



**Off-Base Drinking Water Sample Results,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Figure, SDG 320-45014-1**

*Naval Air Warfare Center Warminster  
Warminster, Pennsylvania*

August 2019

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "9.11", "ng/L", "", "0.831", "DL", "", "TRG", "", "", "4.37", "LOQ", "YES", "-99", "", "285.9", "10.00", "1.75", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "11.8", "ng/L", "M", "2.36", "DL", "", "TRG", "", "", "6.12", "LOQ", "YES", "-99", "", "285.9", "10.00", "5.25", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "13.6", "ng/L", "", "0.560", "DL", "", "TRG", "", "", "4.37", "LOQ", "YES", "-99", "", "285.9", "10.00", "1.75", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "6.67", "ng/L", "", "0.700", "DL", "", "TRG", "", "", "4.37", "LOQ", "YES", "-99", "", "285.9", "10.00", "1.75", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "3.55", "ng/L", "J", "1.14", "DL", "", "TRG", "", "", "4.37", "LOQ", "YES", "-99", "", "285.9", "10.00", "2.62", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "1.18", "ng/L", "J", "0.411", "DL", "", "TRG", "", "", "4.37", "LOQ", "YES", "-99", "", "285.9", "10.00", "0.874", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "STL00993", "13C2  
PFHxA", "66.7", "ng/L", "", "-99", "DL", "", "SURR", "76", "", "-99", "LOQ", "YES", "87.4", "", "285.9", "10.00", "0", ""

"WGNA-110618-RW-3785", "537", "RES", "320-45014-1", "TALSAC", "STL00996", "13C2  
PFDA", "71.5", "ng/L", "", "-99", "DL", "", "SURR", "82", "", "-99", "LOQ", "YES", "87.4", "", "285.9", "10.00", "0", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "1.76", "ng/L", "U", "0.835", "DL", "", "TRG", "", "", "4.39", "LOQ", "YES", "-99", "", "284.5", "10.00", "1.76", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "5.27", "ng/L", "U M", "2.37", "DL", "", "TRG", "", "", "6.15", "LOQ", "YES", "-99", "", "284.5", "10.00", "5.27", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "1.76", "ng/L", "U", "0.562", "DL", "", "TRG", "", "", "4.39", "LOQ", "YES", "-99", "", "284.5", "10.00", "1.76", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "1.76", "ng/L", "U", "0.703", "DL", "", "TRG", "", "", "4.39", "LOQ", "YES", "-99", "", "284.5", "10.00", "1.76", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "2.64", "ng/L", "U M", "1.14", "DL", "", "TRG", "", "", "4.39", "LOQ", "YES", "-99", "", "284.5", "10.00", "2.64", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "0.879", "ng/L", "U", "0.413", "DL", "", "TRG", "", "", "4.39", "LOQ", "YES", "-99", "", "284.5", "10.00", "0.879", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "STL00993", "13C2  
PFHxA", "74.6", "ng/L", "", "-99", "DL", "", "SURR", "85", "", "-99", "LOQ", "YES", "87.9", "", "284.5", "10.00", "0", ""

"WGNA-110618-FRB-4024", "537", "RES", "320-45014-10", "TALSAC", "STL00996", "13C2  
PFDA", "79.2", "ng/L", "", "-99", "DL", "", "SURR", "90", "", "-99", "LOQ", "YES", "87.9", "", "284.5", "10.00", "0", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "10.5", "ng/L", "", "0.872", "DL", "", "TRG", "", "", "4.59", "LOQ", "YES", "-99", "", "272.4", "10.00", "1.84", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "15.9", "ng/L", "M", "2.48", "DL", "", "TRG", "", "", "6.42", "LOQ", "YES", "-99", "", "272.4", "10.00", "5.51", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "4.83", "ng/L", "", "0.587", "DL", "", "TRG", "", "", "4.59", "LOQ", "YES", "-99", "", "272.4", "10.00", "1.84", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "4.44", "ng/L", "J", "0.734", "DL", "", "TRG", "", "", "4.59", "LOQ", "YES", "-99", "", "272.4", "10.00", "1.84", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "5.70", "ng/L", "", "1.19", "DL", "", "TRG", "", "", "4.59", "LOQ", "YES", "-99", "", "272.4", "10.00", "2.75", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "1.52", "ng/L", "J", "0.431", "DL", "", "TRG", "", "", "4.59", "LOQ", "YES", "-99", "", "272.4", "10.00", "0.918", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "STL00993", "13C2  
PFHxA", "78.0", "ng/L", "", "-99", "DL", "", "SURR", "85", "", "-99", "LOQ", "YES", "91.8", "", "272.4", "10.00", "0", ""

"WGNA-110618-RW-3529", "537", "RES", "320-45014-11", "TALSAC", "STL00996", "13C2  
PFDA", "90.4", "ng/L", "", "-99", "DL", "", "SURR", "98", "", "-99", "LOQ", "YES", "91.8", "", "272.4", "10.00", "0", ""

"WGNA-110618-FRB-3529", "537", "RES", "320-45014-12", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "1.81", "ng/L", "U", "0.861", "DL", "", "TRG", "", "", "4.53", "LOQ", "YES", "-99", "", "275.9", "10.00", "1.81", ""

"WGNA-110618-FRB-3529", "537", "RES", "320-45014-12", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "5.44", "ng/L", "U M", "2.45", "DL", "", "TRG", "", "", "6.34", "LOQ", "YES", "-99", "", "275.9", "10.00", "5.44", ""

"WGNA-110618-FRB-3529", "537", "RES", "320-45014-12", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid

(PFHxS),"1.81","ng/L","U","0.580","DL",,"","TRG",,"","4.53","LOQ","YES",-99",,"275.9","10.00","1.81",,""  
"WGNA-110618-FRB-3529","537","RES",320-45014-12,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"1.81","ng/L","U","0.725","DL",,"","TRG",,"","4.53","LOQ","YES",-99",,"275.9","10.00","1.81",,""  
"WGNA-110618-FRB-3529","537","RES",320-45014-12,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"2.72","ng/L","U","1.18","DL",,"","TRG",,"","4.53","LOQ","YES",-99",,"275.9","10.00","2.72",,""  
"WGNA-110618-FRB-3529","537","RES",320-45014-12,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"0.906","ng/L","U","0.426","DL",,"","TRG",,"","4.53","LOQ","YES",-99",,"275.9","10.00","0.906",,""  
"WGNA-110618-FRB-3529","537","RES",320-45014-12,"TALSAC",STL00993,"13C2  
PFHxA,"70.8","ng/L",,"",-99","DL",,"","SURR",78",,"",-99","LOQ","YES",90.6",,"275.9","10.00","0",,""  
"WGNA-110618-FRB-3529","537","RES",320-45014-12,"TALSAC",STL00996,"13C2  
PFDA,"73.5","ng/L",,"",-99","DL",,"","SURR",81",,"",-99","LOQ","YES",90.6",,"275.9","10.00","0",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",1763-23-1,"Perfluorooctanesulfonic acid  
(PFOS),"1.79","ng/L","U","0.850","DL",,"","TRG",,"","4.47","LOQ","YES",-99",,"279.5","10.00","1.79",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"5.37","ng/L","U M",2.42,"DL",,"","TRG",,"","6.26","LOQ","YES",-99",,"279.5","10.00","5.37",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"1.79","ng/L","U","0.572","DL",,"","TRG",,"","4.47","LOQ","YES",-99",,"279.5","10.00","1.79",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"1.79","ng/L","U","0.716","DL",,"","TRG",,"","4.47","LOQ","YES",-99",,"279.5","10.00","1.79",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"2.68","ng/L","U M",1.16,"DL",,"","TRG",,"","4.47","LOQ","YES",-99",,"279.5","10.00","2.68",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"0.894","ng/L","U","0.420","DL",,"","TRG",,"","4.47","LOQ","YES",-99",,"279.5","10.00","0.894",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",STL00993,"13C2  
PFHxA,"75.9","ng/L",,"",-99","DL",,"","SURR",85",,"",-99","LOQ","YES",89.4",,"279.5","10.00","0",,""  
"WGNA-110618-FRB-3785","537","RES",320-45014-2,"TALSAC",STL00996,"13C2  
PFDA,"79.7","ng/L",,"",-99","DL",,"","SURR",89",,"",-99","LOQ","YES",89.4",,"279.5","10.00","0",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",1763-23-1,"Perfluorooctanesulfonic acid  
(PFOS),"12.6","ng/L","J1",0.880,"DL",,"","TRG",,"","4.63","LOQ","YES",-99",,"270","10.00","1.85",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"14.2","ng/L","M J1",2.50,"DL",,"","TRG",,"","6.48","LOQ","YES",-99",,"270","10.00","5.56",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"6.64","ng/L","J1",0.593,"DL",,"","TRG",,"","4.63","LOQ","YES",-99",,"270","10.00","1.85",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"9.78","ng/L","J1",0.741,"DL",,"","TRG",,"","4.63","LOQ","YES",-99",,"270","10.00","1.85",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"3.76","ng/L","J",1.20,"DL",,"","TRG",,"","4.63","LOQ","YES",-99",,"270","10.00","2.78",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"1.41","ng/L","J",0.435,"DL",,"","TRG",,"","4.63","LOQ","YES",-99",,"270","10.00","0.926",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",STL00993,"13C2  
PFHxA,"89.5","ng/L",,"",-99","DL",,"","SURR",97",,"",-99","LOQ","YES",92.6",,"270","10.00","0",,""  
"WGNA-110618-RW-3957","537","RES",320-45014-3,"TALSAC",STL00996,"13C2  
PFDA,"91.5","ng/L",,"",-99","DL",,"","SURR",99",,"",-99","LOQ","YES",92.6",,"270","10.00","0",,""  
"WGNA-110618-RW-3957MS","537","RES",320-45014-3MS,"TALSAC",1763-23-1,"Perfluorooctanesulfonic  
acid (PFOS),"78.34","ng/L",,"0.855","DL",,"","SPK",79",,"4.50","LOQ","YES",83.5,"WGNA-110618-RW-  
3957","277.8","10.00","1.80",,""  
"WGNA-110618-RW-3957MS","537","RES",320-45014-3MS,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"77.23","ng/L","M",2.43,"DL",,"","SPK",70",,"6.30","LOQ","YES",90.1,"WGNA-110618-RW-  
3957","277.8","10.00","5.40",,""  
"WGNA-110618-RW-3957MS","537","RES",320-45014-3MS,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"76.32","ng/L",,"0.576","DL",,"","SPK",85",,"4.50","LOQ","YES",81.9,"WGNA-110618-RW-  
3957","277.8","10.00","1.80",,""  
"WGNA-110618-RW-3957MS","537","RES",320-45014-3MS,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"79.04","ng/L",,"0.720","DL",,"","SPK",87",,"4.50","LOQ","YES",79.6,"WGNA-110618-RW-

