

<u>Sample</u>	<u>Associated FRB</u>
NAWC-012318-RW-081	NAWC-012318-FRB-081
NAWC-012318-RW-082	NAWC-012318-FRB-082
NAWC-012318-RW-117	NAWC-012318-FRB-117
NAWC-012318-RW-159	NAWC-012318-FRB-159
NAWC-012318-RW-166	NAWC-012318-FRB-166
NAWC-012318-RW-170	NAWC-012318-FRB-170
NAWC-012318-RW-279	NAWC-012318-FRB-279
WGNA-012318-DUP-22	NAWC-012318-FRB-166

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

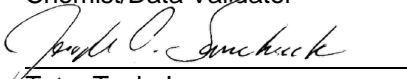
Laboratory Performance: No issues.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

for


Terri Tech, Inc.
Terri L. Solomon
Chemist/Data Validator


Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

TO: A. FREBOWITZ
SDG: 320-35320-1

PAGE 3

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

PROJ_NO: 08005-WE04 SDG: 320-35320-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-012318-FRB-081			NAWC-012318-FRB-082			NAWC-012318-FRB-117			NAWC-012318-FRB-159		
	LAB_ID	320-35320-9			320-35320-11			320-35320-12			320-35320-7		
	SAMP_DATE	1/23/2018			1/23/2018			1/23/2018			1/23/2018		
	QC_TYPE	FB			FB			NM			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		8.1	U		7.9	U		8.2	U		8.1	U	
PERFLUOROBUTANESULFONIC ACID		37	U		36	U		37	U		37	U	
PERFLUOROHEPTANOIC ACID		4.1	U		4	U		4.1	U		4.1	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		20	U		21	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		16	U		16	U	

PROJ_NO: 08005-WE04 SDG: 320-35320-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-012318-FRB-166			NAWC-012318-FRB-170			NAWC-012318-FRB-279			NAWC-012318-RW-081		
	LAB_ID	320-35320-4			320-35320-15			320-35320-2			320-35320-8		
	SAMP_DATE	1/23/2018			1/23/2018			1/23/2018			1/23/2018		
	QC_TYPE	FB			FB			FB			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.8	U		8	U		8	U		19	J	P
PERFLUOROBUTANESULFONIC ACID		35	U		36	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID		3.9	U		4	U		4	U		5.9	J	P
PERFLUOROHXANESULFONIC ACID		12	U		12	U		12	U		11	J	P
PERFLUORONONANOIC ACID		19	U		20	U		20	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		16	U		22	J	P

PROJ_NO: 08005-WE04 SDG: 320-35320-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-012318-RW-082			NAWC-012318-RW-117			NAWC-012318-RW-159			NAWC-012318-RW-166		
	LAB_ID	320-35320-10			320-35320-13			320-35320-6			320-35320-3		
	SAMP_DATE	1/23/2018			1/23/2018			1/23/2018			1/23/2018		
	QC_TYPE	NM			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		21			25			15	J	P	16	J	P
PERFLUOROBUTANESULFONIC ACID		37	U		36	U		37	U		37	U	
PERFLUOROHEPTANOIC ACID		6.3	J	P	6.3	J	P	4.6	J	P	4.8	J	P
PERFLUOROHEXANESULFONIC ACID		12	J	P	17	J	P	6	J	P	12	U	
PERFLUORONONANOIC ACID		20	U		20	U		21	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		19	J	P	31	J	P	16	J	P	17	J	P

PROJ_NO: 08005-WE04 SDG: 320-35320-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-012318-RW-170			NAWC-012318-RW-279			WGNA-012318-DUP-22		
	LAB_ID	320-35320-14			320-35320-1			320-35320-5		
	SAMP_DATE	1/23/2018			1/23/2018			1/23/2018		
	QC_TYPE	NM			NM			FD		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							NAWC-012318-RW-166		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		14	J	P	13	J	P	16	J	P
PERFLUOROBUTANESULFONIC ACID		38	U		38	U		37	U	
PERFLUOROHEPTANOIC ACID		5	J	P	4.6	J	P	4.8	J	P
PERFLUOROHEXANESULFONIC ACID		6.8	J	P	7.9	J	P	12	U	
PERFLUORONONANOIC ACID		21	U		21	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		17	J	P	17	J	P	17	J	P

Appendix A

Qualified Analytical Results

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-RW-279</u>	Lab Sample ID: <u>320-35320-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>240 (mL)</u>	Date Analyzed: <u>02/06/2018 15:55</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	42	17	7.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9	J	31	13	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	94	38	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	105		70-130

Ali L. Salem
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-279</u>	Lab Sample ID: <u>320-35320-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_028.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>02/06/2018 16:00</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	101		70-130

Ami L. Salomon
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-RW-166</u>	Lab Sample ID: <u>320-35320-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_029.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>246.4 (mL)</u>	Date Analyzed: <u>02/06/2018 16:05</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	94		70-130


Steve L. Salzman
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-FRB-166 Lab Sample ID: 320-35320-4
 Matrix: Water Lab File ID: 2018.02.06_537DD_030.d
 Analysis Method: 537 Date Collected: 01/23/2018 08:35
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 257.6(mL) Date Analyzed: 02/06/2018 16:59
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	106		70-130


03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: WGNA-012318-DUP-22 Lab Sample ID: 320-35320-5
 Matrix: Water Lab File ID: 2018.02.06_537DD_031.d
 Analysis Method: 537 Date Collected: 01/23/2018 07:00
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 246.5 (mL) Date Analyzed: 02/06/2018 17:04
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	98		70-130

Teri L. Salomon
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-159 Lab Sample ID: 320-35320-6
 Matrix: Water Lab File ID: 2018.02.06_537DD_032.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:10
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 241.5 (mL) Date Analyzed: 02/06/2018 17:08
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.0	J	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	104		70-130

Wesley L. Salmeron
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-FRB-159 Lab Sample ID: 320-35320-7
 Matrix: Water Lab File ID: 2018.02.06_537DD_033.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:05
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 245.5 (mL) Date Analyzed: 02/06/2018 17:13
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	103		70-130

Wesley L. Salaman
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-081 Lab Sample ID: 320-35320-8
 Matrix: Water Lab File ID: 2018.02.06_537DD_034.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:40
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 247.1 (mL) Date Analyzed: 02/06/2018 17:18
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	19	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.9	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	96		70-130


Wesley L. Salomon
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-FRB-081 Lab Sample ID: 320-35320-9
 Matrix: Water Lab File ID: 2018.02.06_537DD_037.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:35
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 246(mL) Date Analyzed: 02/06/2018 17:32
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	97		70-130


03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-082 Lab Sample ID: 320-35320-10
 Matrix: Water Lab File ID: 2018.02.06_537DD_038.d
 Analysis Method: 537 Date Collected: 01/23/2018 10:10
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 244.4 (mL) Date Analyzed: 02/06/2018 17:37
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	21		20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	25	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	92		70-130

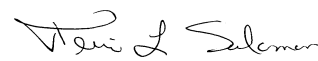
Teri L. Salmeron
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-FRB-082 Lab Sample ID: 320-35320-11
 Matrix: Water Lab File ID: 2018.02.06_537DD_039.d
 Analysis Method: 537 Date Collected: 01/23/2018 10:05
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 251.8 (mL) Date Analyzed: 02/06/2018 17:41
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	102		70-130


03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-~~RW-117~~ FRB-117 Lab Sample ID: 320-35320-12
 Matrix: Water Lab File ID: 2018.02.06_537DD_040.d
 Analysis Method: 537 Date Collected: 01/23/2018 11:10
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 243.3(mL) Date Analyzed: 02/06/2018 17:46
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U 7.1	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U 7.1	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	98		70-130


Wesley L. Salomon
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-~~FRB-117~~ ^{RW-117} Lab Sample ID: 320-35320-13
 Matrix: Water Lab File ID: 2018.02.06_537DD_043.d
 Analysis Method: 537 Date Collected: 01/23/2018 11:05
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 246.7(mL) Date Analyzed: 02/06/2018 18:00
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	25		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	105		70-130


03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-170 Lab Sample ID: 320-35320-14
 Matrix: Water Lab File ID: 2018.02.06_537DD_044.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:25
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 239.5 (mL) Date Analyzed: 02/06/2018 18:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	42	17	7.1
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	21	8.4	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	J	31	13	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.0	J	10	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	94	38	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	114		70-130

Teri L. Salmeron
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-FRB-170 Lab Sample ID: 320-35320-15
 Matrix: Water Lab File ID: 2018.02.06_537DD_045.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:20
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 251.3 (mL) Date Analyzed: 02/06/2018 18:09
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	104		70-130

Teri L. Selman
03/08/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-RW-279</u>	Lab Sample ID: <u>320-35320-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>240 (mL)</u>	Date Analyzed: <u>02/06/2018 15:55</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	42	17	7.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9	J	31	13	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	94	38	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	105		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-279</u>	Lab Sample ID: <u>320-35320-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_028.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>02/06/2018 16:00</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-RW-166</u>	Lab Sample ID: <u>320-35320-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537D_029.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>246.4 (mL)</u>	Date Analyzed: <u>02/06/2018 16:05</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207276</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-166</u>	Lab Sample ID: <u>320-35320-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_030.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 08:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>257.6(mL)</u>	Date Analyzed: <u>02/06/2018 16:59</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207286</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-012318-DUP-22</u>	Lab Sample ID: <u>320-35320-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_031.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>246.5 (mL)</u>	Date Analyzed: <u>02/06/2018 17:04</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207286</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Client Sample ID: NAWC-012318-RW-159 Lab Sample ID: 320-35320-6

Matrix: Water Lab File ID: 2018.02.06_537DD_032.d

Analysis Method: 537 Date Collected: 01/23/2018 09:10

Extraction Method: 537 Date Extracted: 01/31/2018 14:41

Sample wt/vol: 241.5 (mL) Date Analyzed: 02/06/2018 17:08

Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1

Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.0	J	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-159</u>	Lab Sample ID: <u>320-35320-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_033.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>245.5 (mL)</u>	Date Analyzed: <u>02/06/2018 17:13</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207286</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	103		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-081 Lab Sample ID: 320-35320-8
 Matrix: Water Lab File ID: 2018.02.06_537DD_034.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:40
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 247.1 (mL) Date Analyzed: 02/06/2018 17:18
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207286 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	19	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.9	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	96		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-081</u>	Lab Sample ID: <u>320-35320-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_037.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>246(mL)</u>	Date Analyzed: <u>02/06/2018 17:32</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207288</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-RW-082</u>	Lab Sample ID: <u>320-35320-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_038.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 10:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>244.4 (mL)</u>	Date Analyzed: <u>02/06/2018 17:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207288</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	21		20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	25	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	92		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-082</u>	Lab Sample ID: <u>320-35320-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_039.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 10:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>251.8 (mL)</u>	Date Analyzed: <u>02/06/2018 17:41</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207288</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16


CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-~~RW-117~~ FRB-117 Lab Sample ID: 320-35320-12
 Matrix: Water Lab File ID: 2018.02.06_537DD_040.d
 Analysis Method: 537 Date Collected: 01/23/2018 11:10
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 243.3 (mL) Date Analyzed: 02/06/2018 17:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U J1	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U J1	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	98		70-130


03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-~~FRB-117~~ ^{RW-117} Lab Sample ID: 320-35320-13
 Matrix: Water Lab File ID: 2018.02.06_537DD_043.d
 Analysis Method: 537 Date Collected: 01/23/2018 11:05
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 246.7 (mL) Date Analyzed: 02/06/2018 18:00
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	25		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	105		70-130

Amir L. Salameh
03/08/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: NAWC-012318-RW-170 Lab Sample ID: 320-35320-14
 Matrix: Water Lab File ID: 2018.02.06_537DD_044.d
 Analysis Method: 537 Date Collected: 01/23/2018 09:25
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 239.5 (mL) Date Analyzed: 02/06/2018 18:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207288 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	42	17	7.1
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	21	8.4	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	J	31	13	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.0	J	10	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	94	38	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	114		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-35320-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-012318-FRB-170</u>	Lab Sample ID: <u>320-35320-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.02.06_537DD_045.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>01/23/2018 09:20</u>
Extraction Method: <u>537</u>	Date Extracted: <u>01/31/2018 14:41</u>
Sample wt/vol: <u>251.3 (mL)</u>	Date Analyzed: <u>02/06/2018 18:09</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>207288</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	104		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL NAWC-	DUPLICATE WGNA-	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE	DIFFERENCE >2XRL
	012318-RW-166	012318-DUP-22				SAMPLE CONC >2xRL	CONC >2xRL	
Perfluorooctanoic acid (PFOA)	16	16	20	0.000	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	4.8	4.8	10	0.000	FALSE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	17	17	41	0.000	FALSE	FALSE	FALSE	FALSE

TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
Regulatory Program: ☒ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 1/23/2018		COC No:	
TetraTech		Tel/Fax: 610.382.1170		Lab Contact: Dave Alltucker		Carrier: FedEx		1 of 2 COCs	
234 Mall Boulevard Suite 260		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y/N) EPA 537 UCMR3				Sampler: Mary Kay Bond	
King of Prussia, PA 19406		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
610-382-1174		TAT if different from Below 21 <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
610-491-9688									
Project Name: WE04									
Site: WE04									
P O # 1132358 (through EarthToxics)									

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
NAWC-012318-RW-279	1/23/2018	08:10	G	DW	2	N	N	Y	
NAWC-012318-FRB-279	1/23/2018	08:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-012318-RW-166	1/23/2018	08:40	G	DW	2	N	N	Y	
NAWC-012318-FRB-166	1/23/2018	08:35	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-012318-DUP-22	1/23/2018	07:00	G	DW	2	N	N	Y	DUPLICATE
NAWC-012318-RW-159	1/23/2018	09:10	G	DW	2	N	N	Y	
NAWC-012318-FRB-159	1/23/2018	09:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-012318-RW-081	1/23/2018	09:40	G	DW	2	N	N	Y	
NAWC-012318-FRB-081	1/23/2018	09:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-012318-RW-082	1/23/2018	10:10	G	DW	2	N	N	Y	
NAWC-012318-FRB-082	1/23/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-012318-RW-117	1/23/2018	11:10	G	DW	6	N	N	Y	MS/MSD
NAWC-012318-FRB-117	1/23/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

☒ Non-Hazardous
 ☐ Flammable
 ☐ Skin Irritant
 ☐ Poison B
 ☐ Unknown

Fed Ex Tracking: 7713 0226 0129

Custody Seals Intact: ☐ Yes ☐ No
 Custody Seal No.:
 Cooler Temp. (°C): Obs'd: 10 Corr'd:
 Therm ID No.: 1143

Relinquished by: <u>Kateri Rembert</u>	Company: Tetra Tech	Date/Time: 1/23/2018 16:00	Received by: <u>[Signature]</u>	Company: <u>TA-Sac</u>	Date/Time: 1/24/18 9:55
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

[illegible]

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Job Narrative
320-35320-1

Receipt

The samples were received on 1/24/2018 9:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

LCMS

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-206404 and analytical batch 320-207288 were outside control limits for Perfluoroheptanoic acid (PFHpA) and Perfluorooctanoic acid (PFOA). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 537: The following samples:NAWC-012318-RW-279 (320-35320-1), WGNA-012318-DUP-22 (320-35320-5), NAWC-012318-RW-117 (320-35320-12[MSD]) and NAWC-012318-RW-170 (320-35320-14) were recieved with a pH of 9 and sample 320-35320-A-12 MSD was recieved with a pH of 8. Associated with preparation batch 320-206404 , and method code 537_prep.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-35320-1

Job ID: 320-35320-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative 320-35320-1

Receipt

The samples were received on 1/24/2018 9:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

LCMS

Method(s) 537: Sample NAWC-012318-RW-117 (320-35320-12) is listed on the CoC as a filed sample and sample NAWC-012318-FRB-117 (320-35320-13) is listed as the associated field blank. After extraction and analysis it appears the field sample and filed blank bottles may have been switched. The laboratory re-verified labels on back- up bottles and re-extracted both samples and the associated ms/msd with concurring results. After discussion with the client, both sets of data have been reported. NAWC-012318-RW-117 (320-35320-12), NAWC-012318-RW-117 (320-35320-12[MS]), NAWC-012318-RW-117 (320-35320-12[MSD]) and NAWC-012318-FRB-117 (320-35320-13)

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-206404 and analytical batch 320-207288 were outside control limits for Perfluoroheptanoic acid (PFHpA) and Perfluorooctanoic acid (PFOA). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 537: The following samples: NAWC-012318-RW-279 (320-35320-1), WGNA-012318-DUP-22 (320-35320-5), NAWC-012318-RW-117 (320-35320-12[MSD]) and NAWC-012318-RW-170 (320-35320-14) were received with a pH of 9 and sample 320-35320-A-12 MSD was received with a pH of 8. Associated with preparation batch 320-206404, and method code 537_prep.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-35320-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-35320-1

Method	Method Description	Protocol	Laboratory
537	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC

Protocol References:
EPA = US Environmental Protection Agency

Laboratory References:
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-35320-1

Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-35320-1	NAWC-012318-RW-279	Water	01/23/18 08:10	01/24/18 09:55
320-35320-2	NAWC-012318-FRB-279	Water	01/23/18 08:05	01/24/18 09:55
320-35320-3	NAWC-012318-RW-166	Water	01/23/18 08:40	01/24/18 09:55
320-35320-4	NAWC-012318-FRB-166	Water	01/23/18 08:35	01/24/18 09:55
320-35320-5	WGNA-012318-DUP-22	Water	01/23/18 07:00	01/24/18 09:55
320-35320-6	NAWC-012318-RW-159	Water	01/23/18 09:10	01/24/18 09:55
320-35320-7	NAWC-012318-FRB-159	Water	01/23/18 09:05	01/24/18 09:55
320-35320-8	NAWC-012318-RW-081	Water	01/23/18 09:40	01/24/18 09:55
320-35320-9	NAWC-012318-FRB-081	Water	01/23/18 09:35	01/24/18 09:55
320-35320-10	NAWC-012318-RW-082	Water	01/23/18 10:10	01/24/18 09:55
320-35320-11	NAWC-012318-FRB-082	Water	01/23/18 10:05	01/24/18 09:55
320-35320-12	NAWC-012318-RW-117	Water	01/23/18 11:10	01/24/18 09:55
320-35320-13	NAWC-012318-FRB-117	Water	01/23/18 11:05	01/24/18 09:55
320-35320-14	NAWC-012318-RW-170	Water	01/23/18 09:25	01/24/18 09:55
320-35320-15	NAWC-012318-FRB-170	Water	01/23/18 09:20	01/24/18 09:55