3957","277.8","10.00","1.80", ""  
"WGNA-110618-RW-3957MS","537","RES","320-45014-3MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","71.80","ng/L", "", "1.17","DL", "", "SPK","76", "", "4.50","LOQ","YES","90.0","WGNA-110618-RW-3957","277.8","10.00","2.70", ""  
"WGNA-110618-RW-3957MS","537","RES","320-45014-3MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","73.41","ng/L", "", "0.423","DL", "", "SPK","80", "", "4.50","LOQ","YES","90.0","WGNA-110618-RW-3957","277.8","10.00","0.900", ""  
"WGNA-110618-RW-3957MS","537","RES","320-45014-3MS","TALSAC","STL00993","13C2 PFHxA","68.23","ng/L", "", "-99","DL", "", "SURR","76", "", "-99","LOQ","YES","90.0","WGNA-110618-RW-3957","277.8","10.00","0", ""  
"WGNA-110618-RW-3957MS","537","RES","320-45014-3MS","TALSAC","STL00996","13C2 PFDA","73.55","ng/L", "", "-99","DL", "", "SURR","82", "", "-99","LOQ","YES","90.0","WGNA-110618-RW-3957","277.8","10.00","0", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","59.78","ng/L","J1","0.849","DL", "", "SPK","57","27","4.47","LOQ","YES","82.9","WGNA-110618-RW-3957","279.8","10.00","1.79", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","69.40","ng/L","J1","2.41","DL", "", "SPK","62","11","6.25","LOQ","YES","89.4","WGNA-110618-RW-3957","279.8","10.00","5.36", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","60.85","ng/L","J1","0.572","DL", "", "SPK","67","23","4.47","LOQ","YES","81.3","WGNA-110618-RW-3957","279.8","10.00","1.79", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","60.56","ng/L","J1","0.715","DL", "", "SPK","64","26","4.47","LOQ","YES","79.0","WGNA-110618-RW-3957","279.8","10.00","1.79", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","66.98","ng/L", "", "1.16","DL", "", "SPK","71","7","4.47","LOQ","YES","89.3","WGNA-110618-RW-3957","279.8","10.00","2.68", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","70.25","ng/L", "", "0.420","DL", "", "SPK","77","4","4.47","LOQ","YES","89.3","WGNA-110618-RW-3957","279.8","10.00","0.893", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","STL00993","13C2 PFHxA","68.02","ng/L", "", "-99","DL", "", "SURR","76", "", "-99","LOQ","YES","89.3","WGNA-110618-RW-3957","279.8","10.00","0", ""  
"WGNA-110618-RW-3957MSD","537","RES","320-45014-3MSD","TALSAC","STL00996","13C2 PFDA","74.22","ng/L", "", "-99","DL", "", "SURR","83", "", "-99","LOQ","YES","89.3","WGNA-110618-RW-3957","279.8","10.00","0", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","1.80","ng/L","U H","0.855","DL", "", "TRG", "", "", "4.50","LOQ","NO",-99, "", "277.7","10.00","1.80", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","5.40","ng/L","U H M","2.43","DL", "", "TRG", "", "", "6.30","LOQ","NO",-99, "", "277.7","10.00","5.40", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","1.80","ng/L","U H","0.576","DL", "", "TRG", "", "", "4.50","LOQ","NO",-99, "", "277.7","10.00","1.80", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.80","ng/L","U H","0.720","DL", "", "TRG", "", "", "4.50","LOQ","NO",-99, "", "277.7","10.00","1.80", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.70","ng/L","U H","1.17","DL", "", "TRG", "", "", "4.50","LOQ","NO",-99, "", "277.7","10.00","2.70", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","0.900","ng/L","U H","0.423","DL", "", "TRG", "", "", "4.50","LOQ","NO",-99, "", "277.7","10.00","0.900", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","STL00993","13C2 PFHxA","85.1","ng/L", "", "-99","DL", "", "SURR","95", "", "-99","LOQ","YES","90.0", "", "277.7","10.00","0", ""  
"WGNA-110618-FRB-3957","537","RE","320-45014-4","TALSAC","STL00996","13C2 PFDA","89.4","ng/L", "", "-99","DL", "", "SURR","99", "", "-99","LOQ","YES","90.0", "", "277.7","10.00","0", ""  
"WGNA-110618-FRB-3957","537","RES","320-45014-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"9.94","ng/L",,"0.854","DL",,"TRG",,"","4.50","LOQ","YES",-99,"","278","10.00","1.80",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"11.3","ng/L","M",2.43,"DL",,"TRG",,"","6.29","LOQ","YES",-99,"","278","10.00","5.40",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"5.22","ng/L",,"0.576","DL",,"TRG",,"","4.50","LOQ","YES",-99,"","278","10.00","1.80",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"7.24","ng/L",,"0.719","DL",,"TRG",,"","4.50","LOQ","YES",-99,"","278","10.00","1.80",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"3.18","ng/L","J",1.17,"DL",,"TRG",,"","4.50","LOQ","YES",-99,"","278","10.00","2.70",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"1.15","ng/L","J",0.423,"DL",,"TRG",,"","4.50","LOQ","YES",-99,"","278","10.00","0.899",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC","STL00993",13C2  
PFHxA,"64.1","ng/L",,"-99","DL",,"SURR",71,"","-99","LOQ","YES",89.9,"","278","10.00","0",,""  
"WGNA-110618-FRB-3957","537","RES",320-45014-4,"TALSAC","STL00996",13C2  
PFDA,"72.7","ng/L",,"-99","DL",,"SURR",81,"","-99","LOQ","YES",89.9,"","278","10.00","0",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",1763-23-1,"Perfluorooctanesulfonic acid  
(PFOS),"15.5","ng/L",,"0.836","DL",,"TRG",,"","4.40","LOQ","YES",-99,"","284.1","10.00","1.76",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"16.0","ng/L","M",2.38,"DL",,"TRG",,"","6.16","LOQ","YES",-99,"","284.1","10.00","5.28",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"6.26","ng/L",,"0.563","DL",,"TRG",,"","4.40","LOQ","YES",-99,"","284.1","10.00","1.76",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"5.68","ng/L",,"0.704","DL",,"TRG",,"","4.40","LOQ","YES",-99,"","284.1","10.00","1.76",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"5.08","ng/L",,"1.14","DL",,"TRG",,"","4.40","LOQ","YES",-99,"","284.1","10.00","2.64",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"1.35","ng/L","J",0.414,"DL",,"TRG",,"","4.40","LOQ","YES",-99,"","284.1","10.00","0.880",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC","STL00993",13C2  
PFHxA,"71.1","ng/L",,"-99","DL",,"SURR",81,"","-99","LOQ","YES",88.0,"","284.1","10.00","0",,""  
"NAWC-110618-RW-303","537","RES",320-45014-5,"TALSAC","STL00996",13C2  
PFDA,"72.0","ng/L",,"-99","DL",,"SURR",82,"","-99","LOQ","YES",88.0,"","284.1","10.00","0",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",1763-23-1,"Perfluorooctanesulfonic acid  
(PFOS),"1.77","ng/L","U",0.842,"DL",,"TRG",,"","4.43","LOQ","YES",-99,"","282.1","10.00","1.77",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"5.32","ng/L","U M",2.39,"DL",,"TRG",,"","6.20","LOQ","YES",-99,"","282.1","10.00","5.32",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"1.77","ng/L","U",0.567,"DL",,"TRG",,"","4.43","LOQ","YES",-99,"","282.1","10.00","1.77",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid  
(PFBS),"1.77","ng/L","U",0.709,"DL",,"TRG",,"","4.43","LOQ","YES",-99,"","282.1","10.00","1.77",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",375-85-9,"Perfluoroheptanoic acid  
(PFHpA),"2.66","ng/L","U",1.15,"DL",,"TRG",,"","4.43","LOQ","YES",-99,"","282.1","10.00","2.66",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC",375-95-1,"Perfluorononanoic acid  
(PFNA),"0.886","ng/L","U",0.417,"DL",,"TRG",,"","4.43","LOQ","YES",-99,"","282.1","10.00","0.886",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC","STL00993",13C2  
PFHxA,"71.6","ng/L",,"-99","DL",,"SURR",81,"","-99","LOQ","YES",88.6,"","282.1","10.00","0",,""  
"NAWC-110618-FRB-303","537","RES",320-45014-6,"TALSAC","STL00996",13C2  
PFDA,"79.3","ng/L",,"-99","DL",,"SURR",90,"","-99","LOQ","YES",88.6,"","282.1","10.00","0",,""  
"NAWC-110618-RW-124","537","RES",320-45014-7,"TALSAC",1763-23-1,"Perfluorooctanesulfonic acid  
(PFOS),"26.9","ng/L",,"0.852","DL",,"TRG",,"","4.48","LOQ","YES",-99,"","278.9","10.00","1.79",,""  
"NAWC-110618-RW-124","537","RES",320-45014-7,"TALSAC",335-67-1,"Perfluorooctanoic acid  
(PFOA),"20.5","ng/L","M",2.42,"DL",,"TRG",,"","6.27","LOQ","YES",-99,"","278.9","10.00","5.38",,""  
"NAWC-110618-RW-124","537","RES",320-45014-7,"TALSAC",355-46-4,"Perfluorohexanesulfonic acid  
(PFHxS),"13.7","ng/L",,"0.574","DL",,"TRG",,"","4.48","LOQ","YES",-99,"","278.9","10.00","1.79",,""  
"NAWC-110618-RW-124","537","RES",320-45014-7,"TALSAC",375-73-5,"Perfluorobutanesulfonic acid

(PFBS)", "5.24", "ng/L", "", "0.717", "DL", "", "TRG", "", "", "4.48", "LOQ", "YES", "-99", "", "278.9", "10.00", "1.79", ""  
"NAWC-110618-RW-124", "537", "RES", "320-45014-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid  
(PFHpA)", "4.23", "ng/L", "J", "1.17", "DL", "", "TRG", "", "", "4.48", "LOQ", "YES", "-99", "", "278.9", "10.00", "2.69", ""  
"NAWC-110618-RW-124", "537", "RES", "320-45014-7", "TALSAC", "375-95-1", "Perfluorononanoic acid  
(PFNA)", "2.22", "ng/L", "J", "0.421", "DL", "", "TRG", "", "", "4.48", "LOQ", "YES", "-99", "", "278.9", "10.00", "0.896", ""  
"NAWC-110618-RW-124", "537", "RES", "320-45014-7", "TALSAC", "STL00993", "13C2  
PFHxA", "79.2", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "89.6", "", "278.9", "10.00", "0", ""  
"NAWC-110618-RW-124", "537", "RES", "320-45014-7", "TALSAC", "STL00996", "13C2  
PFDA", "81.1", "ng/L", "", "-99", "DL", "", "SURR", "90", "", "-99", "LOQ", "YES", "89.6", "", "278.9", "10.00", "0", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid  
(PFOS)", "1.74", "ng/L", "U", "0.826", "DL", "", "TRG", "", "", "4.35", "LOQ", "YES", "-99", "", "287.4", "10.00", "1.74", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "335-67-1", "Perfluorooctanoic acid  
(PFOA)", "5.22", "ng/L", "U M", "2.35", "DL", "", "TRG", "", "", "6.09", "LOQ", "YES", "-99", "", "287.4", "10.00", "5.22", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid  
(PFHxS)", "1.74", "ng/L", "U", "0.557", "DL", "", "TRG", "", "", "4.35", "LOQ", "YES", "-99", "", "287.4", "10.00", "1.74", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid  
(PFBS)", "1.74", "ng/L", "U", "0.696", "DL", "", "TRG", "", "", "4.35", "LOQ", "YES", "-99", "", "287.4", "10.00", "1.74", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "375-85-9", "Perfluoroheptanoic acid  
(PFHpA)", "2.61", "ng/L", "U M", "1.13", "DL", "", "TRG", "", "", "4.35", "LOQ", "YES", "-99", "", "287.4", "10.00", "2.61", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "375-95-1", "Perfluorononanoic acid  
(PFNA)", "0.870", "ng/L", "U", "0.409", "DL", "", "TRG", "", "", "4.35", "LOQ", "YES", "-99", "", "287.4", "10.00", "0.870", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "STL00993", "13C2  
PFHxA", "70.0", "ng/L", "", "-99", "DL", "", "SURR", "80", "", "-99", "LOQ", "YES", "87.0", "", "287.4", "10.00", "0", ""  
"NAWC-110618-FRB-124", "537", "RES", "320-45014-8", "TALSAC", "STL00996", "13C2  
PFDA", "76.4", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "87.0", "", "287.4", "10.00", "0", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid  
(PFOS)", "22.0", "ng/L", "", "0.818", "DL", "", "TRG", "", "", "4.31", "LOQ", "YES", "-99", "", "290.2", "10.00", "1.72", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "335-67-1", "Perfluorooctanoic acid  
(PFOA)", "12.2", "ng/L", "M", "2.33", "DL", "", "TRG", "", "", "6.03", "LOQ", "YES", "-99", "", "290.2", "10.00", "5.17", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid  
(PFHxS)", "6.20", "ng/L", "", "0.551", "DL", "", "TRG", "", "", "4.31", "LOQ", "YES", "-99", "", "290.2", "10.00", "1.72", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid  
(PFBS)", "4.64", "ng/L", "M", "0.689", "DL", "", "TRG", "", "", "4.31", "LOQ", "YES", "-99", "", "290.2", "10.00", "1.72", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "375-85-9", "Perfluoroheptanoic acid  
(PFHpA)", "3.53", "ng/L", "J", "1.12", "DL", "", "TRG", "", "", "4.31", "LOQ", "YES", "-99", "", "290.2", "10.00", "2.58", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "375-95-1", "Perfluorononanoic acid  
(PFNA)", "1.85", "ng/L", "J", "0.405", "DL", "", "TRG", "", "", "4.31", "LOQ", "YES", "-99", "", "290.2", "10.00", "0.861", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "STL00993", "13C2  
PFHxA", "69.7", "ng/L", "", "-99", "DL", "", "SURR", "81", "", "-99", "LOQ", "YES", "86.1", "", "290.2", "10.00", "0", ""  
"WGNA-110618-RW-4024", "537", "RES", "320-45014-9", "TALSAC", "STL00996", "13C2  
PFDA", "79.7", "ng/L", "", "-99", "DL", "", "SURR", "93", "", "-99", "LOQ", "YES", "86.1", "", "290.2", "10.00", "0", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid  
(PFOS)", "71.60", "ng/L", "", "0.950", "DL", "", "SPK", "77", "", "5.00", "LOQ", "YES", "92.8", "", "250.00", "10.00", "2.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid  
(PFOA)", "73.21", "ng/L", "", "2.70", "DL", "", "SPK", "73", "", "7.00", "LOQ", "YES", "100", "", "250.00", "10.00", "6.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid  
(PFHxS)", "73.48", "ng/L", "", "0.640", "DL", "", "SPK", "81", "", "5.00", "LOQ", "YES", "91.0", "", "250.00", "10.00", "2.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid  
(PFBS)", "72.91", "ng/L", "", "0.800", "DL", "", "SPK", "82", "", "5.00", "LOQ", "YES", "88.4", "", "250.00", "10.00", "2.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid  
(PFHpA)", "77.22", "ng/L", "", "1.30", "DL", "", "SPK", "77", "", "5.00", "LOQ", "YES", "100", "", "250.00", "10.00", "3.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid  
(PFNA)", "81.63", "ng/L", "", "0.470", "DL", "", "SPK", "82", "", "5.00", "LOQ", "YES", "100", "", "250.00", "10.00", "1.00", ""  
"LCS 320-260410/2-A", "537", "RES", "LCS 320-260410/2-A", "TALSAC", "STL00993", "13C2