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-012318-RW-279	320-35320-1	103	105
NAWC-012318-FRB-279	320-35320-2	104	101
NAWC-012318-RW-166	320-35320-3	91	94
NAWC-012318-FRB-166	320-35320-4	103	106
WGNA-012318-DUP-22	320-35320-5	95	98
NAWC-012318-RW-159	320-35320-6	101	104
NAWC-012318-FRB-159	320-35320-7	105	103
NAWC-012318-RW-081	320-35320-8	99	96
NAWC-012318-FRB-081	320-35320-9	101	97
NAWC-012318-RW-082	320-35320-10	100	92
NAWC-012318-FRB-082	320-35320-11	104	102
NAWC-012318-RW-117	320-35320-12	101	98
NAWC-012318-FRB-117	320-35320-13	107	105
NAWC-012318-RW-170	320-35320-14	107	114
NAWC-012318-FRB-170	320-35320-15	105	104
	MB 320-206404/1-A	105	100
	LCS 320-206404/2-A	98	94
NAWC-012318-RW-117 MS	320-35320-12 MS	102	99
NAWC-012318-RW-117 MSD	320-35320-12 MSD	100	105

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.02.06_537D_026.d
 Lab ID: LCS 320-206404/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	133	100	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	74.7	112	70-130	
Perfluorononanoic acid (PFNA)	66.7	69.6	104	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	110	110	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	40.3	121	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	316	105	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.02.06_537DD_041.d
 Lab ID: 320-35320-12 MS Client ID: NAWC-012318-RW-117 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	137	16 U	168	123	70-130	M
Perfluorooctanoic acid (PFOA)	68.3	8.2 U	101	148	70-130	J1
Perfluorononanoic acid (PFNA)	68.3	21 U	75.6	111	70-130	
Perfluorohexanesulfonic acid (PFHxS)	102	12 U	124	121	70-130	
Perfluoroheptanoic acid (PFHpA)	34.1	4.1 U	46.3	136	70-130	J1
Perfluorobutanesulfonic acid (PFBS)	307	37 U	314	102	70-130	

using the sample results reported for NAWC-012318-FRB-117 as a result of possible mixup of samples in field all MS/MSD recoveries within limits.

FRB results	recalculated MS%R	recalculated MSD %R
PFOA 25 ng/L	111%	112%
PFHpA 6.3 ng/L	117%	112%
PFHxS 17 ng/L	105%	100%
PFOS 31 ng/L	100%	96.4%

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.02.06_537DD_042.d
 Lab ID: 320-35320-12 MSD Client ID: NAWC-012318-RW-117 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	140	166	119	1	30	70-130	M
Perfluorooctanoic acid (PFOA)	69.8	103	148	2	30	70-130	J1
Perfluorononanoic acid (PFNA)	69.8	76.3	109	1	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	105	122	117	2	30	70-130	
Perfluoroheptanoic acid (PFHpA)	34.9	45.5	131	2	30	70-130	J1
Perfluorobutanesulfonic acid (PFBS)	314	325	103	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab File ID: 2018.02.06_537D_025.d Lab Sample ID: MB 320-206404/1-A
 Matrix: Water Date Extracted: 01/31/2018 14:41
 Instrument ID: A8_N Date Analyzed: 02/06/2018 15:46
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-206404/2-A	2018.02.06_537D_026.d	02/06/2018 15:50
NAWC-012318-RW-279	320-35320-1	2018.02.06_537D_027.d	02/06/2018 15:55
NAWC-012318-FRB-279	320-35320-2	2018.02.06_537D_028.d	02/06/2018 16:00
NAWC-012318-RW-166	320-35320-3	2018.02.06_537D_029.d	02/06/2018 16:05
NAWC-012318-FRB-166	320-35320-4	2018.02.06_537DD_030.d	02/06/2018 16:59
WGNA-012318-DUP-22	320-35320-5	2018.02.06_537DD_031.d	02/06/2018 17:04
NAWC-012318-RW-159	320-35320-6	2018.02.06_537DD_032.d	02/06/2018 17:08
NAWC-012318-FRB-159	320-35320-7	2018.02.06_537DD_033.d	02/06/2018 17:13
NAWC-012318-RW-081	320-35320-8	2018.02.06_537DD_034.d	02/06/2018 17:18
NAWC-012318-FRB-081	320-35320-9	2018.02.06_537DD_037.d	02/06/2018 17:32
NAWC-012318-RW-082	320-35320-10	2018.02.06_537DD_038.d	02/06/2018 17:37
NAWC-012318-FRB-082	320-35320-11	2018.02.06_537DD_039.d	02/06/2018 17:41
NAWC-012318-RW-117	320-35320-12	2018.02.06_537DD_040.d	02/06/2018 17:46
NAWC-012318-RW-117 MS	320-35320-12 MS	2018.02.06_537DD_041.d	02/06/2018 17:51
NAWC-012318-RW-117 MSD	320-35320-12 MSD	2018.02.06_537DD_042.d	02/06/2018 17:55
NAWC-012318-FRB-117	320-35320-13	2018.02.06_537DD_043.d	02/06/2018 18:00
NAWC-012318-RW-170	320-35320-14	2018.02.06_537DD_044.d	02/06/2018 18:05
NAWC-012318-FRB-170	320-35320-15	2018.02.06_537DD_045.d	02/06/2018 18:09

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-206404/1-A
 Matrix: Water Lab File ID: 2018.02.06_537D_025.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 01/31/2018 14:41
 Sample wt/vol: 250 (mL) Date Analyzed: 02/06/2018 15:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 207276 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	100		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 11/03/2017 14:01
 Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1535518	1.91	3276559	2.15		
UPPER LIMIT		2303277	2.41	4914839	2.65		
LOWER LIMIT		767759	1.41	1638280	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-192908/11		1586829	1.91	3305852	2.15		
ICV 320-192908/13		1512045	1.90	3433628	2.14		
CCVL 320-207097/1		1375995	1.81	3051061	2.05		
CCV 320-207276/17 CCVIS		1332101	1.80	2964118	2.05		
MB 320-206404/1-A		1392245	1.80	3192878	2.05		
LCS 320-206404/2-A		1347283	1.80	3130734	2.04		
320-35320-1	NAWC-012318-RW-279	1291337	1.81	3190877	2.05		
320-35320-2	NAWC-012318-FRB-279	1303623	1.81	2945874	2.05		
320-35320-3	NAWC-012318-RW-166	1330598	1.80	3055400	2.05		
CCV 320-207276/24 CCVIS		1311703	1.81	3150989	2.06		
CCV 320-207286/1 CCVIS		1316329	1.84	2917817	2.08		
320-35320-4	NAWC-012318-FRB-166	1231049	1.81	2891035	2.06		
320-35320-5	WGNA-012318-DUP-22	1305309	1.81	3055712	2.06		
320-35320-6	NAWC-012318-RW-159	1328783	1.81	3100624	2.06		
320-35320-7	NAWC-012318-FRB-159	1253032	1.81	2941296	2.06		
320-35320-8	NAWC-012318-RW-081	1325757	1.81	3140478	2.06		
CCV 320-207286/8 CCVIS		1294268	1.81	3074231	2.06		
CCV 320-207288/8 CCVIS		1294268	1.81	3074231	2.06		
320-35320-9	NAWC-012318-FRB-081	1360968	1.80	3086052	2.05		
320-35320-10	NAWC-012318-RW-082	1378528	1.81	3076381	2.05		
320-35320-11	NAWC-012318-FRB-082	1274111	1.81	2988070	2.05		
320-35320-12	NAWC-012318-RW-117	1295901	1.80	3063799	2.05		
320-35320-12 MS	NAWC-012318-RW-117 MS	1269633	1.81	2998823	2.05		
320-35320-12 MSD	NAWC-012318-RW-117 MSD	1348791	1.81	3257849	2.06		
320-35320-13	NAWC-012318-FRB-117	1284947	1.81	3095903	2.05		
320-35320-14	NAWC-012318-RW-170	1247140	1.81	3032481	2.05		
320-35320-15	NAWC-012318-FRB-170	1315153	1.81	3130525	2.06		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3 (mm) Calibration End Date: 11/03/2017 14:01
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT	1535518	1.91	3276559	2.15		
UPPER LIMIT	2303277	2.41	4914839	2.65		
LOWER LIMIT	767759	1.41	1638280	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-207288/19 CCVIS		1327877 1.80	2959647 2.05			

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207276/17 Date Analyzed: 02/06/2018 15:36
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537D_023 Heated Purge: (Y/N) N
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1332101	1.80	2964118	2.05		
UPPER LIMIT	1864941	2.30	4149765	2.55		
LOWER LIMIT	932471	1.30	2074883	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-206404/1-A		1392245	1.80	3192878	2.05	
LCS 320-206404/2-A		1347283	1.80	3130734	2.04	
320-35320-1	NAWC-012318-RW-279	1291337	1.81	3190877	2.05	
320-35320-2	NAWC-012318-FRB-279	1303623	1.81	2945874	2.05	
320-35320-3	NAWC-012318-RW-166	1330598	1.80	3055400	2.05	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207276/24 Date Analyzed: 02/06/2018 16:09
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537D_035 Heated Purge: (Y/N) N
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1311703	1.81	3150989	2.06		
UPPER LIMIT	1836384	2.31	4411385	2.56		
LOWER LIMIT	918192	1.31	2205692	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-206404/1-A		1392245	1.80	3192878	2.05	
LCS 320-206404/2-A		1347283	1.80	3130734	2.04	
320-35320-1	NAWC-012318-RW-279	1291337	1.81	3190877	2.05	
320-35320-2	NAWC-012318-FRB-279	1303623	1.81	2945874	2.05	
320-35320-3	NAWC-012318-RW-166	1330598	1.80	3055400	2.05	