PFHxA","82.04","ng/L","",-99","DL","","SURR","82","",-99","LOQ","YES","100","","250.00","10.00","0",""  
"LCS 320-260410/2-A","537","RES","LCS 320-260410/2-A","TALSAC","STL00996","13C2  
PFDA","81.63","ng/L","",-99","DL","","SURR","82","",-99","LOQ","YES","100","","250.00","10.00","0",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","178.1","ng/L","","0.950","DL","","SPK","96","","5.00","LOQ","YES","186","","250","10.00","2.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","187.6","ng/L","","2.70","DL","","SPK","94","","7.00","LOQ","YES","200","","250","10.00","6.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","182.4","ng/L","","0.640","DL","","SPK","100","","5.00","LOQ","YES","182","","250","10.00","2.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","169.7","ng/L","","0.800","DL","","SPK","96","","5.00","LOQ","YES","177","","250","10.00","2.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","197.4","ng/L","","1.30","DL","","SPK","99","","5.00","LOQ","YES","200","","250","10.00","3.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","194.3","ng/L","","0.470","DL","","SPK","97","","5.00","LOQ","YES","200","","250","10.00","1.00",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","STL00993","13C2  
PFHxA","99.12","ng/L","",-99","DL","","SURR","99","",-99","LOQ","YES","100","","250","10.00","0",""  
"LCS 320-264106/2-A","537","RES","LCS 320-264106/2-A","TALSAC","STL00996","13C2  
PFDA","103.8","ng/L","",-99","DL","","SURR","104","",-99","LOQ","YES","100","","250","10.00","0",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic  
acid (PFOS)","181.6","ng/L","","0.950","DL","","SPK","98","2","5.00","LOQ","YES","186","LCS 320-264106/2-  
A","250","10.00","2.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","180.1","ng/L","","2.70","DL","","SPK","90","4","7.00","LOQ","YES","200","LCS 320-264106/2-  
A","250","10.00","6.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic  
acid (PFHxS)","192.6","ng/L","","0.640","DL","","SPK","106","5","5.00","LOQ","YES","182","LCS 320-264106/2-  
A","250","10.00","2.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","157.9","ng/L","","0.800","DL","","SPK","89","7","5.00","LOQ","YES","177","LCS 320-264106/2-  
A","250","10.00","2.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","183.6","ng/L","","1.30","DL","","SPK","92","7","5.00","LOQ","YES","200","LCS 320-264106/2-  
A","250","10.00","3.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","189.0","ng/L","","0.470","DL","","SPK","94","3","5.00","LOQ","YES","200","LCS 320-264106/2-  
A","250","10.00","1.00",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","STL00993","13C2  
PFHxA","92.48","ng/L","",-99","DL","","SURR","92","",-99","LOQ","YES","100","LCS 320-264106/2-  
A","250","10.00","0",""  
"LCSD 320-264106/3-A","537","RES","LCSD 320-264106/3-A","TALSAC","STL00996","13C2  
PFDA","101.9","ng/L","",-99","DL","","SURR","102","",-99","LOQ","YES","100","LCS 320-264106/2-  
A","250","10.00","0",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","2.00","ng/L","U","0.950","DL","","TRG","","","5.00","LOQ","YES","-99","","250.00","10.00","2.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","6.00","ng/L","U M","2.70","DL","","TRG","","","7.00","LOQ","YES","-99","","250.00","10.00","6.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","2.00","ng/L","U","0.640","DL","","TRG","","","5.00","LOQ","YES","-99","","250.00","10.00","2.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","2.00","ng/L","U M","0.800","DL","","TRG","","","5.00","LOQ","YES","-99","","250.00","10.00","2.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.00","ng/L","U","1.30","DL","","TRG","","","5.00","LOQ","YES","-99","","250.00","10.00","3.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"1.00","ng/L","U","0.470","DL","","TRG","","","5.00","LOQ","YES","-99","","250.00","10.00","1.00",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","STL00993","13C2  
PFHxA","92.56","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","100","","250.00","10.00","0",""  
"MB 320-260410/1-A","537","RES","MB 320-260410/1-A","TALSAC","STL00996","13C2  
PFDA","98.38","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","100","","250.00","10.00","0",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","2.00","ng/L","U","0.950","DL","","TRG","","","5.00","LOQ","YES","-99","","250","10.00","2.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","6.00","ng/L","U M","2.70","DL","","TRG","","","7.00","LOQ","YES","-99","","250","10.00","6.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","2.00","ng/L","U","0.640","DL","","TRG","","","5.00","LOQ","YES","-99","","250","10.00","2.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","2.00","ng/L","U","0.800","DL","","TRG","","","5.00","LOQ","YES","-99","","250","10.00","2.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.00","ng/L","U M","1.30","DL","","TRG","","","5.00","LOQ","YES","-99","","250","10.00","3.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","1.00","ng/L","U M","0.470","DL","","TRG","","","5.00","LOQ","YES","-99","","250","10.00","1.00",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","STL00993","13C2  
PFHxA","93.49","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","100","","250","10.00","0",""  
"MB 320-264106/1-A","537","RES","MB 320-264106/1-A","TALSAC","STL00996","13C2  
PFDA","99.35","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","100","","250","10.00","0",""  
"Unknown","Unknown","WGNA-110618-RW-3785","11/06/2018 08:40","AQ","320-45014-  
1","NM","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
01:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-FRB-4024","11/06/2018 11:05","AQ","320-45014-  
10","FB","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
03:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263320","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-RW-3529","11/06/2018 13:40","AQ","320-45014-  
11","NM","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
03:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263320","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
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12","FB","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
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263320","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-FRB-3785","11/06/2018 08:35","AQ","320-45014-  
2","FB","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
01:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
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"Unknown","Unknown","WGNA-110618-RW-3957","11/06/2018 08:10","AQ","320-45014-  
3","NM","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
01:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-RW-3957MS","11/06/2018 08:10","AQ","320-45014-  
3MS","MS","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:06","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-RW-3957MSD","11/06/2018 08:10","AQ","320-45014-  
3MSD","MSD","","1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",""  
"Unknown","Unknown","WGNA-110618-FRB-3957","11/06/2018 08:05","AQ","320-45014-



4","FB",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:21","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
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4","FB",,"1.00","537","METHOD","RE","12/10/2018 05:39","12/11/2018  
07:14","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-264106","320-264106","NA","320-  
264395","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
"Unknown","Unknown","NAWC-110618-RW-303","11/06/2018 09:10","AQ","320-45014-  
5","NM",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:28","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
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6","FB",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:36","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
"Unknown","Unknown","NAWC-110618-RW-124","11/06/2018 09:40","AQ","320-45014-  
7","NM",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
02:58","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263320","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
"Unknown","Unknown","NAWC-110618-FRB-124","11/06/2018 09:35","AQ","320-45014-  
8","FB",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
03:05","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263320","320-45014-1","11/07/2018 10:05","11/12/2018 09:40",,"  
"Unknown","Unknown","WGNA-110618-RW-4024","11/06/2018 11:10","AQ","320-45014-  
9","NM",,"1.00","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
03:13","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
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A","LCS",,"-99","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
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07:07","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-264106","320-264106","NA","320-  
264395","320-45014-1","12/10/2018 05:39","11/12/2018 09:40",,"  
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A","MB",,"-99","537","METHOD","RES","11/20/2018 15:07","12/06/2018  
01:28","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-260410","320-260410","NA","320-  
263318","320-45014-1","11/20/2018 15:07","11/12/2018 09:40",,"  
"Unknown","Unknown","MB 320-264106/1-A",,"AQ","MB 320-264106/1-  
A","MB",,"-99","537","METHOD","RES","12/10/2018 05:39","12/11/2018  
06:52","TALSAC","COA","WET","NA","1","NA","NA",,"100","320-264106","320-264106","NA","320-  
264395","320-45014-1","12/10/2018 05:39","11/12/2018 09:40",,"



**TO:** A. FREBOWITZ **DATE:** JANUARY 14, 2019  
**FROM:** TERRI L. SOLOMON **COPIES:** DV FILE  
**SUBJECT:** ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)  
 NAS JRB WILLOW GROVE  
 SAMPLE DELIVERY GROUP (SDG) 320-45014-1

**SAMPLES:** 6/Field Reagent Blank (FRB)  
 NAWC-110618-FRB-124 NAWC-110618-FRB-303  
 WGNA-110618-FRB-3529 WGNA-110618-FRB-3785  
 WGNA-110618-FRB-3957 WGNA-110618-FRB-4024

6/Drinking Water  
 NAWC-110618-RW-124 NAWC-110618-RW-303  
 WGNA-110618-RW-3529 WGNA-110618-RW-3785  
 WGNA-110618-RW-3957 WGNA-110618-RW-4024

Overview

The sample set for NAS JRB Willow Grove, SDG 320-45014-1, consisted of six (6) drinking water samples and six (6) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech on November 6, 2018 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, instrument sensitivity check, peak asymmetry factor, initial/continuing calibrations, ion transitions, laboratory method/FRB results, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, matrix spike / matrix spike duplicate recoveries, injected internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

Sample results for WGNA-110618-FRB-3957 were detected above 1/3 the method reporting limit for all compounds. Compounds PFOA, PFBS, PFHxS and PFOS were detected above the reporting limit (RL). Because sample WGNA-110618-RW-3957 had six vials collected to support the analysis of a matrix spike, the data reviewer suspects that a sample bottle was either inadvertently switched with the FRB by the lab or in the field. The laboratory took corrective action and re-prepared the FRB outside of holding time and all results were nondetected which confirms the probability that the samples were switched. Per EPA Method 537 version 1.1, the sample results for WGNA-110618-FRB-3957 and WGNA-110618-RW-3957 were qualified as (X), indicating a serious noncompliance. The re-extraction data were not used because the sample was extracted three weeks after the holding time expired.

Minor

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated (J).

TO: A. FREBOWITZ  
SDG: 320-45014-1

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### **Notes**

It was noted that a preservative was indicated on the chain of custody. However, Trizma was not listed as the preservative.

Sample WGNA-110618-FRB-3957 was re-extracted 20 days past the 14 day hold time due to detections in the original analysis. The reanalysis contained no detected results. The laboratory noted that the parent sample and the FRB were double checked for mis-labeling and none was found. The original results were used for validation as EPA Method 537 version 1.1 states that sample results are only valid if samples are extracted within sample holding times.

The matrix spike duplicate (MSD) percent recoveries for PFOS, PFOA, PFHxS and PFBS were below the quality control limits for sample WGNA-110618-RW-3957. The matrix spike %Rs and MS/MSD relative percent differences (%RPDs) were within quality control limits. No validation actions were required as all sample results were qualified as unusable because of detections in the associated FRB sample.

Samples with detections and their associated FRBs are summarized below.

<b><u>Sample</u></b>	<b><u>Associated FRB</u></b>
NAWC-110618-RW-124	NAWC-110618-FRB-124
NAWC-110618-RW-303	NAWC-110618-FRB-303
WGNA-110618-RW-3529	WGNA-110618-FRB-3529
WGNA-110618-RW-3785	WGNA-110618-FRB-3785
WGNA-110618-RW-3957	WGNA-110618-FRB-3957
WGNA-110618-RW-4024	WGNA-110618-FRB-4024

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:** All results were > 1/3 RL for sample WGNA-110618-FRB-3957. 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), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

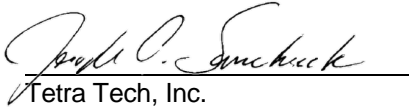


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Tetra Tech, Inc.  
Terri L. Solomon  
Chemist/Data Validator

TO: A. FREBOWITZ  
SDG: 320-45014-1

PAGE 3



*Joseph A. Samchuck*

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

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.

<b>U</b>	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
<b>J</b>	The result is an estimated quantity. 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).
<b>J+</b>	The result is an estimated quantity, but the result may be biased high.
<b>J-</b>	The result is an estimated quantity, but the result may be biased low.
<b>UJ</b>	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
<b>NJ</b>	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
<b>R</b>	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.
<b>UR</b>	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.
<b>X</b>	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

**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: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3785 Lab Sample ID: 320-45014-1  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_034.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 285.9(mL) Date Analyzed: 12/06/2018 01:43  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.11		4.37	1.75	0.831
335-67-1	Perfluorooctanoic acid (PFOA)	11.8	<del>M</del>	6.12	5.25	2.36
375-95-1	Perfluorononanoic acid (PFNA)	1.18	J	4.37	0.874	0.411
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13.6		4.37	1.75	0.560
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.55	J	4.37	2.62	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	6.67		4.37	1.75	0.700

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	82		70-130

*Wesley L. Selman*

01/02/2019



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3785 Lab Sample ID: 320-45014-2  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_035.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 279.5 (mL) Date Analyzed: 12/06/2018 01:51  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.79	U	4.47	1.79	0.850
335-67-1	Perfluorooctanoic acid (PFOA)	5.37	U <del>M</del>	6.26	5.37	2.42
375-95-1	Perfluorononanoic acid (PFNA)	0.894	U	4.47	0.894	0.420
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.79	U	4.47	1.79	0.572
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.68	U <del>M</del>	4.47	2.68	1.16
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.79	U	4.47	1.79	0.716

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	89		70-130

*Wesley L. Selman*  
01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3957 Lab Sample ID: 320-45014-3  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_036.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 270 (mL) Date Analyzed: 12/06/2018 01:58  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12.6	<del>J</del> X	4.63	1.85	0.880
335-67-1	Perfluorooctanoic acid (PFOA)	14.2	<del>M-J</del> X	6.48	5.56	2.50
375-95-1	Perfluorononanoic acid (PFNA)	1.41	<del>J</del> X	4.63	0.926	0.435
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.64	<del>J</del> X	4.63	1.85	0.593
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.76	<del>J</del> X	4.63	2.78	1.20
375-73-5	Perfluorobutanesulfonic acid (PFBS)	9.78	<del>J</del> X	4.63	1.85	0.741

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	99		70-130

*Steve L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3957 Lab Sample ID: 320-45014-4  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_039.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 278 (mL) Date Analyzed: 12/06/2018 02:21  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.94	X	4.50	1.80	0.854
335-67-1	Perfluorooctanoic acid (PFOA)	11.3	<del>M</del> X	6.29	5.40	2.43
375-95-1	Perfluorononanoic acid (PFNA)	1.15	<del>J</del> X	4.50	0.899	0.423
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.22	X	4.50	1.80	0.576
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.18	<del>J</del> X	4.50	2.70	1.17
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.24	X	4.50	1.80	0.719

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	71		70-130
STL00996	13C2 PFDA	81		70-130

*Steve L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-RW-303 Lab Sample ID: 320-45014-5  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_040.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 284.1(mL) Date Analyzed: 12/06/2018 02:28  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.5		4.40	1.76	0.836
335-67-1	Perfluorooctanoic acid (PFOA)	16.0	<del>M</del>	6.16	5.28	2.38
375-95-1	Perfluorononanoic acid (PFNA)	1.35	J	4.40	0.880	0.414
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.26		4.40	1.76	0.563
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.08		4.40	2.64	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.68		4.40	1.76	0.704

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	82		70-130

*Maria L. Salmeron*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-FRB-303 Lab Sample ID: 320-45014-6  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_041.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 282.1(mL) Date Analyzed: 12/06/2018 02:36  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.77	U	4.43	1.77	0.842
335-67-1	Perfluorooctanoic acid (PFOA)	5.32	U <del>M</del>	6.20	5.32	2.39
375-95-1	Perfluorononanoic acid (PFNA)	0.886	U	4.43	0.886	0.417
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.77	U	4.43	1.77	0.567
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.66	U	4.43	2.66	1.15
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.77	U	4.43	1.77	0.709

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	90		70-130

*Wesley L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-RW-124 Lab Sample ID: 320-45014-7  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_044.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 278.9(mL) Date Analyzed: 12/06/2018 02:58  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26.9		4.48	1.79	0.852
335-67-1	Perfluorooctanoic acid (PFOA)	20.5	<del>M</del>	6.27	5.38	2.42
375-95-1	Perfluorononanoic acid (PFNA)	2.22	J	4.48	0.896	0.421
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13.7		4.48	1.79	0.574
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.23	J	4.48	2.69	1.17
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.24		4.48	1.79	0.717

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	90		70-130

*Mari L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-FRB-124 Lab Sample ID: 320-45014-8  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_045.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 287.4 (mL) Date Analyzed: 12/06/2018 03:05  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.74	U	4.35	1.74	0.826
335-67-1	Perfluorooctanoic acid (PFOA)	5.22	U <del>M</del>	6.09	5.22	2.35
375-95-1	Perfluorononanoic acid (PFNA)	0.870	U	4.35	0.870	0.409
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.74	U	4.35	1.74	0.557
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.61	U <del>M</del>	4.35	2.61	1.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.74	U	4.35	1.74	0.696

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	88		70-130

*Wesley L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-4024 Lab Sample ID: 320-45014-9  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_046.d  
 Analysis Method: 537 Date Collected: 11/06/2018 11:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 290.2 (mL) Date Analyzed: 12/06/2018 03:13  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22.0		4.31	1.72	0.818
335-67-1	Perfluorooctanoic acid (PFOA)	12.2	<del>M</del>	6.03	5.17	2.33
375-95-1	Perfluorononanoic acid (PFNA)	1.85	J	4.31	0.861	0.405
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.20		4.31	1.72	0.551
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.53	J	4.31	2.58	1.12
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.64	<del>M</del>	4.31	1.72	0.689

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	93		70-130

*Wesley L. Salomon*  
01/02/2019



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-4024 Lab Sample ID: 320-45014-10  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_047.d  
 Analysis Method: 537 Date Collected: 11/06/2018 11:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 284.5 (mL) Date Analyzed: 12/06/2018 03:20  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.76	U	4.39	1.76	0.835
335-67-1	Perfluorooctanoic acid (PFOA)	5.27	U <del>M</del>	6.15	5.27	2.37
375-95-1	Perfluorononanoic acid (PFNA)	0.879	U	4.39	0.879	0.413
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.76	U	4.39	1.76	0.562
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.64	U <del>M</del>	4.39	2.64	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.76	U	4.39	1.76	0.703

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	90		70-130

*Steve L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3529 Lab Sample ID: 320-45014-11  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_048.d  
 Analysis Method: 537 Date Collected: 11/06/2018 13:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 272.4 (mL) Date Analyzed: 12/06/2018 03:28  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10.5		4.59	1.84	0.872
335-67-1	Perfluorooctanoic acid (PFOA)	15.9	<del>M</del>	6.42	5.51	2.48
375-95-1	Perfluorononanoic acid (PFNA)	1.52	J	4.59	0.918	0.431
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.83		4.59	1.84	0.587
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.70		4.59	2.75	1.19
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.44	J	4.59	1.84	0.734

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	98		70-130

*Wesley L. Selman*

01/02/2019

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3529 Lab Sample ID: 320-45014-12  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_049.d  
 Analysis Method: 537 Date Collected: 11/06/2018 13:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 275.9(mL) Date Analyzed: 12/06/2018 03:35  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.81	U	4.53	1.81	0.861
335-67-1	Perfluorooctanoic acid (PFOA)	5.44	U-M	6.34	5.44	2.45
375-95-1	Perfluorononanoic acid (PFNA)	0.906	U	4.53	0.906	0.426
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.81	U	4.53	1.81	0.580
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.72	U	4.53	2.72	1.18
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.81	U	4.53	1.81	0.725

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	81		70-130

*Wesley L. Selman*  
01/02/2019

**Appendix B**

Results as Reported by the Laboratory

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3785 Lab Sample ID: 320-45014-1  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_034.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 285.9(mL) Date Analyzed: 12/06/2018 01:43  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.11		4.37	1.75	0.831
335-67-1	Perfluorooctanoic acid (PFOA)	11.8	M	6.12	5.25	2.36
375-95-1	Perfluorononanoic acid (PFNA)	1.18	J	4.37	0.874	0.411
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13.6		4.37	1.75	0.560
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.55	J	4.37	2.62	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	6.67		4.37	1.75	0.700

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	82		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3785 Lab Sample ID: 320-45014-2  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_035.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 279.5 (mL) Date Analyzed: 12/06/2018 01:51  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.79	U	4.47	1.79	0.850
335-67-1	Perfluorooctanoic acid (PFOA)	5.37	U M	6.26	5.37	2.42
375-95-1	Perfluorononanoic acid (PFNA)	0.894	U	4.47	0.894	0.420
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.79	U	4.47	1.79	0.572
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.68	U M	4.47	2.68	1.16
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.79	U	4.47	1.79	0.716

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	89		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3957 Lab Sample ID: 320-45014-3  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_036.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 270 (mL) Date Analyzed: 12/06/2018 01:58  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12.6	J1	4.63	1.85	0.880
335-67-1	Perfluorooctanoic acid (PFOA)	14.2	M J1	6.48	5.56	2.50
375-95-1	Perfluorononanoic acid (PFNA)	1.41	J	4.63	0.926	0.435
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.64	J1	4.63	1.85	0.593
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.76	J	4.63	2.78	1.20
375-73-5	Perfluorobutanesulfonic acid (PFBS)	9.78	J1	4.63	1.85	0.741

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	99		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3957 Lab Sample ID: 320-45014-4  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_039.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 278 (mL) Date Analyzed: 12/06/2018 02:21  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.94		4.50	1.80	0.854
335-67-1	Perfluorooctanoic acid (PFOA)	11.3	M	6.29	5.40	2.43
375-95-1	Perfluorononanoic acid (PFNA)	1.15	J	4.50	0.899	0.423
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.22		4.50	1.80	0.576
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.18	J	4.50	2.70	1.17
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.24		4.50	1.80	0.719

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	71		70-130
STL00996	13C2 PFDA	81		70-130



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3957 RE Lab Sample ID: 320-45014-4 RE  
 Matrix: Water Lab File ID: 2018.12.10\_537A\_013.d  
 Analysis Method: 537 Date Collected: 11/06/2018 08:05  
 Extraction Method: 537 Date Extracted: 12/10/2018 05:39  
 Sample wt/vol: 277.7(mL) Date Analyzed: 12/11/2018 07:14  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 264395 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.80	U H	4.50	1.80	0.855
335-67-1	Perfluorooctanoic acid (PFOA)	5.40	U H M	6.30	5.40	2.43
375-95-1	Perfluorononanoic acid (PFNA)	0.900	U H	4.50	0.900	0.423
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.80	U H	4.50	1.80	0.576
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.70	U H	4.50	2.70	1.17
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.80	U H	4.50	1.80	0.720

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	99		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-RW-303 Lab Sample ID: 320-45014-5  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_040.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 284.1(mL) Date Analyzed: 12/06/2018 02:28  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.5		4.40	1.76	0.836
335-67-1	Perfluorooctanoic acid (PFOA)	16.0	M	6.16	5.28	2.38
375-95-1	Perfluorononanoic acid (PFNA)	1.35	J	4.40	0.880	0.414
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.26		4.40	1.76	0.563
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.08		4.40	2.64	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.68		4.40	1.76	0.704

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	82		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-FRB-303 Lab Sample ID: 320-45014-6  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_041.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 282.1(mL) Date Analyzed: 12/06/2018 02:36  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.77	U	4.43	1.77	0.842
335-67-1	Perfluorooctanoic acid (PFOA)	5.32	U M	6.20	5.32	2.39
375-95-1	Perfluorononanoic acid (PFNA)	0.886	U	4.43	0.886	0.417
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.77	U	4.43	1.77	0.567
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.66	U	4.43	2.66	1.15
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.77	U	4.43	1.77	0.709

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	90		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-RW-124 Lab Sample ID: 320-45014-7  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_044.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 278.9(mL) Date Analyzed: 12/06/2018 02:58  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26.9		4.48	1.79	0.852
335-67-1	Perfluorooctanoic acid (PFOA)	20.5	M	6.27	5.38	2.42
375-95-1	Perfluorononanoic acid (PFNA)	2.22	J	4.48	0.896	0.421
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13.7		4.48	1.79	0.574
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.23	J	4.48	2.69	1.17
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.24		4.48	1.79	0.717

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	90		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-110618-FRB-124 Lab Sample ID: 320-45014-8  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_045.d  
 Analysis Method: 537 Date Collected: 11/06/2018 09:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 287.4 (mL) Date Analyzed: 12/06/2018 03:05  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.74	U	4.35	1.74	0.826
335-67-1	Perfluorooctanoic acid (PFOA)	5.22	U M	6.09	5.22	2.35
375-95-1	Perfluorononanoic acid (PFNA)	0.870	U	4.35	0.870	0.409
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.74	U	4.35	1.74	0.557
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.61	U M	4.35	2.61	1.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.74	U	4.35	1.74	0.696

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	88		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-4024 Lab Sample ID: 320-45014-9  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_046.d  
 Analysis Method: 537 Date Collected: 11/06/2018 11:10  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 290.2 (mL) Date Analyzed: 12/06/2018 03:13  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22.0		4.31	1.72	0.818
335-67-1	Perfluorooctanoic acid (PFOA)	12.2	M	6.03	5.17	2.33
375-95-1	Perfluorononanoic acid (PFNA)	1.85	J	4.31	0.861	0.405
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.20		4.31	1.72	0.551
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.53	J	4.31	2.58	1.12
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.64	M	4.31	1.72	0.689

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	93		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-4024 Lab Sample ID: 320-45014-10  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_047.d  
 Analysis Method: 537 Date Collected: 11/06/2018 11:05  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 284.5 (mL) Date Analyzed: 12/06/2018 03:20  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.76	U	4.39	1.76	0.835
335-67-1	Perfluorooctanoic acid (PFOA)	5.27	U M	6.15	5.27	2.37
375-95-1	Perfluorononanoic acid (PFNA)	0.879	U	4.39	0.879	0.413
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.76	U	4.39	1.76	0.562
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.64	U M	4.39	2.64	1.14
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.76	U	4.39	1.76	0.703

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	90		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-RW-3529 Lab Sample ID: 320-45014-11  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_048.d  
 Analysis Method: 537 Date Collected: 11/06/2018 13:40  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 272.4 (mL) Date Analyzed: 12/06/2018 03:28  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10.5		4.59	1.84	0.872
335-67-1	Perfluorooctanoic acid (PFOA)	15.9	M	6.42	5.51	2.48
375-95-1	Perfluorononanoic acid (PFNA)	1.52	J	4.59	0.918	0.431
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.83		4.59	1.84	0.587
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.70		4.59	2.75	1.19
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.44	J	4.59	1.84	0.734

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	98		70-130



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-110618-FRB-3529 Lab Sample ID: 320-45014-12  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_049.d  
 Analysis Method: 537 Date Collected: 11/06/2018 13:35  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 275.9(mL) Date Analyzed: 12/06/2018 03:35  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 14(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263320 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.81	U	4.53	1.81	0.861
335-67-1	Perfluorooctanoic acid (PFOA)	5.44	U M	6.34	5.44	2.45
375-95-1	Perfluorononanoic acid (PFNA)	0.906	U	4.53	0.906	0.426
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.81	U	4.53	1.81	0.580
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.72	U	4.53	2.72	1.18
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.81	U	4.53	1.81	0.725

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	81		70-130

**Appendix C**

Support Documentation



# Definitions/Glossary

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

TestAmerica Job ID: 320-45014-1

## Qualifiers

### LCMS

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

## 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)

**Job Narrative**  
**320-45014-1**

**Receipt**

The samples were received on 11/7/2018 10:05 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 duplicate (MSD) recoveries for preparation batch 320-260410 and analytical batch 320-263318 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537: The following sample is a Field Blank with positive detections. Remaining bottles of the parent sample and FRB were double checked for miss-labeling and none was found. The sample was re-extracted outside holding time with the target analytes non-detect. Both sets of data are reported. WGNA-110618-FRB-3957 (320-45014-4)

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

**Organic Prep**

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-264106

Method(s) 537: The following sample was re-prepared outside of preparation holding time due to positive hits in a field blank sample.: WGNA-110618-FRB-3957 (320-45014-4).