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207286/1 Date Analyzed: 02/06/2018 16:50
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537DD_02 Heated Purge: (Y/N) N
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1316329	1.84	2917817	2.08		
UPPER LIMIT	1842861	2.34	4084944	2.58		
LOWER LIMIT	921430	1.34	2042472	1.58		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35320-4	NAWC-012318-FRB-166	1231049	1.81	2891035	2.06	
320-35320-5	WGNA-012318-DUP-22	1305309	1.81	3055712	2.06	
320-35320-6	NAWC-012318-RW-159	1328783	1.81	3100624	2.06	
320-35320-7	NAWC-012318-FRB-159	1253032	1.81	2941296	2.06	
320-35320-8	NAWC-012318-RW-081	1325757	1.81	3140478	2.06	

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207286/8 Date Analyzed: 02/06/2018 17:22
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537DD_03 Heated Purge: (Y/N) N
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1294268	1.81	3074231	2.06		
UPPER LIMIT	1811975	2.31	4303923	2.56		
LOWER LIMIT	905988	1.31	2151962	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35320-4	NAWC-012318-FRB-166	1231049	1.81	2891035	2.06	
320-35320-5	WGNA-012318-DUP-22	1305309	1.81	3055712	2.06	
320-35320-6	NAWC-012318-RW-159	1328783	1.81	3100624	2.06	
320-35320-7	NAWC-012318-FRB-159	1253032	1.81	2941296	2.06	
320-35320-8	NAWC-012318-RW-081	1325757	1.81	3140478	2.06	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207288/8 Date Analyzed: 02/06/2018 17:22
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537DD_03 Heated Purge: (Y/N) N
 Calibration ID: 36012

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1294268	1.81	3074231	2.06		
UPPER LIMIT	1811975	2.31	4303923	2.56		
LOWER LIMIT	905988	1.31	2151962	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35320-9	NAWC-012318-FRB-081	1360968	1.80	3086052	2.05	
320-35320-10	NAWC-012318-RW-082	1378528	1.81	3076381	2.05	
320-35320-11	NAWC-012318-FRB-082	1274111	1.81	2988070	2.05	
320-35320-12	NAWC-012318-RW-117	1295901	1.80	3063799	2.05	
320-35320-12 MS	NAWC-012318-RW-117 MS	1269633	1.81	2998823	2.05	
320-35320-12 MSD	NAWC-012318-RW-117 MSD	1348791	1.81	3257849	2.06	
320-35320-13	NAWC-012318-FRB-117	1284947	1.81	3095903	2.05	
320-35320-14	NAWC-012318-RW-170	1247140	1.81	3032481	2.05	
320-35320-15	NAWC-012318-FRB-170	1315153	1.81	3130525	2.06	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Sample No.: CCV 320-207288/19 Date Analyzed: 02/06/2018 18:14
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.06_537DD_04 Heated Purge: (Y/N) N
 Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1327877	1.80	2959647	2.05		
UPPER LIMIT		1859028	2.30	4143506	2.55		
LOWER LIMIT		929514	1.30	2071753	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-35320-9	NAWC-012318-FRB-081	1360968	1.80	3086052	2.05		
320-35320-10	NAWC-012318-RW-082	1378528	1.81	3076381	2.05		
320-35320-11	NAWC-012318-FRB-082	1274111	1.81	2988070	2.05		
320-35320-12	NAWC-012318-RW-117	1295901	1.80	3063799	2.05		
320-35320-12 MS	NAWC-012318-RW-117 MS	1269633	1.81	2998823	2.05		
320-35320-12 MSD	NAWC-012318-RW-117 MSD	1348791	1.81	3257849	2.06		
320-35320-13	NAWC-012318-FRB-117	1284947	1.81	3095903	2.05		
320-35320-14	NAWC-012318-RW-170	1247140	1.81	3032481	2.05		
320-35320-15	NAWC-012318-FRB-170	1315153	1.81	3130525	2.06		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = \pm 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1 Analy Batch No.: 192908

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.0397 0.8468	1.0767	1.0898	0.9577	0.9303	QuaF		1.1193	-0.001498						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9433 0.9848	0.9187	0.9551	0.9185	0.9011	Ave		0.9369				3.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6459 1.6841	1.6355	1.7405	1.6631	1.6755	Ave		1.6741				2.2		30.0			
Perfluorooctanoic acid (PFOA)	0.9757 0.9799	0.8919	0.9000	0.8953	0.9117	Ave		0.9258				4.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8958 0.9902	0.9213	0.9281	0.9268	0.9715	Ave		0.9389				3.7		30.0			
Perfluorononanoic acid (PFNA)	0.6610 0.7042	0.6285	0.6624	0.6810	0.6478	Ave		0.6642				3.9		30.0			
13C2 PFHxA	1.0891 1.1664	1.0526	1.1042	1.1123	1.0772	Ave		1.1003				3.5		30.0			
13C2 PFDA	0.7748 0.8159	0.7295	0.7569	0.7811	0.7330	Ave		0.7652				4.3		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1 Analy Batch No.: 192908

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1076553 16699152	2591121	5461974	10142530	14011858	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	143455 2810797	331548	736034	1420703	2102676	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	568156 11071993	1312135	2908204	5871843	8413133	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	296934 5597122	644149	1388033	2771271	4257225	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	412315 8679676	985487	2067792	4363079	6504279	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	201053 4019666	453612	1020851	2106479	3023088	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1655691 1664260	1708988	1701491	1719911	1675220	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1177922 1164156	1184358	1166275	1207887	1139992	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1 Analy Batch No.: 192908

SDG No.: _____

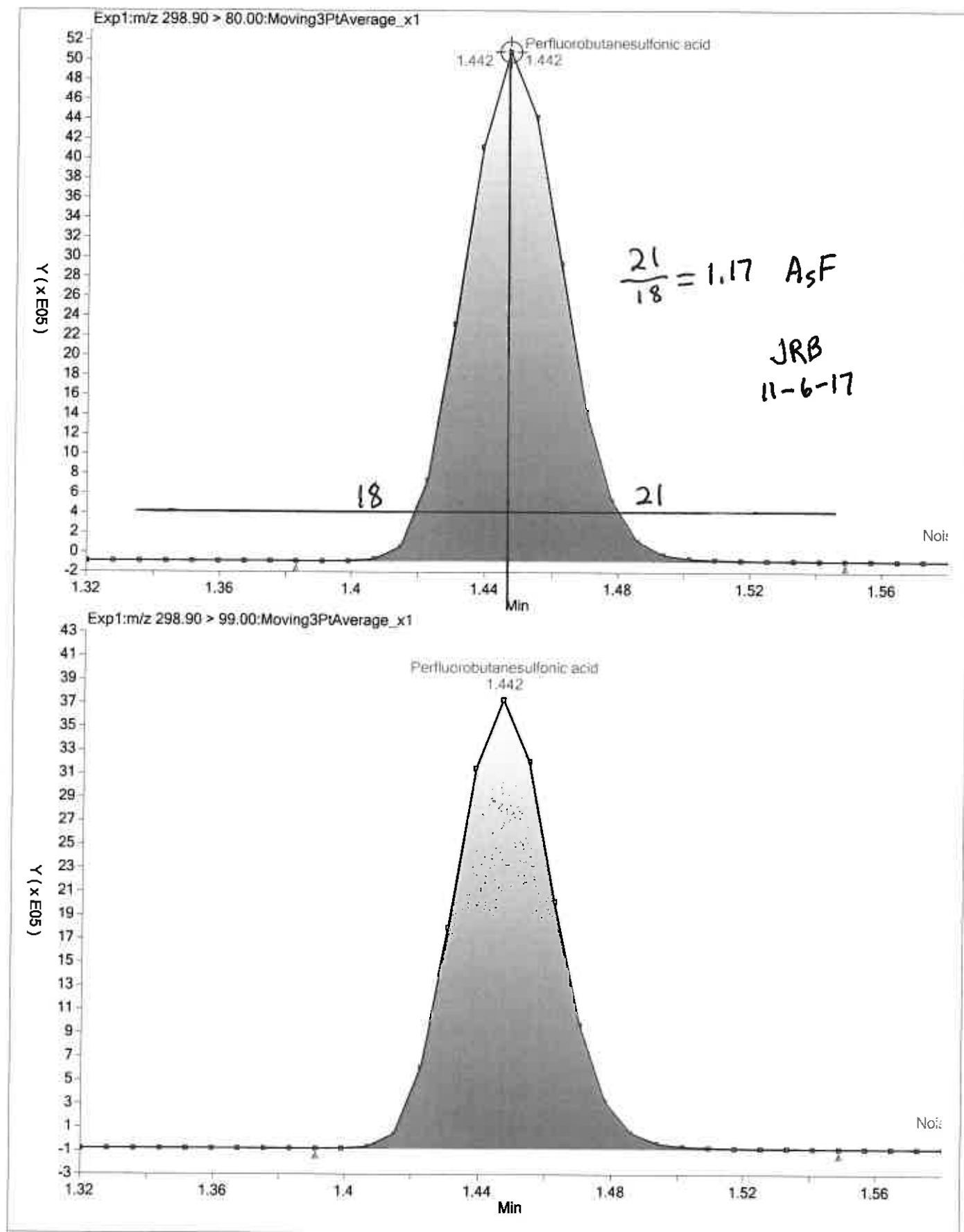
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