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

# Method Summary

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

TestAmerica Job ID: 320-45014-1

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
537	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537	Extraction of Perfluorinated Alkyl Acids	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: 320-45014-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-45014-1	WGNA-110618-RW-3785	Water	11/06/18 08:40	11/07/18 10:05
320-45014-2	WGNA-110618-FRB-3785	Water	11/06/18 08:35	11/07/18 10:05
320-45014-3	WGNA-110618-RW-3957	Water	11/06/18 08:10	11/07/18 10:05
320-45014-4	WGNA-110618-FRB-3957	Water	11/06/18 08:05	11/07/18 10:05
320-45014-5	NAWC-110618-RW-303	Water	11/06/18 09:10	11/07/18 10:05
320-45014-6	NAWC-110618-FRB-303	Water	11/06/18 09:05	11/07/18 10:05
320-45014-7	NAWC-110618-RW-124	Water	11/06/18 09:40	11/07/18 10:05
320-45014-8	NAWC-110618-FRB-124	Water	11/06/18 09:35	11/07/18 10:05
320-45014-9	WGNA-110618-RW-4024	Water	11/06/18 11:10	11/07/18 10:05
320-45014-10	WGNA-110618-FRB-4024	Water	11/06/18 11:05	11/07/18 10:05
320-45014-11	WGNA-110618-RW-3529	Water	11/06/18 13:40	11/07/18 10:05
320-45014-12	WGNA-110618-FRB-3529	Water	11/06/18 13:35	11/07/18 10:05

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-110618-RW-378 5	320-45014-1	76	82
WGNA-110618-FRB-37 85	320-45014-2	85	89
WGNA-110618-RW-395 7	320-45014-3	97	99
WGNA-110618-FRB-39 57	320-45014-4	71	81
WGNA-110618-FRB-39 57 RE	320-45014-4 RE	95	99
NAWC-110618-RW-303	320-45014-5	81	82
NAWC-110618-FRB-30 3	320-45014-6	81	90
NAWC-110618-RW-124	320-45014-7	88	90
NAWC-110618-FRB-12 4	320-45014-8	80	88
WGNA-110618-RW-402 4	320-45014-9	81	93
WGNA-110618-FRB-40 24	320-45014-10	85	90
WGNA-110618-RW-352 9	320-45014-11	85	98
WGNA-110618-FRB-35 29	320-45014-12	78	81
	MB 320-260410/1-A	93	98
	MB 320-264106/1-A	93	99
	LCS 320-260410/2-A	82	82
	LCS 320-264106/2-A	99	104
	LCSD 320-264106/3-A	92	102
WGNA-110618-RW-395 7 MS	320-45014-3 MS	76	82
WGNA-110618-RW-395 7 MSD	320-45014-3 MSD	76	83

PFHxA = 13C2 PFHxA  
PFDA = 13C2 PFDA

QC LIMITS  
70-130  
70-130

# Column to be used to flag recovery values



FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2018.12.05\_537B\_033.d  
 Lab ID: LCS 320-260410/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	92.8	71.60	77	70-130	
Perfluorooctanoic acid (PFOA)	100	73.21	73	70-130	
Perfluorononanoic acid (PFNA)	100	81.63	82	70-130	
Perfluorohexanesulfonic acid (PFHxS)	91.0	73.48	81	70-130	
Perfluoroheptanoic acid (PFHpA)	100	77.22	77	70-130	
Perfluorobutanesulfonic acid (PFBS)	88.4	72.91	82	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2018.12.10\_537A\_011.d  
 Lab ID: LCS 320-264106/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	186	178.1	96	70-130	
Perfluorooctanoic acid (PFOA)	200	187.6	94	70-130	
Perfluorononanoic acid (PFNA)	200	194.3	97	70-130	
Perfluorohexanesulfonic acid (PFHxS)	182	182.4	100	70-130	
Perfluoroheptanoic acid (PFHpA)	200	197.4	99	70-130	
Perfluorobutanesulfonic acid (PFBS)	177	169.7	96	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 2018.12.10\_537A\_012.d

Lab ID: LCSD 320-264106/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	186	181.6	98	2	30	70-130	
Perfluorooctanoic acid (PFOA)	200	180.1	90	4	30	70-130	
Perfluorononanoic acid (PFNA)	200	189.0	94	3	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	182	192.6	106	5	30	70-130	
Perfluoroheptanoic acid (PFHpA)	200	183.6	92	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	177	157.9	89	7	30	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2018.12.05\_537B\_037.d  
 Lab ID: 320-45014-3 MS Client ID: WGNA-110618-RW-3957 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	83.5	12.6	78.34	79	70-130	
Perfluorooctanoic acid (PFOA)	90.1	14.2	77.23	70	70-130	M
Perfluorononanoic acid (PFNA)	90.0	1.41 J	73.41	80	70-130	
Perfluorohexanesulfonic acid (PFHxS)	81.9	6.64	76.32	85	70-130	
Perfluoroheptanoic acid (PFHpA)	90.0	3.76 J	71.80	76	70-130	
Perfluorobutanesulfonic acid (PFBS)	79.6	9.78	79.04	87	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2018.12.05\_537B\_038.d  
 Lab ID: 320-45014-3 MSD Client ID: WGNA-110618-RW-3957 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD %		QC LIMITS		#
			REC	RPD	RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	82.9	59.78	57	27	30	70-130	J1
Perfluorooctanoic acid (PFOA)	89.4	69.40	62	11	30	70-130	J1
Perfluorononanoic acid (PFNA)	89.3	70.25	77	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	81.3	60.85	67	23	30	70-130	J1
Perfluoroheptanoic acid (PFHpA)	89.3	66.98	71	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	79.0	60.56	64	26	30	70-130	J1

# Column to be used to flag recovery and RPD values

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2018.12.05\_537B\_032.d Lab Sample ID: MB 320-260410/1-A  
 Matrix: Water Date Extracted: 11/20/2018 15:07  
 Instrument ID: A8\_N Date Analyzed: 12/06/2018 01:28  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-260410/2-A	2018.12.05_537B_033.d	12/06/2018 01:36
WGNA-110618-RW-3785	320-45014-1	2018.12.05_537B_034.d	12/06/2018 01:43
WGNA-110618-FRB-3785	320-45014-2	2018.12.05_537B_035.d	12/06/2018 01:51
WGNA-110618-RW-3957	320-45014-3	2018.12.05_537B_036.d	12/06/2018 01:58
WGNA-110618-RW-3957 MS	320-45014-3 MS	2018.12.05_537B_037.d	12/06/2018 02:06
WGNA-110618-RW-3957 MSD	320-45014-3 MSD	2018.12.05_537B_038.d	12/06/2018 02:13
WGNA-110618-FRB-3957	320-45014-4	2018.12.05_537B_039.d	12/06/2018 02:21
NAWC-110618-RW-303	320-45014-5	2018.12.05_537B_040.d	12/06/2018 02:28
NAWC-110618-FRB-303	320-45014-6	2018.12.05_537B_041.d	12/06/2018 02:36
NAWC-110618-RW-124	320-45014-7	2018.12.05_537B_044.d	12/06/2018 02:58
NAWC-110618-FRB-124	320-45014-8	2018.12.05_537B_045.d	12/06/2018 03:05
WGNA-110618-RW-4024	320-45014-9	2018.12.05_537B_046.d	12/06/2018 03:13
WGNA-110618-FRB-4024	320-45014-10	2018.12.05_537B_047.d	12/06/2018 03:20
WGNA-110618-RW-3529	320-45014-11	2018.12.05_537B_048.d	12/06/2018 03:28
WGNA-110618-FRB-3529	320-45014-12	2018.12.05_537B_049.d	12/06/2018 03:35

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-260410/1-A  
 Matrix: Water Lab File ID: 2018.12.05\_537B\_032.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 11/20/2018 15:07  
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/06/2018 01:28  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 14 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 263318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.00	U	5.00	2.00	0.950
335-67-1	Perfluorooctanoic acid (PFOA)	6.00	U	7.00	6.00	2.70
375-95-1	Perfluorononanoic acid (PFNA)	1.00	U	5.00	1.00	0.470
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.00	U	5.00	2.00	0.640
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.00	U	5.00	3.00	1.30
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.00	U	5.00	2.00	0.800

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	98		70-130

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2018.12.10\_537A\_010.d Lab Sample ID: MB 320-264106/1-A  
 Matrix: Water Date Extracted: 12/10/2018 05:39  
 Instrument ID: A8\_N Date Analyzed: 12/11/2018 06:52  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-264106/2-A	2018.12.10_537A_011.d	12/11/2018 06:59
	LCSD 320-264106/3-A	2018.12.10_537A_012.d	12/11/2018 07:07
WGNA-110618-FRB-3957 RE	320-45014-4 RE	2018.12.10_537A_013.d	12/11/2018 07:14



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-264106/1-A  
 Matrix: Water Lab File ID: 2018.12.10\_537A\_010.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 12/10/2018 05:39  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/11/2018 06:52  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 264395 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.00	U	5.00	2.00	0.950
335-67-1	Perfluorooctanoic acid (PFOA)	6.00	U	7.00	6.00	2.70
375-95-1	Perfluorononanoic acid (PFNA)	1.00	U	5.00	1.00	0.470
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.00	U	5.00	2.00	0.640
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.00	U	5.00	3.00	1.30
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.00	U	5.00	2.00	0.800

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	99		70-130

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 11/28/2018 13:51  
 Calibration ID: 42464

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	3424979	3.19	2530065	3.59		
UPPER LIMIT	5137469	3.69	3795098	4.09		
LOWER LIMIT	1712490	2.69	1265033	3.09		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-261708/10		3361485	3.19	2496845	3.57	
ICV 320-261708/12		3358714	3.20	2579571	3.59	
CCVL 320-263312/1		3440974	3.19	2566366	3.59	
CCV 320-263318/27 CCVIS		3641898	3.17	2683371	3.57	
MB 320-260410/1-A		3834895	3.19	2756388	3.57	
LCS 320-260410/2-A		4120813	3.17	2927085	3.56	
320-45014-1	WGNA-110618-RW-3785	4047625	3.19	2899219	3.57	
320-45014-2	WGNA-110618-FRB-3785	3719247	3.19	2568711	3.57	
320-45014-3	WGNA-110618-RW-3957	3857375	3.19	2722219	3.57	
320-45014-3 MS	WGNA-110618-RW-3957 MS	4094577	3.17	2853091	3.56	
320-45014-3 MSD	WGNA-110618-RW-3957 MSD	3965880	3.17	3095220	3.56	
320-45014-4	WGNA-110618-FRB-3957	4197150	3.19	3040104	3.57	
320-45014-5	NAWC-110618-RW-303	3872337	3.17	2808026	3.56	
320-45014-6	NAWC-110618-FRB-303	3756257	3.17	2793797	3.56	
CCV 320-263318/39 CCVIS		3384515	3.17	2486882	3.56	
CCV 320-263320/39 CCVIS		3384515	3.17	2486882	3.56	
320-45014-7	NAWC-110618-RW-124	3669637	3.17	2721651	3.56	
320-45014-8	NAWC-110618-FRB-124	3930760	3.17	2921674	3.56	
320-45014-9	WGNA-110618-RW-4024	3980460	3.19	2839201	3.57	
320-45014-10	WGNA-110618-FRB-4024	3989001	3.19	2960861	3.57	
320-45014-11	WGNA-110618-RW-3529	3832929	3.19	2838708	3.57	
320-45014-12	WGNA-110618-FRB-3529	4080727	3.19	2938602	3.57	
CCV 320-263320/47 CCVIS		3658284	3.17	2742376	3.56	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-263318/27 Date Analyzed: 12/06/2018 01:14  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.05\_537B\_030 Heated Purge: (Y/N) N  
 Calibration ID: 42464

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3641898	3.17	2683371	3.57		
UPPER LIMIT	5098657	3.67	3756719	4.07		
LOWER LIMIT	2549329	2.67	1878360	3.07		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-260410/1-A		3834895	3.19	2756388	3.57	
LCS 320-260410/2-A		4120813	3.17	2927085	3.56	
320-45014-1	WGNA-110618-RW-3785	4047625	3.19	2899219	3.57	
320-45014-2	WGNA-110618-FRB-3785	3719247	3.19	2568711	3.57	
320-45014-3	WGNA-110618-RW-3957	3857375	3.19	2722219	3.57	
320-45014-3 MS	WGNA-110618-RW-3957 MS	4094577	3.17	2853091	3.56	
320-45014-3 MSD	WGNA-110618-RW-3957 MSD	3965880	3.17	3095220	3.56	
320-45014-4	WGNA-110618-FRB-3957	4197150	3.19	3040104	3.57	
320-45014-5	NAWC-110618-RW-303	3872337	3.17	2808026	3.56	
320-45014-6	NAWC-110618-FRB-303	3756257	3.17	2793797	3.56	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-263318/39 Date Analyzed: 12/06/2018 02:43  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.05\_537B\_042 Heated Purge: (Y/N) N  
 Calibration ID: 42464

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3384515	3.17	2486882	3.56		
UPPER LIMIT	4738321	3.67	3481635	4.06		
LOWER LIMIT	2369161	2.67	1740817	3.06		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-260410/1-A		3834895	3.19	2756388	3.57	
LCS 320-260410/2-A		4120813	3.17	2927085	3.56	
320-45014-1	WGNA-110618-RW-3785	4047625	3.19	2899219	3.57	
320-45014-2	WGNA-110618-FRB-3785	3719247	3.19	2568711	3.57	
320-45014-3	WGNA-110618-RW-3957	3857375	3.19	2722219	3.57	
320-45014-3 MS	WGNA-110618-RW-3957 MS	4094577	3.17	2853091	3.56	
320-45014-3 MSD	WGNA-110618-RW-3957 MSD	3965880	3.17	3095220	3.56	
320-45014-4	WGNA-110618-FRB-3957	4197150	3.19	3040104	3.57	
320-45014-5	NAWC-110618-RW-303	3872337	3.17	2808026	3.56	
320-45014-6	NAWC-110618-FRB-303	3756257	3.17	2793797	3.56	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-263320/39 Date Analyzed: 12/06/2018 02:43  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.05\_537B\_042 Heated Purge: (Y/N) N  
 Calibration ID: 42464

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3384515	3.17	2486882	3.56		
UPPER LIMIT	4738321	3.67	3481635	4.06		
LOWER LIMIT	2369161	2.67	1740817	3.06		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-45014-7	NAWC-110618-RW-124	3669637	3.17	2721651	3.56	
320-45014-8	NAWC-110618-FRB-124	3930760	3.17	2921674	3.56	
320-45014-9	WGNA-110618-RW-4024	3980460	3.19	2839201	3.57	
320-45014-10	WGNA-110618-FRB-4024	3989001	3.19	2960861	3.57	
320-45014-11	WGNA-110618-RW-3529	3832929	3.19	2838708	3.57	
320-45014-12	WGNA-110618-FRB-3529	4080727	3.19	2938602	3.57	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-263320/47 Date Analyzed: 12/06/2018 03:43  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.05\_537B\_050 Heated Purge: (Y/N) N  
 Calibration ID: 42464

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3658284	3.17	2742376	3.56		
UPPER LIMIT	5121598	3.67	3839326	4.06		
LOWER LIMIT	2560799	2.67	1919663	3.06		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-45014-7	NAWC-110618-RW-124	3669637	3.17	2721651	3.56	
320-45014-8	NAWC-110618-FRB-124	3930760	3.17	2921674	3.56	
320-45014-9	WGNA-110618-RW-4024	3980460	3.19	2839201	3.57	
320-45014-10	WGNA-110618-FRB-4024	3989001	3.19	2960861	3.57	
320-45014-11	WGNA-110618-RW-3529	3832929	3.19	2838708	3.57	
320-45014-12	WGNA-110618-FRB-3529	4080727	3.19	2938602	3.57	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 12/07/2018 15:50  
 Calibration ID: 42659

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		3528472	3.19	2654650	3.59		
UPPER LIMIT		5292708	3.69	3981975	4.09		
LOWER LIMIT		1764236	2.69	1327325	3.09		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-263818/10		3854163	3.20	2764360	3.59		
ICV 320-263818/12		3693184	3.19	2637299	3.57		
CCVL 320-264395/1		3615336	3.17	2665948	3.56		
CCV 320-264395/2 CCVIS		3536625	3.17	2548404	3.56		
MB 320-264106/1-A		3604826	3.17	2571151	3.56		
LCS 320-264106/2-A		3454307	3.17	2598176	3.56		
LCSD 320-264106/3-A		3614530	3.17	2559960	3.56		
320-45014-4 RE	WGNA-110618-FRB-3957 RE	3494121	3.17	2611982	3.56		
CCV 320-264395/10 CCVIS		3561717	3.17	2582800	3.56		

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-264395/2 Date Analyzed: 12/11/2018 06:30  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.10\_537A\_005 Heated Purge: (Y/N) N  
 Calibration ID: 42659

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3536625	3.17	2548404	3.56		
UPPER LIMIT	4951275	3.67	3567766	4.06		
LOWER LIMIT	2475638	2.67	1783883	3.06		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-264106/1-A			3604826	3.17	2571151	3.56
LCS 320-264106/2-A			3454307	3.17	2598176	3.56
LCSD 320-264106/3-A			3614530	3.17	2559960	3.56
320-45014-4 RE	WGNA-110618-FRB-3957 RE		3494121	3.17	2611982	3.56

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-264395/10 Date Analyzed: 12/11/2018 07:29  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.12.10\_537A\_017 Heated Purge: (Y/N) N  
 Calibration ID: 42659

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	3561717	3.17	2582800	3.56		
UPPER LIMIT	4986404	3.67	3615920	4.06		
LOWER LIMIT	2493202	2.67	1807960	3.06		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-264106/1-A			3604826	3.17	2571151	3.56
LCS 320-264106/2-A			3454307	3.17	2598176	3.56
LCSD 320-264106/3-A			3614530	3.17	2559960	3.56
320-45014-4 RE	WGNA-110618-FRB-3957 RE		3494121	3.17	2611982	3.56

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-45014-1 Analy Batch No.: 261708

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/28/2018 13:06 Calibration End Date: 11/28/2018 13:51 Calibration ID: 42464

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-261708/2	2018.11.28_537ICALTPX_002.d
Level 2	IC 320-261708/3	2018.11.28_537ICALTPX_003.d
Level 3	IC 320-261708/4	2018.11.28_537ICALTPX_004.d
Level 4	IC 320-261708/5	2018.11.28_537ICALTPX_005.d
Level 5	IC 320-261708/6	2018.11.28_537ICALTPX_006.d
Level 6	IC 320-261708/7	2018.11.28_537ICALTPX_007.d
Level 7	IC 320-261708/8	2018.11.28_537ICALTPX_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanesulfonic acid (PFBS)	1.0388 1.1489	1.1365 1.1585	1.0547	1.1161	1.0610	Ave		1.1021			4.5		30.0				
Perfluoroheptanoic acid (PFHpA)	1.1785 1.0717	1.1773 1.0331	1.0436	1.0795	1.0602	Ave		1.0920			5.6		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.5510 1.5200	1.5154 1.5186	1.4306	1.6489	1.4266	Ave		1.5159			5.0		30.0				
Perfluorooctanoic acid (PFOA)	1.3708 1.0949	1.0876 1.0617	1.0316	1.0346	1.0862	Ave		1.1096			10.6		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.3564 1.0553	1.1480 1.1008	1.0855	1.0475	1.0232	Ave		1.1167			10.1		30.0				
Perfluorononanoic acid (PFNA)	0.8532 0.8136	0.8026 0.7695	0.7938	0.7765	0.8213	Ave		0.8044			3.5		30.0				
13C2 PFHxA	1.0211 0.9588	0.9790 0.9541	0.9550	0.9581	0.9800	Ave		0.9723			2.5		30.0				
13C2 PFDA	0.7170 0.6883	0.7063 0.6634	0.6923	0.6499	0.7060	Ave		0.6890			3.5		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.: 320-45014-1 Analy Batch No.: 261708

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/28/2018 13:06 Calibration End Date: 11/28/2018 13:51 Calibration ID: 42464

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-261708/2	2018.11.28_537ICALTPX_002.d
Level 2	IC 320-261708/3	2018.11.28_537ICALTPX_003.d
Level 3	IC 320-261708/4	2018.11.28_537ICALTPX_004.d
Level 4	IC 320-261708/5	2018.11.28_537ICALTPX_005.d
Level 5	IC 320-261708/6	2018.11.28_537ICALTPX_006.d
Level 6	IC 320-261708/7	2018.11.28_537ICALTPX_007.d
Level 7	IC 320-261708/8	2018.11.28_537ICALTPX_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	24683 5388468	51738 10213970	251462	1046520	2596086	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	40652 7139685	80331 13578406	368755	1552410	3571313	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	37936 7338783	71018 13781782	351103	1591569	3593335	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	47331 7301376	74285 13968411	364884	1489386	3662288	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	33833 5196086	54866 10188257	271684	1031103	2628210	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)	13PF OA	Ave	29431 5420001	54763 10113962	280495	1116613	2766383	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C2 PFHxA	13PF OA	Ave	3522233 3193611	3340174 3135028	3374605	3444540	3300906	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDA	13PF OA	Ave	2473031 2292639	2409794 2179789	2446341	2336562	2377959	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1 Analy Batch No.: 261708

SDG No.: \_\_\_\_\_

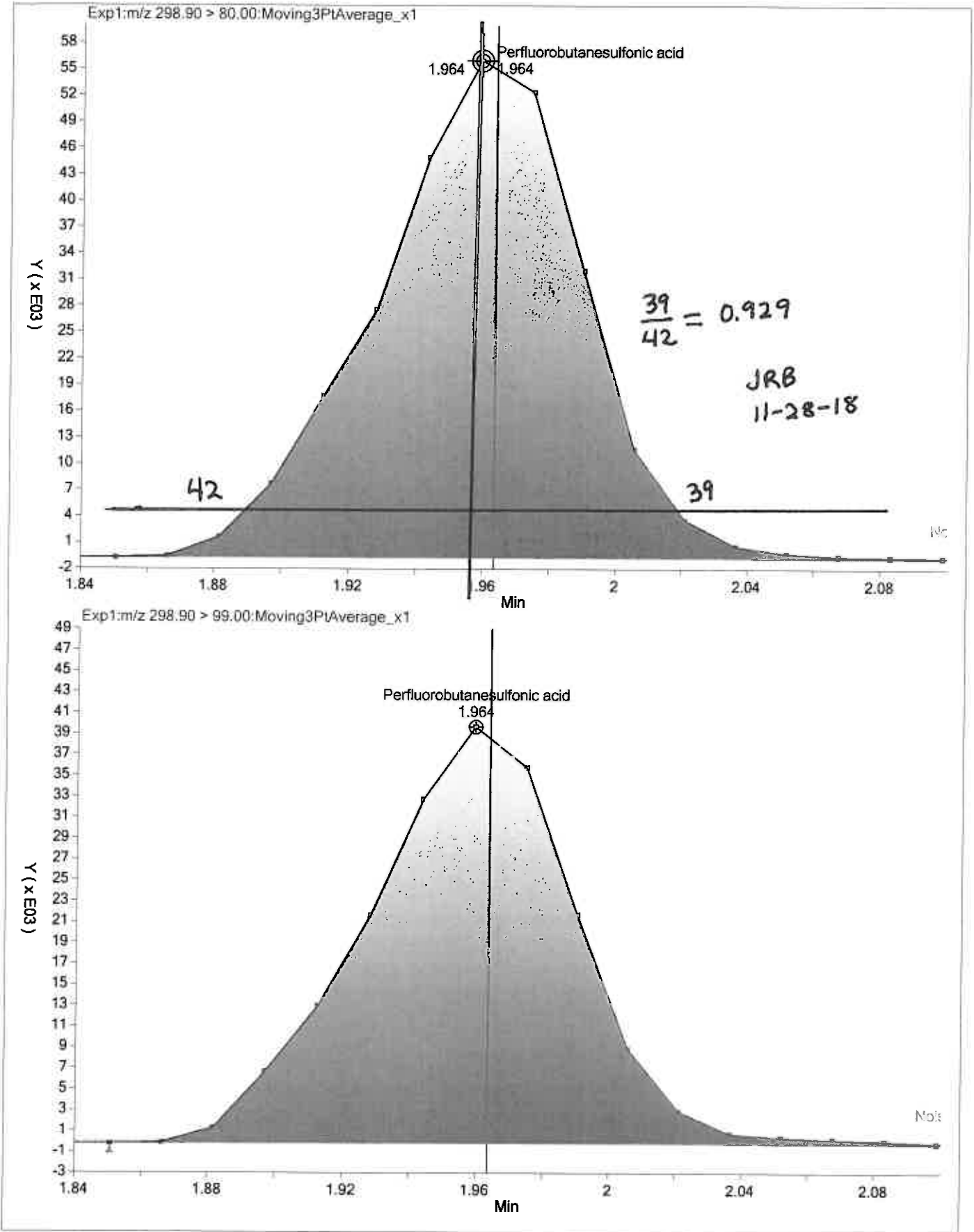
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