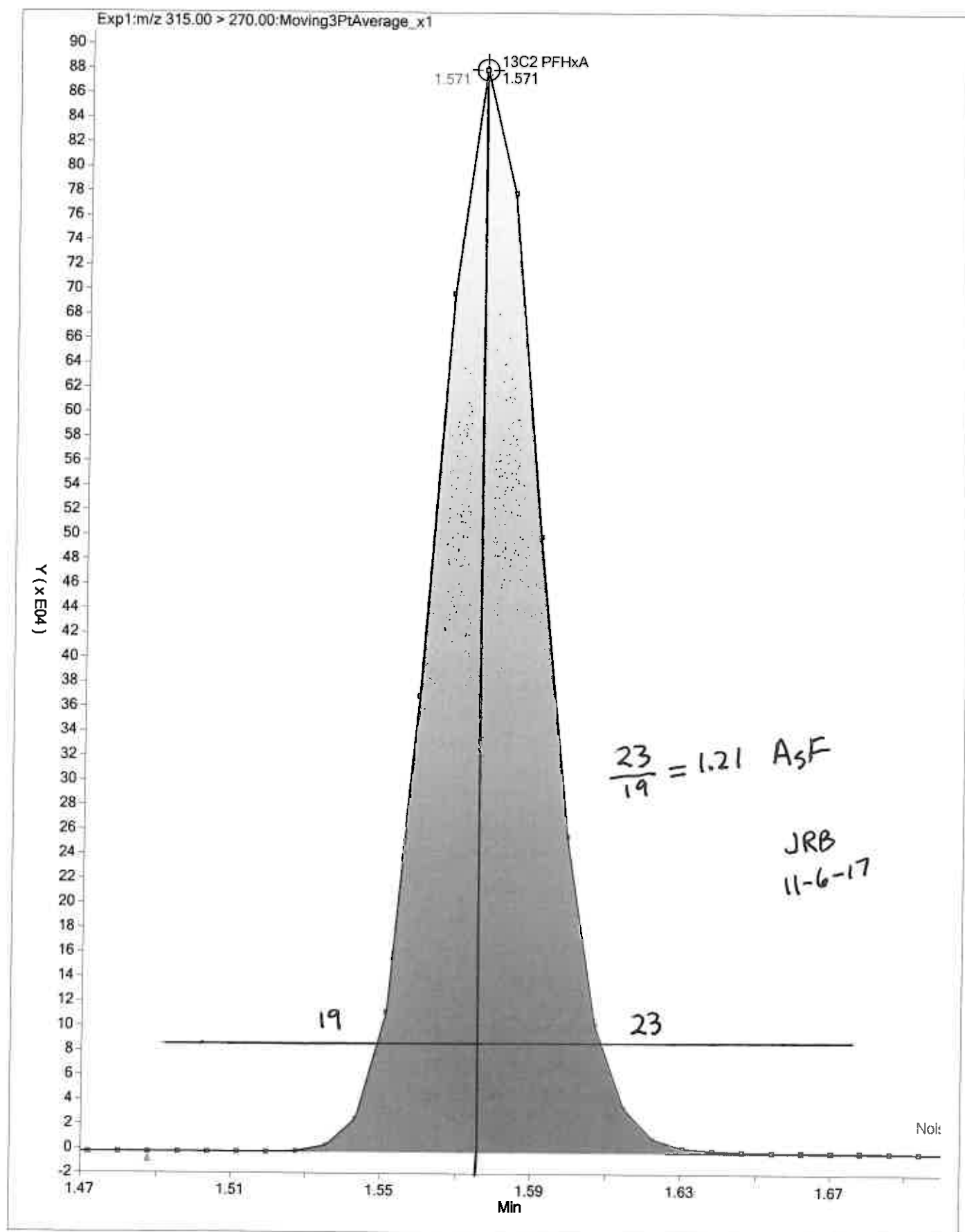
Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-6.0	-1.2	3.9	-3.1	1.9	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	0.7	-1.9	1.9	-2.0	-3.8	5.1	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-1.7	-2.3	4.0	-0.7	0.1	0.6	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	5.4	-3.7	-2.8	-3.3	-1.5	5.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	-1.9	-1.2	-1.3	3.5	5.5	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.5	-5.4	-0.3	2.5	-2.5	6.0	50	30	30	30	30	30
13C2 PFHxA	-1.0	-4.3	0.4	1.1	-2.1	6.0	30	30	30	30	30	30
13C2 PFDA	1.3	-4.7	-1.1	2.1	-4.2	6.6	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-192908/11 Calibration Date: 11/03/2017 14:10
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2017.11.03_537XICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		20.4	20.0	1.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9382		2.23	2.22	0.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.688		6.72	6.67	0.8	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.8825		4.24	4.45	-4.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9176		8.69	8.89	-2.3	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6625		4.43	4.45	-0.2	50.0
13C2 PFHxA	Ave	1.100	1.068		9.70	10.0	-3.0	30.0
13C2 PFDA	Ave	0.7652	0.7460		9.75	10.0	-2.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: ICV 320-192908/13 Calibration Date: 11/03/2017 14:20
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2017.11.03_537XICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8310		83.7	100	-16.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.8136		8.68	10.0	-13.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.463		17.5	20.1	-12.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.7995		17.7	20.5	-13.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.8637		18.1	19.7	-8.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6428		19.5	20.1	-3.2	30.0
13C2 PFHxA	Ave	1.100	1.039		9.44	10.0	-5.6	30.0
13C2 PFDA	Ave	0.7652	0.7391		9.66	10.0	-3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-207097/1 Calibration Date: 02/06/2018 08:30
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.081		19.8	20.0	-0.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.648		6.56	6.67	-1.6	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.009		2.39	2.22	7.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9155		4.42	4.47	-1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9828		9.34	8.93	4.7	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6745		4.52	4.45	1.6	50.0
13C2 PFHxA	Ave	1.100	1.102		10.0	10.0	0.1	30.0
13C2 PFDA	Ave	0.7652	0.7044		9.21	10.0	-7.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207276/17 Calibration Date: 02/06/2018 15:36
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537D_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9402		139	135	3.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.021		16.3	15.0	9.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.705		45.8	45.0	1.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9545		31.1	30.2	3.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	1.013		65.0	60.3	7.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6749		30.5	30.0	1.6	30.0
13C2 PFHxA	Ave	1.100	1.073		9.75	10.0	-2.5	30.0
13C2 PFDA	Ave	0.7652	0.7410		9.68	10.0	-3.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207276/24 Calibration Date: 02/06/2018 16:09
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537D_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.020		43.6	45.0	-3.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.056		5.64	5.00	12.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.678		15.0	15.0	0.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	1.008		10.9	10.1	8.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9745		20.8	20.1	3.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.7051		10.6	10.0	6.2	30.0
13C2 PFHxA	Ave	1.100	1.081		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7652	0.7593		9.92	10.0	-0.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207286/1 Calibration Date: 02/06/2018 16:50
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537DD_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9545		142	135	5.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9874		15.8	15.0	5.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.704		45.8	45.0	1.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9451		30.8	30.2	2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9920		63.7	60.3	5.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6875		31.1	30.0	3.5	30.0
13C2 PFHxA	Ave	1.100	1.071		9.73	10.0	-2.7	30.0
13C2 PFDA	Ave	0.7652	0.7156		9.35	10.0	-6.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207286/8 Calibration Date: 02/06/2018 17:22
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537DD_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.059		45.3	45.0	0.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.020		5.44	5.00	8.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.667		14.9	15.0	-0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9482		10.3	10.1	2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9781		20.9	20.1	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6944		10.5	10.0	4.5	30.0
13C2 PFHxA	Ave	1.100	1.098		9.98	10.0	-0.2	30.0
13C2 PFDA	Ave	0.7652	0.7457		9.74	10.0	-2.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207288/8 Calibration Date: 02/06/2018 17:22
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537DD_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.059		45.3	45.0	0.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.020		5.44	5.00	8.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.667		14.9	15.0	-0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9482		10.3	10.1	2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9781		20.9	20.1	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6944		10.5	10.0	4.5	30.0
13C2 PFHxA	Ave	1.100	1.098		9.98	10.0	-0.2	30.0
13C2 PFDA	Ave	0.7652	0.7457		9.74	10.0	-2.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1
 SDG No.: _____
 Lab Sample ID: CCV 320-207288/19 Calibration Date: 02/06/2018 18:14
 Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/03/2017 14:01
 Lab File ID: 2018.02.06_537DD_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9306		138	135	1.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.038		16.6	15.0	10.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.753		47.1	45.0	4.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9914		32.3	30.2	7.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	1.002		64.3	60.3	6.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6959		31.4	30.0	4.8	30.0
13C2 PFHxA	Ave	1.100	1.128		10.3	10.0	2.6	30.0
13C2 PFDA	Ave	0.7652	0.7246		9.47	10.0	-5.3	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-35320-1