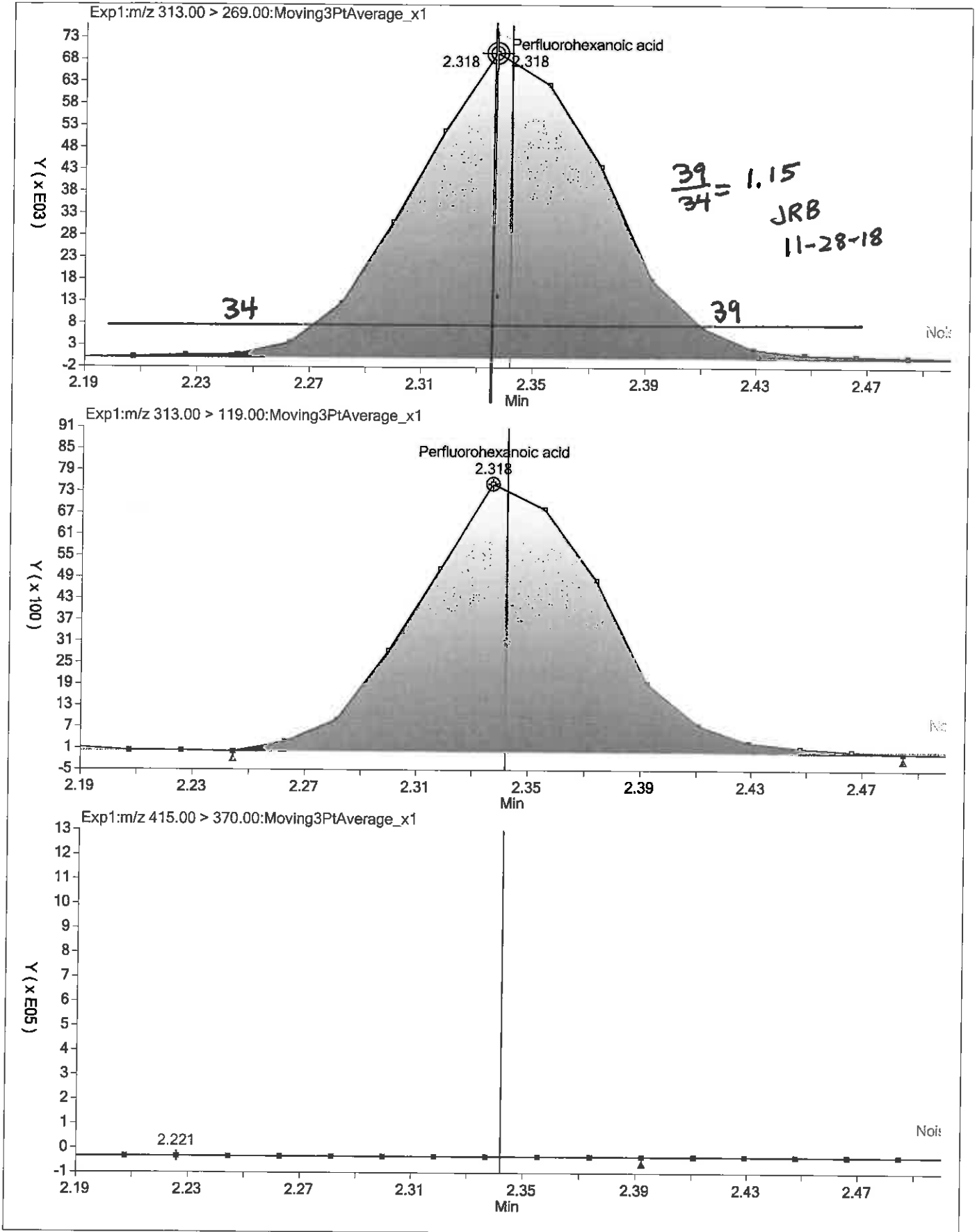
Calibration Start Date: 11/28/2018 13:06 Calibration End Date: 11/28/2018 13:51 Calibration ID: 42464

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-261708/2	2018.11.28_537ICALTPX_002.d
Level 2	IC 320-261708/3	2018.11.28_537ICALTPX_003.d
Level 3	IC 320-261708/4	2018.11.28_537ICALTPX_004.d
Level 4	IC 320-261708/5	2018.11.28_537ICALTPX_005.d
Level 5	IC 320-261708/6	2018.11.28_537ICALTPX_006.d
Level 6	IC 320-261708/7	2018.11.28_537ICALTPX_007.d
Level 7	IC 320-261708/8	2018.11.28_537ICALTPX_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-5.7 5.1	3.1	-4.3	1.3	-3.7	4.2	50 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	7.9 -5.4	7.8	-4.4	-1.1	-2.9	-1.9	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	2.3 0.2	0.0	-5.6	8.8	-5.9	0.3	50 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	23.5 -4.3	-2.0	-7.0	-6.8	-2.1	-1.3	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	21.5 -1.4	2.8	-2.8	-6.2	-8.4	-5.5	50 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	6.1 -4.3	-0.2	-1.3	-3.5	2.1	1.1	50 30	30	30	30	30	30
13C2 PFHxA	5.0 -1.9	0.7	-1.8	-1.5	0.8	-1.4	30 30	30	30	30	30	30
13C2 PFDA	4.1 -3.7	2.5	0.5	-5.7	2.5	-0.1	30 30	30	30	30	30	30





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

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1 Analy Batch No.: 263818

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/07/2018 15:06 Calibration End Date: 12/07/2018 15:50 Calibration ID: 42659

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-263818/2	2018.12.07_537ICAL_003.d
Level 2	IC 320-263818/3	2018.12.07_537ICAL_004.d
Level 3	IC 320-263818/4	2018.12.07_537ICAL_005.d
Level 4	IC 320-263818/5	2018.12.07_537ICAL_006.d
Level 5	IC 320-263818/6	2018.12.07_537ICAL_007.d
Level 6	IC 320-263818/7	2018.12.07_537ICAL_008.d
Level 7	IC 320-263818/8	2018.12.07_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanesulfonic acid (PFBS)	1.0988 1.1767	1.2086 1.1302	1.0474	1.1169	1.0674	Ave		1.1209			5.1		30.0				
Perfluoroheptanoic acid (PFHpA)	1.2239 1.0659	1.0707 1.0573	1.0359	1.0224	0.9766	Ave		1.0647			7.3		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4212 1.5811	1.4959 1.4890	1.3853	1.5308	1.4287	Ave		1.4760			4.6		30.0				
Perfluorooctanoic acid (PFOA)	1.2538 1.0902	1.0919 1.0484	1.0827	1.0711	0.9868	Ave		1.0893			7.5		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.2739 1.0826	1.1148 1.0827	1.0146	1.0841	1.0634	Ave		1.1023			7.4		30.0				
Perfluorononanoic acid (PFNA)	0.8864 0.8230	0.8400 0.8262	0.8111	0.8329	0.8003	Ave		0.8314			3.3		30.0				
13C2 PFHxA	0.9542 0.9684	0.9959 0.9973	0.9365	0.9604	0.8704	Ave		0.9547			4.5		30.0				
13C2 PFDA	0.7164 0.7292	0.7303 0.7164	0.7050	0.7335	0.6982	Ave		0.7184			1.9		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.: 320-45014-1 Analy Batch No.: 263818

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/07/2018 15:06 Calibration End Date: 12/07/2018 15:50 Calibration ID: 42659

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-263818/2	2018.12.07_537ICAL_003.d
Level 2	IC 320-263818/3	2018.12.07_537ICAL_004.d
Level 3	IC 320-263818/4	2018.12.07_537ICAL_005.d
Level 4	IC 320-263818/5	2018.12.07_537ICAL_006.d
Level 5	IC 320-263818/6	2018.12.07_537ICAL_007.d
Level 6	IC 320-263818/7	2018.12.07_537ICAL_008.d
Level 7	IC 320-263818/8	2018.12.07_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	27320 5447804	62153 10829607	265789	1062646	2667621	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	43264 7185923	80008 14333785	365716	1393593	3642688	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	36374 7535367	79188 14686493	361859	1499172	3675806	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	44364 7357085	81675 14227009	382620	1461416	3684632	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	33250 5261445	60183 10890349	270284	1082696	2790009	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)	13PF OA	Ave	31332 5548381	62765 11200160	286352	1135323	2985342	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C2 PFHxA	13PF OA	Ave	3372926 3264066	3720908 3379961	3306344	3272924	3246608	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDA	13PF OA	Ave	2532483 2457743	2728445 2428151	2488961	2499615	2604411	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD



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

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1 Analy Batch No.: 263818

SDG No.: \_\_\_\_\_

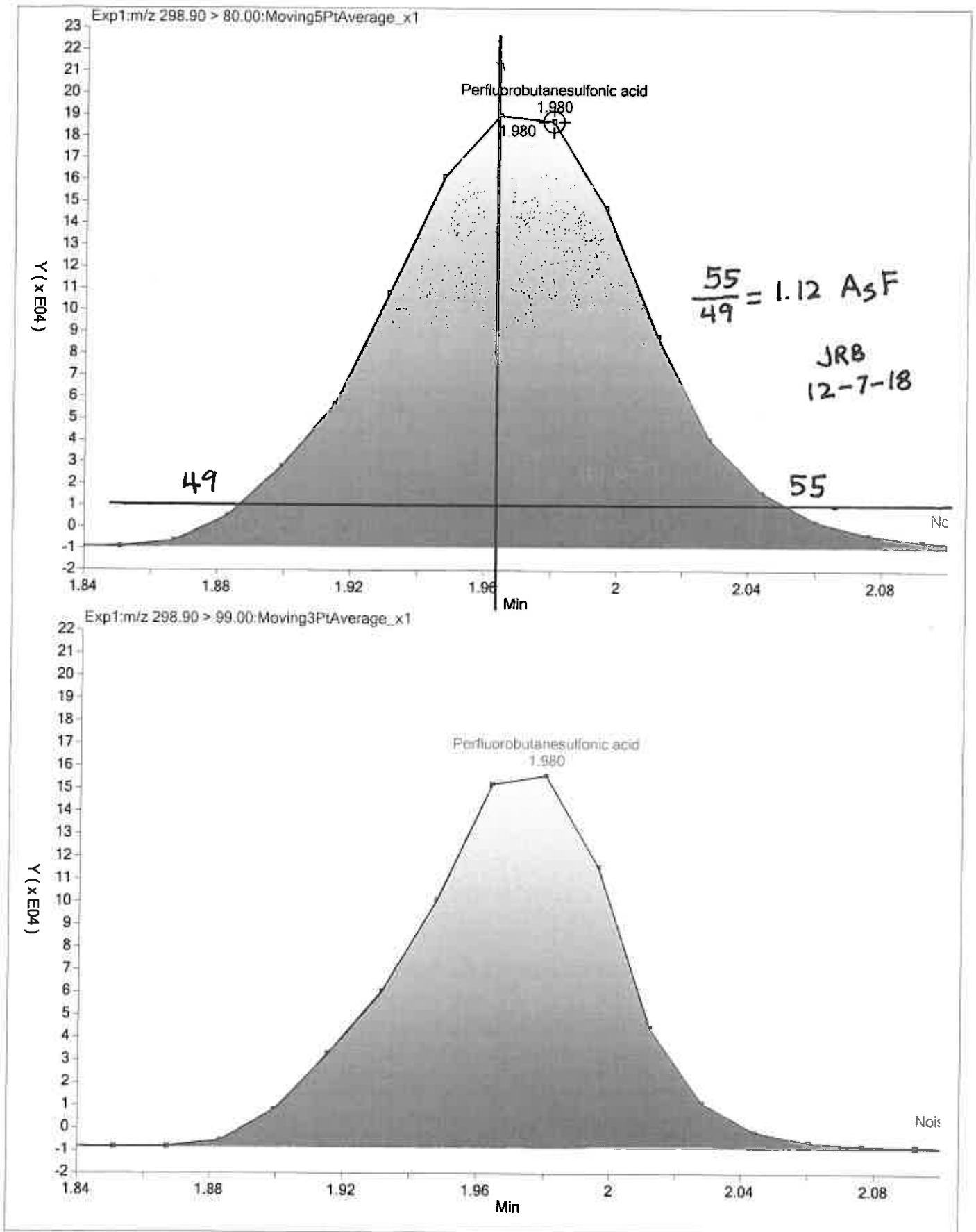
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

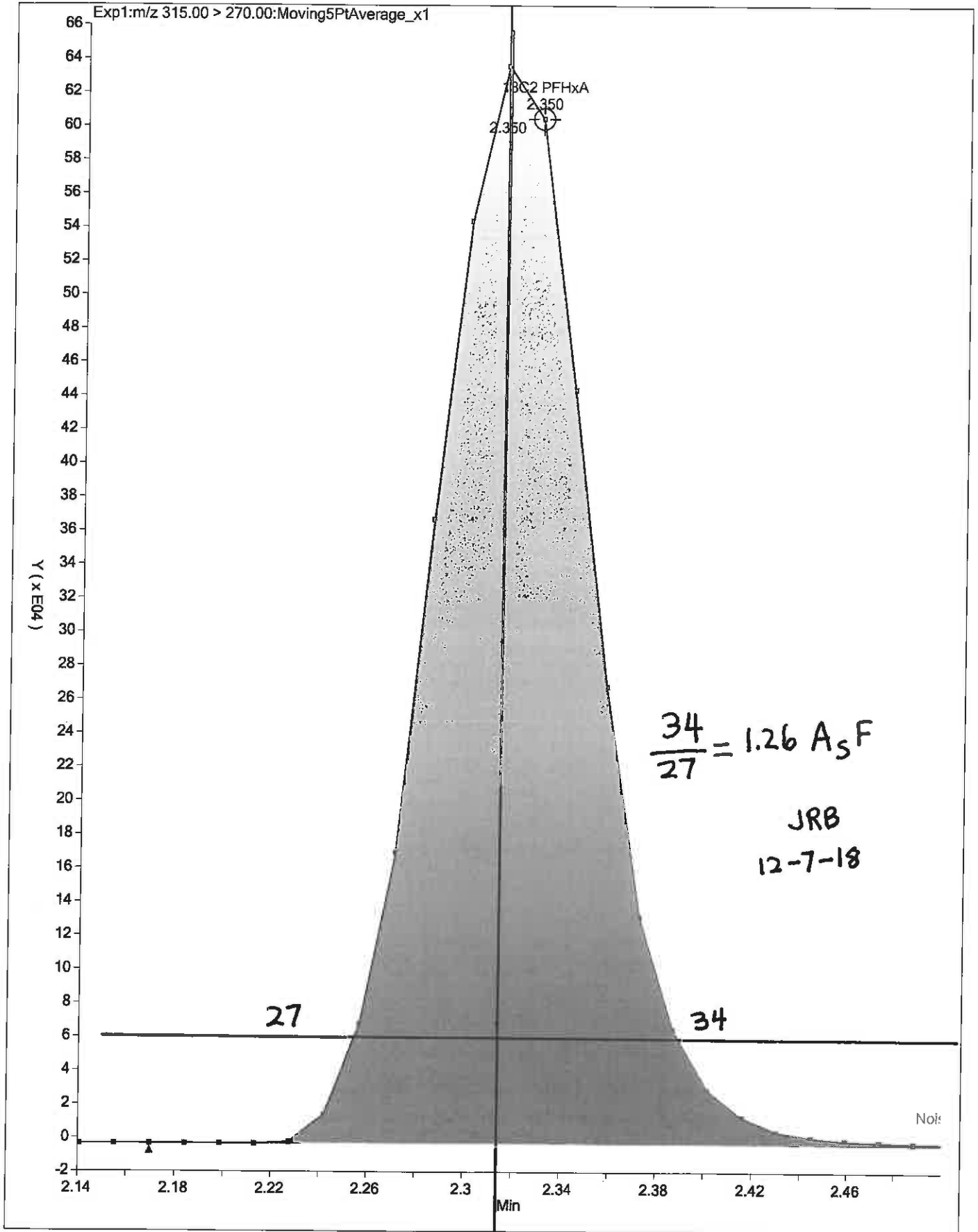
Calibration Start Date: 12/07/2018 15:06 Calibration End Date: 12/07/2018 15:50 Calibration ID: 42659