SDG No.: _____

Instrument ID: A8_NStart Date: 11/03/2017 13:37Analysis Batch Number: 192908End Date: 11/03/2017 14:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-192908/4		11/03/2017 13:37	1	2017.11.03_537X ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-192908/5		11/03/2017 13:42	1	2017.11.03_537X ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-192908/6		11/03/2017 13:47	1	2017.11.03_537X ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-192908/7 ICISAV		11/03/2017 13:52	1	2017.11.03_537X ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-192908/8		11/03/2017 13:56	1	2017.11.03_537X ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-192908/9		11/03/2017 14:01	1	2017.11.03_537X ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:06	1		GeminiC18 3x100 3(mm)
CCVL 320-192908/11		11/03/2017 14:10	1	2017.11.03_537X ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:15	1		GeminiC18 3x100 3(mm)
ICV 320-192908/13		11/03/2017 14:20	1	2017.11.03_537X ICAL 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:24	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-35320-1

SDG No.: _____

Instrument ID: A8_NStart Date: 02/06/2018 08:30Analysis Batch Number: 207097End Date: 02/06/2018 09:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-207097/1		02/06/2018 08:30	1	2018.02.06_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-207097/2 CCVIS		02/06/2018 08:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 08:44	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 08:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 08:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 08:58	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:03	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:08	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:17	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		02/06/2018 09:26	1		GeminiC18 3x100 3(mm)
CCV 320-207097/14 CCVIS		02/06/2018 09:31	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/06/2018 15:36Analysis Batch Number: 207276 End Date: 02/06/2018 16:09

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-207276/17 CCVIS		02/06/2018 15:36	1	2018.02.06_537D 023.d	GeminiC18 3x100 3(mm)
MB 320-206404/1-A		02/06/2018 15:46	1	2018.02.06_537D 025.d	GeminiC18 3x100 3(mm)
LCS 320-206404/2-A		02/06/2018 15:50	1	2018.02.06_537D 026.d	GeminiC18 3x100 3(mm)
320-35320-1		02/06/2018 15:55	1	2018.02.06_537D 027.d	GeminiC18 3x100 3(mm)
320-35320-2		02/06/2018 16:00	1	2018.02.06_537D 028.d	GeminiC18 3x100 3(mm)
320-35320-3		02/06/2018 16:05	1	2018.02.06_537D 029.d	GeminiC18 3x100 3(mm)
CCV 320-207276/24 CCVIS		02/06/2018 16:09	1	2018.02.06_537D 035.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/06/2018 16:50Analysis Batch Number: 207286 End Date: 02/06/2018 17:22

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-207286/1 CCVIS		02/06/2018 16:50	1	2018.02.06_537D D 023.d	GeminiC18 3x100 3(mm)
320-35320-4		02/06/2018 16:59	1	2018.02.06_537D D 030.d	GeminiC18 3x100 3(mm)
320-35320-5		02/06/2018 17:04	1	2018.02.06_537D D 031.d	GeminiC18 3x100 3(mm)
320-35320-6		02/06/2018 17:08	1	2018.02.06_537D D 032.d	GeminiC18 3x100 3(mm)
320-35320-7		02/06/2018 17:13	1	2018.02.06_537D D 033.d	GeminiC18 3x100 3(mm)
320-35320-8		02/06/2018 17:18	1	2018.02.06_537D D 034.d	GeminiC18 3x100 3(mm)
CCV 320-207286/8 CCVIS		02/06/2018 17:22	1	2018.02.06_537D D 035.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-35320-1

SDG No.: _____

Instrument ID: A8_NStart Date: 02/06/2018 17:22Analysis Batch Number: 207288End Date: 02/06/2018 18:14

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-207288/8 CCVIS		02/06/2018 17:22	1	2018.02.06_537D D 035.d	GeminiC18 3x100 3(mm)
320-35320-9		02/06/2018 17:32	1	2018.02.06_537D D 037.d	GeminiC18 3x100 3(mm)
320-35320-10		02/06/2018 17:37	1	2018.02.06_537D D 038.d	GeminiC18 3x100 3(mm)
320-35320-11		02/06/2018 17:41	1	2018.02.06_537D D 039.d	GeminiC18 3x100 3(mm)
320-35320-12		02/06/2018 17:46	1	2018.02.06_537D D 040.d	GeminiC18 3x100 3(mm)
320-35320-12 MS		02/06/2018 17:51	1	2018.02.06_537D D 041.d	GeminiC18 3x100 3(mm)
320-35320-12 MSD		02/06/2018 17:55	1	2018.02.06_537D D 042.d	GeminiC18 3x100 3(mm)
320-35320-13		02/06/2018 18:00	1	2018.02.06_537D D 043.d	GeminiC18 3x100 3(mm)
320-35320-14		02/06/2018 18:05	1	2018.02.06_537D D 044.d	GeminiC18 3x100 3(mm)
320-35320-15		02/06/2018 18:09	1	2018.02.06_537D D 045.d	GeminiC18 3x100 3(mm)
CCV 320-207288/19 CCVIS		02/06/2018 18:14	1	2018.02.06_537D D 046.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Batch Number: 206404 Batch Start Date: 01/31/18 14:40 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 02/02/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00057
MB 320-206404/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-206404/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-35320-A-1	NAWC-012318-RW-279	537, 537	T	267.98 g	27.94 g	240 mL	1.00 mL	9 SU	100 uL
320-35320-A-2	NAWC-012318-FRB-279	537, 537	T	278.06 g	27.00 g	251.1 mL	1.00 mL	7 SU	100 uL
320-35320-A-3	NAWC-012318-RW-166	537, 537	T	274.37 g	27.96 g	246.4 mL	1.00 mL	7 SU	100 uL
320-35320-A-4	NAWC-012318-FRB-166	537, 537	T	284.94 g	27.37 g	257.6 mL	1.00 mL	7 SU	100 uL
320-35320-A-5	WGNA-012318-DUP-22	537, 537	T	274.66 g	28.12 g	246.5 mL	1.00 mL	9 SU	100 uL
320-35320-A-6	NAWC-012318-RW-159	537, 537	T	270.32 g	28.86 g	241.5 mL	1.00 mL	7 SU	100 uL
320-35320-A-7	NAWC-012318-FRB-159	537, 537	T	272.62 g	27.09 g	245.5 mL	1.00 mL	7 SU	100 uL
320-35320-A-8	NAWC-012318-RW-081	537, 537	T	275.65 g	28.56 g	247.1 mL	1.00 mL	7 SU	100 uL
320-35320-A-9	NAWC-012318-FRB-081	537, 537	T	273.04 g	27.03 g	246 mL	1.00 mL	7 SU	100 uL
320-35320-A-10	NAWC-012318-RW-082	537, 537	T	273.37 g	28.93 g	244.4 mL	1.00 mL	7 SU	100 uL
320-35320-A-11	NAWC-012318-FRB-082	537, 537	T	279.34 g	27.52 g	251.8 mL	1.00 mL	7 SU	100 uL
320-35320-A-12	NAWC-012318-RW-117	537, 537	T	270.42 g	27.16 g	243.3 mL	1.00 mL	7 SU	100 uL
320-35320-A-12 MS	NAWC-012318-RW-117	537, 537	T	272.57 g	28.38 g	244.2 mL	1.00 mL	7 SU	100 uL
320-35320-A-12 MSD	NAWC-012318-RW-117	537, 537	T	267.30 g	28.30 g	239 mL	1.00 mL	8 SU	100 uL
320-35320-A-13	NAWC-012318-FRB-117	537, 537	T	275.43 g	28.78 g	246.7 mL	1.00 mL	7 SU	100 uL
320-35320-A-14	NAWC-012318-RW-170	537, 537	T	268.15 g	28.65 g	239.5 mL	1.00 mL	9 SU	100 uL
320-35320-A-15	NAWC-012318-FRB-170	537, 537	T	279.05 g	27.75 g	251.3 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00053	AnalysisComment			
MB 320-206404/1		537, 537			100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Batch Number: 206404 Batch Start Date: 01/31/18 14:40 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 02/02/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00053	AnalysisComment			
LCS 320-206404/2		537, 537		100 uL	100 uL	Chlorine ND			
320-35320-A-1	NAWC-012318-RW-2 79	537, 537	T		100 uL	Chlorine ND			
320-35320-A-2	NAWC-012318-FRB- 279	537, 537	T		100 uL	Chlorine ND			
320-35320-A-3	NAWC-012318-RW-1 66	537, 537	T		100 uL	Chlorine ND			
320-35320-A-4	NAWC-012318-FRB- 166	537, 537	T		100 uL	Chlorine ND			
320-35320-A-5	WGNA-012318-DUP- 22	537, 537	T		100 uL	Chlorine ND			
320-35320-A-6	NAWC-012318-RW-1 59	537, 537	T		100 uL	Chlorine ND			
320-35320-A-7	NAWC-012318-FRB- 159	537, 537	T		100 uL	Chlorine ND			
320-35320-A-8	NAWC-012318-RW-0 81	537, 537	T		100 uL	Chlorine ND			
320-35320-A-9	NAWC-012318-FRB- 081	537, 537	T		100 uL	Chlorine ND			
320-35320-A-10	NAWC-012318-RW-0 82	537, 537	T		100 uL	Chlorine ND			
320-35320-A-11	NAWC-012318-FRB- 082	537, 537	T		100 uL	Chlorine ND			
320-35320-A-12	NAWC-012318-RW-1 17	537, 537	T		100 uL	Chlorine ND			
320-35320-A-12 MS	NAWC-012318-RW-1 17	537, 537	T	100 uL	100 uL	Chlorine ND			
320-35320-A-12 MSD	NAWC-012318-RW-1 17	537, 537	T	100 uL	100 uL	Chlorine ND			
320-35320-A-13	NAWC-012318-FRB- 117	537, 537	T		100 uL	Chlorine ND			
320-35320-A-14	NAWC-012318-RW-1 70	537, 537	T		100 uL	Chlorine ND			
320-35320-A-15	NAWC-012318-FRB- 170	537, 537	T		100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35320-1

SDG No.: _____

Batch Number: 206404 Batch Start Date: 01/31/18 14:40 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 02/02/18 17:25

Batch Notes	
Analyst ID - Aliquot Step	VPM
Batch Comment	Client labels match: TWL 1/31/18
Analyst ID - Concentration	NIGHTS/CCB
Analyst ID - Final Volume Step	CCB
Internal Standard ID#	1145836
Manifold ID	7,1
Methanol ID	1127839
pH Indicator ID	2517
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	JNS
Analyst ID - SU Reagent Drop Witness	TWL
Analyst ID - TA Reagent Drop	JNS
Analyst ID - TA Reagent Drop Witness	TWL
SPE Cartridge Lot ID	6369499-04
Trizma ID	SLBR4303V
Reagent Water ID	1/30/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 06FEB2018_537D

Worklist Number: 53774

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180207-53774.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 CS ICAL Raw Batch: 207273	LC 537 ICAL Raw Batch: 207289
# 1 CCV L5	# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB	
# 3 MB 320-206461/1-A	# 3 MB 320-206461/1-A	
# 4 LLCS 320-206461/2-A	# 4 LLCS 320-206461/2-A	
# 5 LLCSD 320-206461/3-A	# 5 LLCSD 320-206461/3-A	
# 6 320-35367-A-1-A	# 6 320-35367-A-1-A	
# 7 320-35367-A-2-A	# 7 320-35367-A-2-A	
# 8 320-35367-A-3-A	# 8 320-35367-A-3-A	
# 9 320-35367-A-3-D LMS	# 9 320-35367-A-3-D LMS	
#10 320-35367-A-3-E LMSD	#10 320-35367-A-3-E LMSD	
#11 320-35367-A-4-A	#11 320-35367-A-4-A	
#12 320-35367-A-5-A	#12 320-35367-A-5-A	
#13 CCV L3	#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 CS ICAL Raw Batch: 207274	LC 537 ICAL Raw Batch: 207290
#13 CCV L3	#13 CCV L3	#13 CCV L3
#14 RB	#14 RB	
#15 320-35367-A-6-A	#15 320-35367-A-6-A	
#16 320-35367-A-7-A	#16 320-35367-A-7-A	
#17 CCV L5	#17 CCV L5	#17 CCV L5

QC Batch: 3	LC 537 CS ICAL Raw Batch: 207275	LC 537 ICAL Raw Batch: 207276
#17 CCV L5	#17 CCV L5	#17 CCV L5
#18 RB	#18 RB	
#19 MB 320-206404/1-A		#19 MB 320-206404/1-A
#20 LCS 320-206404/2-A		#20 LCS 320-206404/2-A
#21 320-35320-A-1-A		#21 320-35320-A-1-A
#22 320-35320-A-2-A		#22 320-35320-A-2-A
#23 320-35320-A-3-A		#23 320-35320-A-3-A
#24 CCV L3	#24 CCV L3	#24 CCV L3
#25 RB	#25 RB	

CCVL: 207096

CCVL: 207097

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 06FEB2018_537E

Worklist Number: 53778

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180207-53778.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 CS ICAL Raw Batch: 207285	LC 537 ICAL Raw Batch: 207286
# 1 CCV L5 # 2 RB # 3 320-35320-A-4-A # 4 320-35320-A-5-A # 5 320-35320-A-6-A # 6 320-35320-A-7-A # 7 320-35320-A-8-A # 8 CCV L3	# 1 CCV L5 # 2 RB # 8 CCV L3	# 1 CCV L5 # 2 RB # 3 320-35320-A-4-A # 4 320-35320-A-5-A # 5 320-35320-A-6-A # 6 320-35320-A-7-A # 7 320-35320-A-8-A # 8 CCV L3

QC Batch: 2	LC 537 CS ICAL Raw Batch: 207287	LC 537 ICAL Raw Batch: 207288
# 8 CCV L3 # 9 RB #10 320-35320-A-9-A #11 320-35320-A-10-A #12 320-35320-A-11-A #13 320-35320-A-12-A #14 320-35320-A-12-B MS #15 320-35320-A-12-C MSD #16 320-35320-A-13-A #17 320-35320-A-14-A #18 320-35320-A-15-A #19 CCV L5 #20 RB	# 8 CCV L3 # 9 RB #19 CCV L5 #20 RB	# 8 CCV L3 # 9 RB #10 320-35320-A-9-A #11 320-35320-A-10-A #12 320-35320-A-11-A #13 320-35320-A-12-A #14 320-35320-A-12-B MS #15 320-35320-A-12-C MSD #16 320-35320-A-13-A #17 320-35320-A-14-A #18 320-35320-A-15-A #19 CCV L5 #20 RB

CCVL: 207097

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 07FEB2018_537A

Worklist Number: 53797

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180207-53797.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 CS ICAL Raw Batch: 207359	LC 537 ICAL Raw Batch: 207360
# 1 CCVL	# 1 CCVL	# 1 CCVL
# 2 CCV L3	# 2 CCV L3	# 2 CCV L3
# 3 RB	# 3 RB	# 3 RB
# 4 320-35320-A-13-A		# 4 320-35320-A-13-A
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5
# 6 RB	# 6 RB	# 6 RB

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-206404

Analyst: Long, Tyrel W











Batch Open: 1/31/2018 2:40:00PM

Method Code: 320-537_Prep-320

Batch End: 2/2/2018 5:25:00PM

Extraction of Perfluorinated Alkyl Acids

Due 2/14

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-206404/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
2 LCS-320-206404/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
3 320-35320-A-1 (537_DOD5)	N/A (320-35320-1)	267.98 g	240 mL	9			1/28/18	16_Days	4	Chlorine ND	
		27.94 g	1.00 mL								
320-35320-A-2 (537_DOD5)	N/A (320-35320-1)	278.06 g	251.1 mL	7			1/28/18	16_Days	4	Chlorine ND	
		27.00 g	1.00 mL								
320-35320-A-3 (537_DOD5)	N/A (320-35320-1)	274.37 g	246.4 mL	7			1/28/18	16_Days	4	Chlorine ND	
		27.96 g	1.00 mL								
320-35320-A-4 (537_DOD5)	N/A (320-35320-1)	284.94 g	257.6 mL	7			1/28/18	16_Days	4	Chlorine ND	
		27.37 g	1.00 mL								
320-35320-A-5 (537_DOD5)	N/A (320-35320-1)	274.66 g	246.5 mL	9			1/28/18	16_Days	4	Chlorine ND	
		28.12 g	1.00 mL								
320-35320-A-6 (537_DOD5)	N/A (320-35320-1)	270.32 g	241.5 mL	7			1/28/18	16_Days	4	Chlorine ND	
		28.86 g	1.00 mL								
320-35320-A-7 (537_DOD5)	N/A (320-35320-1)	272.62 g	245.5 mL	7			1/28/18	16_Days	4	Chlorine ND	
		27.09 g	1.00 mL								
320-35320-A-8 (537_DOD5)	N/A (320-35320-1)	275.65 g	247.1 mL	7			1/28/18	16_Days	4	Chlorine ND	
		28.56 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)










Batch Number: 320-206404

Analyst: Long, Tyrel W

Batch Open: 1/31/2018 2:40:00PM

Method Code: 320-537_Prep-320

Batch End: 2/2/2018 5:25:00PM

11	320-35320-A-9 (537_DOD5)	N/A (320-35320-1)	273.04 g	246 mL	7		1/28/18	16_Days	4	Chlorine ND	
			27.03 g	1.00 mL							
12	320-35320-A-10 (537_DOD5)	N/A (320-35320-1)	273.37 g	244.4 mL	7		1/28/18	16_Days	4	Chlorine ND	
			28.93 g	1.00 mL							
13	320-35320-A-11 (537_DOD5)	N/A (320-35320-1)	279.34 g	251.8 mL	7		1/28/18	16_Days	4	Chlorine ND	
			27.52 g	1.00 mL							
14	320-35320-A-12 (537_DOD5)	N/A (320-35320-1)	270.42 g	243.3 mL	7		1/28/18	16_Days	4	Chlorine ND	
			27.16 g	1.00 mL							
15	320-35320-A-12-MS (537_DOD5)	N/A (320-35320-1)	272.57 g	244.2 mL	7		1/28/18	16_Days	4	Chlorine ND	
			28.38 g	1.00 mL							
16	320-35320-A-12-MSD (537_DOD5)	N/A (320-35320-1)	267.30 g	239 mL	8		1/28/18	16_Days	4	Chlorine ND	
			28.30 g	1.00 mL							
17	320-35320-A-13 (537_DOD5)	N/A (320-35320-1)	275.43 g	246.7 mL	7		1/28/18	16_Days	4	Chlorine ND	
			28.78 g	1.00 mL							
18	320-35320-A-14 (537_DOD5)	N/A (320-35320-1)	268.15 g	239.5 mL	9		1/28/18	16_Days	4	Chlorine ND	
			28.65 g	1.00 mL							
19	320-35320-A-15 (537_DOD5)	N/A (320-35320-1)	279.05 g	251.3 mL	7		1/28/18	16_Days	4	Chlorine ND	
			27.75 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-206404

Analyst: Long, Tyrel W

Batch Open: 1/31/2018 2:40:00PM

Method Code: 320-537_Prep-320

Batch End: 2/2/2018 5:25:00PM

Batch Notes

Manifold ID 7,1

pH Indicator ID 2517

Trizma ID SLBR4303V

SPE Cartridge ID 6369499-04

Methanol ID 1127839

Reagent Water ID 1/30/18

Internal Standard ID# 1145836

Pipette ID NA

Analyst ID - TA Reagent Drop JNS

Analyst ID - TA Reagent Drop TWL

Witness

Analyst ID - SU Reagent Drop JNS

Analyst ID - SU Reagent Drop TWL

Witness

Analyst ID - IS Reagent Drop CCB

Analyst ID - IS Reagent Drop TWL

Witness

Analyst ID - Concentration NIGHTS/CCB

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step CCB

Batch Comment Client labels match: TWL 1/31/18

72

Aqueous Extraction Analysis Sheet

As 2/6/18

(To Accompany Samples to Instruments)

Batch Number: 320-206461

Analyst: Branscum, Cassie











Batch Open: 2/1/2018 8:35:00AM

Method Code: 320-537_Prep-320

Batch End: 2/5/2018 6:39:00PM

Extraction of Perfluorinated Alkyl Acids

Due 2/8

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-206461/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
2 LLCS-320-206461/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
3 LLCSD-320-206461/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
4 320-35367-A-1 (537_DuPont)	N/A (320-35367-1)	285.11 g	256.2 mL	7			1/31/18	8_Days	4	ch nd	
		28.94 g	1.00 mL								
5 320-35367-A-2 (537_DuPont)	N/A (320-35367-1)	276.12 g	246.9 mL	7			1/31/18	8_Days	4	ch nd	
		29.24 g	1.00 mL								
6 320-35367-A-3 (537_DuPont)	N/A (320-35367-1)	283.15 g	254.4 mL	7			1/31/18	8_Days	4	ch nd	
		28.72 g	1.00 mL								
7 320-35367-A-3-LMS (537_DuPont)	N/A (320-35367-1)	281.16 g	252.5 mL	7			1/31/18	8_Days	4	ch nd	
		28.65 g	1.00 mL								
8 320-35367-A-3-LMSD (537_DuPont)	N/A (320-35367-1)	284.44 g	255.8 mL	7			1/31/18	8_Days	4	ch nd	
		28.69 g	1.00 mL								
9 320-35367-A-4 (537_DuPont)	N/A (320-35367-1)	281.18 g	252.6 mL	7			1/31/18	8_Days	4	ch nd	
		28.55 g	1.00 mL								
10 320-35367-A-5 (537_DuPont)	N/A (320-35367-1)	288.45 g	259.5 mL	7			1/31/18	8_Days	4	ch nd	
		28.91 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-206461

Analyst: Branscum, Cassie



Batch Open: 2/1/2018 8:35:00AM

Method Code: 320-537_Prep-320

Batch End: 2/5/2018 6:39:00PM

11

12

320-35367-A-6 (537_DuPont)	N/A (320-35367-1)	282.84 g	253.7 mL	7			1/31/18	8_Days	4	ch nd	
		29.12 g	1.00 mL								
320-35367-A-7 (537_DuPont)	N/A (320-35367-1)	284.52 g	255.5 mL	7			1/31/18	8_Days	4	ch nd	
		29.00 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-206461

Analyst: Branscum, Cassie

Batch Open: 2/1/2018 8:35:00AM

Method Code: 320-537_Prep-320

Batch End: 2/5/2018 6:39:00PM

Batch Notes

Manifold ID 4, 15

pH Indicator ID 2517

Trizma ID SLBR4303V

SPE Cartridge ID 6369499-04

Methanol ID 1127839

Reagent Water ID 1/30/18

Internal Standard ID# 1099356

Pipette ID M16387D

Analyst ID - TA Reagent Drop CCB

Analyst ID - TA Reagent Drop JNS

Witness

Analyst ID - SU Reagent Drop CCB

Analyst ID - SU Reagent Drop JNS

Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop KMK

Witness

Analyst ID - Concentration CCB/KMK

Analyst ID - Aliquot Step KMK

Analyst ID - Final Volume Step KMK

Batch Comment Client labels match: KMK 2/1/18

TestAmerica Laboratories

Worklist QC Batch Report

Worklist Name: 09FEB2018_537B

Worklist Number: 53917

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180210-53917.b

QC Batching: Enabled

Limit Group Batching: Enabled

CCVL: 207860

QC Batch: 1	LC 537 ICAL Raw Batch: 207871	LC 537 CS ICAL Raw Batch: 207872
# 1 CCV L5	# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB	# 2 RB
# 3 MB 320-207339/1-A	# 3 MB 320-207339/1-A	
# 4 LCS 320-207339/2-A	# 4 LCS 320-207339/2-A	
# 5 LCSD 320-207339/3-A	# 5 LCSD 320-207339/3-A	
# 6 320-35504-B-7-A	# 6 320-35504-B-7-A	
# 7 320-35320-B-12-A	# 7 320-35320-B-12-A	
# 8 320-35320-B-12-B MS	# 8 320-35320-B-12-B MS	
# 9 320-35320-B-12-C MSD	# 9 320-35320-B-12-C MSD	
#10 320-35320-B-13-A	#10 320-35320-B-13-A	
#11 CCV L3	#11 CCV L3	
#12 RB	#12 RB	

79 

Aqueous Extraction Analysis Sheet

A8 2/9/18

(To Accompany Samples to Instruments)

Batch Number: 320-207339









Analyst: Long, Tyrel W

Batch Open: 2/7/2018 11:00:00AM

Method Code: 320-537_Prep-320

Batch End: 2/9/2018 11:20:00AM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-207339/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
2 LCS-320-207339/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
3 LCSD-320-207339/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
4 320-35504-B-7 (537)	N/A (320-35504-2)	312.65 g	283.4 mL	7			2/13/18	4_Day_RUSH	4	Chlorine ND	
		29.27 g	1.00 mL							20X	
5 320-35320-B-12 (537_DOD5)	N/A (320-35320-1)	300.47 g	270.7 mL	7			1/28/18	16_Days	4	Chlorine ND	
		29.78 g	1.00 mL								
6 320-35320-B-12~MS (537_DOD5)	N/A (320-35320-1)	318.32 g	289.6 mL	7			1/28/18	16_Days	4	Chlorine ND	
		28.74 g	1.00 mL								
7 320-35320-B-12~MSD (537_DOD5)	N/A (320-35320-1)	317.11 g	288.8 mL	7			1/28/18	16_Days	4	Chlorine ND	
		28.28 g	1.00 mL								
8 320-35320-B-13 (537_DOD5)	N/A (320-35320-1)	308.82 g	280.9 mL	7			1/28/18	16_Days	4	Chlorine ND	
		27.89 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-207339

Analyst: Long, Tyrel W

Batch Open: 2/7/2018 11:00:00AM

Method Code: 320-537_Prep-320

Batch End: 2/9/2018 11:20:00AM

Batch Notes

Manifold ID 7

pH Indicator ID 2517

Trizma ID SLBR4303V

SPE Cartridge Lot ID 6369499-05

Methanol ID 1147520

Reagent Water ID 2/5/18

Internal Standard ID# 1145836

Pipette ID M16387D

Analyst ID - TA Reagent Drop JNS

Analyst ID - TA Reagent Drop TWL
Witness

Analyst ID - SU Reagent Drop JNS

Analyst ID - SU Reagent Drop TWL
Witness

Analyst ID - IS Reagent Drop KMK

Analyst ID - IS Reagent Drop JER
Witness

Analyst ID - Concentration CCB/KMK

Analyst ID - Aliquot Step KMK

Analyst ID - Final Volume Step KMK

Batch Comment Client ID matches label ID TWL 2-7-18

PFAS Calibration Calculations:

Initial Calibration 11/3/2017
Instrument A8_N

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
4	412315	3298877	28.7	0.89678	0.8958
8.89	985487	3450592	28.7	0.92201	0.9213
20	2067792	3194016	28.7	0.92901	0.9281
40	4363079	3374600	28.7	0.92767	0.9268
60	6504279	3199479	28.7	0.97241	0.9715
80	8679676	3141787	28.7	0.99110	0.9902
Average				0.93983	0.9389
Standard Deviation				0.0350	
RSD				0.0372	
%RSD				3.72448	3.7

Continuing Calibration 02/06/2018 @ 15:36

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
60	6311071	2964118	28.7	1.0184	7.8922143	1.013	7.9

Willow Grove
SDG 320-35320-1

Sample Identification NAWC-012318-RW-279

Compound Perfluorooctanesulfonic acid

Compound Area	434235
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	3190877
Average RRF	0.9389
Sample Volume(L)	0.24
Volume Extract (ml)	1
Injection Volume (µl)	1
Concentration	17.3327 ng/L

C:\AI\Projects\112008005\WECA\FSDR\03\NAWC_201901.mxd MKB 1/24/2019