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-263818/2	2018.12.07_537ICAL_003.d
Level 2	IC 320-263818/3	2018.12.07_537ICAL_004.d
Level 3	IC 320-263818/4	2018.12.07_537ICAL_005.d
Level 4	IC 320-263818/5	2018.12.07_537ICAL_006.d
Level 5	IC 320-263818/6	2018.12.07_537ICAL_007.d
Level 6	IC 320-263818/7	2018.12.07_537ICAL_008.d
Level 7	IC 320-263818/8	2018.12.07_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-2.0 0.8	7.8	-6.6	-0.4	-4.8	5.0	50 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	15.0 -0.7	0.6	-2.7	-4.0	-8.3	0.1	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-3.7 0.9	1.3	-6.1	3.7	-3.2	7.1	50 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	15.1 -3.8	0.2	-0.6	-1.7	-9.4	0.1	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	15.6 -1.8	1.1	-8.0	-1.7	-3.5	-1.8	50 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	6.6 -0.6	1.0	-2.4	0.2	-3.7	-1.0	50 30	30	30	30	30	30
13C2 PFHxA	-0.1 4.5	4.3	-1.9	0.6	-8.8	1.4	30 30	30	30	30	30	30
13C2 PFDA	-0.3 -0.3	1.6	-1.9	2.1	-2.8	1.5	30 30	30	30	30	30	30





FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-261708/10 Calibration Date: 11/28/2018 14:06  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.11.28\_537ICALTPX\_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.065		9.00	0.0442	-3.4	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.020		1.00	0.0500	-6.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.483		3.00	0.0455	-2.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.169		2.00	0.0501	5.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.236		4.00	0.0464	10.7	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8258		5.00	0.0500	2.7	50.0
13C2 PFHxA	Ave	0.9723	0.9667		2.49	2.50	-0.6	30.0
13C2 PFDA	Ave	0.6890	0.6934		2.52	2.50	0.6	30.0
d5-NEtFOSAA	Ave	1.060	1.054		2.49	2.50	-0.6	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-261708/12 Calibration Date: 11/28/2018 14:21  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.11.28\_537ICALTPX\_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.069		9.00	1.77	-3.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.104		2.02	2.00	1.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.504		1.81	1.82	-0.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.096		1.98	2.00	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8428		2.10	2.00	4.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.005		4.00	1.85	-10.0	30.0
13C2 PFHxA	Ave	0.9723	0.9637		2.48	2.50	-0.9	30.0
13C2 PFDA	Ave	0.6890	0.7109		2.58	2.50	3.2	30.0
d5-NEtFOSAA	Ave	1.060	1.058		2.50	2.50	-0.2	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-263312/1 Calibration Date: 12/05/2018 22:00  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.12.05\_537B\_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.055		9.00	0.0442	-4.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.074		1.00	0.0500	-1.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.570		3.00	0.0455	3.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.178		2.00	0.0501	6.1	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.9144		5.00	0.0500	13.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.224		4.00	0.0464	9.6	50.0
13C2 PFHxA	Ave	0.9723	1.001		2.57	2.50	2.9	30.0
13C2 PFDA	Ave	0.6890	0.7257		2.63	2.50	5.3	30.0
d5-NEtFOSAA	Ave	1.060	1.014		2.39	2.50	-4.3	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-263318/27 Calibration Date: 12/06/2018 01:14  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.12.05\_537B\_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.171		4.70	4.42	6.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.095		5.01	5.00	0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.523		4.57	4.55	0.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.129		5.09	5.01	1.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8557		5.32	5.00	6.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.088		4.52	4.64	-2.5	30.0
13C2 PFHxA	Ave	0.9723	0.9673		2.49	2.50	-0.5	30.0
13C2 PFDA	Ave	0.6890	0.7290		2.65	2.50	5.8	30.0
d5-NEtFOSAA	Ave	1.060	1.032		2.43	2.50	-2.7	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-263318/39 Calibration Date: 12/06/2018 02:43  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.12.05\_537B\_042.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.118		9.00	0.884	1.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.089		0.997	1.00	-0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.502		3.00	0.910	-0.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.110		1.00	1.00	0.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8639		5.00	1.00	7.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.072		4.00	0.928	-4.0	30.0
13C2 PFHxA	Ave	0.9723	0.9540		2.45	2.50	-1.9	30.0
13C2 PFDA	Ave	0.6890	0.7431		2.70	2.50	7.9	30.0
d5-NEtFOSAA	Ave	1.060	1.082		2.55	2.50	2.0	30.0



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-263320/39 Calibration Date: 12/06/2018 02:43  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.12.05\_537B\_042.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.118		9.00	0.884	1.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.089		0.997	1.00	-0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.502		3.00	0.910	-0.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.110		1.00	1.00	0.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8639		5.00	1.00	7.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.072		4.00	0.928	-4.0	30.0
13C2 PFHxA	Ave	0.9723	0.9540		2.45	2.50	-1.9	30.0
13C2 PFDA	Ave	0.6890	0.7431		2.70	2.50	7.9	30.0
d5-NEtFOSAA	Ave	1.060	1.082		2.55	2.50	2.0	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-263320/47 Calibration Date: 12/06/2018 03:43  
 Instrument ID: A8\_N Calib Start Date: 11/28/2018 13:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 11/28/2018 13:51  
 Lab File ID: 2018.12.05\_537B\_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.102	1.164		4.67	4.42	5.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.092	1.086		4.97	5.00	-0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.516	1.508		4.53	4.55	-0.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.110	1.136		5.12	5.01	2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.117	1.086		4.51	4.64	-2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8044	0.8352		5.19	5.00	3.8	30.0
13C2 PFHxA	Ave	0.9723	0.9456		2.43	2.50	-2.7	30.0
13C2 PFDA	Ave	0.6890	0.7084		2.57	2.50	2.8	30.0
d5-NEtFOSAA	Ave	1.060	1.043		2.46	2.50	-1.6	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-263818/10 Calibration Date: 12/07/2018 16:05  
 Instrument ID: A8\_N Calib Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 12/07/2018 15:50  
 Lab File ID: 2018.12.07\_537ICAL\_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.121	1.084		9.00	0.0442	-3.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.065	1.081		1.00	0.0500	1.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.476	1.539		3.00	0.0455	4.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.089	1.107		2.00	0.0501	1.6	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8314	0.8012		5.00	0.0500	-3.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.102	1.251		4.00	0.0464	13.5	50.0
13C2 PFHxA	Ave	0.9547	0.9343		2.45	2.50	-2.1	30.0
13C2 PFDA	Ave	0.7184	0.6646		2.31	2.50	-7.5	30.0
d5-NEtFOSAA	Ave	1.065	1.074		2.52	2.50	0.8	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-263818/12 Calibration Date: 12/07/2018 16:20  
 Instrument ID: A8\_N Calib Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 12/07/2018 15:50  
 Lab File ID: 2018.12.07\_537ICAL\_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.121	1.102		9.00	1.77	-1.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.065	1.021		1.92	2.00	-4.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.476	1.548		1.91	1.82	4.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.089	1.035		1.90	2.00	-4.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.102	1.058		1.78	1.85	-4.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8314	0.7865		5.00	2.00	-5.4	30.0
13C2 PFHxA	Ave	0.9547	0.9303		2.44	2.50	-2.6	30.0
13C2 PFDA	Ave	0.7184	0.6774		2.36	2.50	-5.7	30.0
d5-NEtFOSAA	Ave	1.065	1.097		2.57	2.50	2.9	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-264395/1 Calibration Date: 12/11/2018 06:22  
 Instrument ID: A8\_N Calib Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 12/07/2018 15:50  
 Lab File ID: 2018.12.10\_537A\_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.121	1.143		9.00	0.0442	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.065	0.9641		1.00	0.0500	-9.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.476	1.489		3.00	0.0455	0.8	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.089	1.177		2.00	0.0501	8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.102	1.284		4.00	0.0464	16.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8314	0.8228		5.00	0.0500	-1.0	50.0
13C2 PFHxA	Ave	0.9547	0.9081		2.38	2.50	-4.9	30.0
13C2 PFDA	Ave	0.7184	0.6528		2.27	2.50	-9.1	30.0
d5-NEtFOSAA	Ave	1.065	1.020		2.39	2.50	-4.3	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-264395/2 Calibration Date: 12/11/2018 06:30  
 Instrument ID: A8\_N Calib Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 12/07/2018 15:50  
 Lab File ID: 2018.12.10\_537A\_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.121	1.235		9.00	0.884	10.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.065	1.026		0.963	1.00	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.476	1.508		3.00	0.910	2.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.089	1.047		0.962	1.00	-3.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.102	1.086		4.00	0.928	-1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8314	0.8018		5.00	1.00	-3.6	30.0
13C2 PFHxA	Ave	0.9547	0.9633		2.52	2.50	0.9	30.0
13C2 PFDA	Ave	0.7184	0.7400		2.58	2.50	3.0	30.0
d5-NEtFOSAA	Ave	1.065	1.048		2.46	2.50	-1.6	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-264395/10 Calibration Date: 12/11/2018 07:29  
 Instrument ID: A8\_N Calib Start Date: 12/07/2018 15:06  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 12/07/2018 15:50  
 Lab File ID: 2018.12.10\_537A\_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.121	1.259		4.96	4.42	12.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.065	1.040		4.88	5.00	-2.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.476	1.563		4.82	4.55	5.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.089	1.097		5.04	5.01	0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.102	1.062		4.47	4.64	-3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8314	0.8082		4.86	5.00	-2.8	30.0
13C2 PFHxA	Ave	0.9547	0.9728		2.55	2.50	1.9	30.0
13C2 PFDA	Ave	0.7184	0.6973		2.43	2.50	-2.9	30.0
d5-NEtFOSAA	Ave	1.065	1.046		2.46	2.50	-1.8	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 11/28/2018 13:06

Analysis Batch Number: 261708 End Date: 11/28/2018 14:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-261708/2		11/28/2018 13:06	1	2018.11.28_537I CALTPX 002.d	GeminiC18 3x100 3(mm)
IC 320-261708/3		11/28/2018 13:14	1	2018.11.28_537I CALTPX 003.d	GeminiC18 3x100 3(mm)
IC 320-261708/4		11/28/2018 13:21	1	2018.11.28_537I CALTPX 004.d	GeminiC18 3x100 3(mm)
IC 320-261708/5 ICISAV		11/28/2018 13:29	1	2018.11.28_537I CALTPX 005.d	GeminiC18 3x100 3(mm)
IC 320-261708/6		11/28/2018 13:36	1	2018.11.28_537I CALTPX 006.d	GeminiC18 3x100 3(mm)
IC 320-261708/7		11/28/2018 13:44	1	2018.11.28_537I CALTPX 007.d	GeminiC18 3x100 3(mm)
IC 320-261708/8		11/28/2018 13:51	1	2018.11.28_537I CALTPX 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/28/2018 13:59	1		GeminiC18 3x100 3(mm)
CCVL 320-261708/10		11/28/2018 14:06	1	2018.11.28_537I CALTPX 010.d	GeminiC18 3x100 3(mm)
ICB 320-261708/11		11/28/2018 14:13	1		GeminiC18 3x100 3(mm)
ICV 320-261708/12		11/28/2018 14:21	1	2018.11.28_537I CALTPX 012.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/28/2018 14:28	1		GeminiC18 3x100 3(mm)



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 12/05/2018 22:00

Analysis Batch Number: 263312 End Date: 12/05/2018 23:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-263312/1		12/05/2018 22:00	1	2018.12.05_537B 004.d	GeminiC18 3x100 3(mm)
CCV 320-263312/2 CCVIS		12/05/2018 22:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:15	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:37	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:44	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:52	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 22:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 23:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 23:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 23:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		12/05/2018 23:29	1		GeminiC18 3x100 3(mm)
CCV 320-263312/14 CCVIS		12/05/2018 23:37	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 12/06/2018 01:14

Analysis Batch Number: 263318 End Date: 12/06/2018 02:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-263318/27 CCVIS		12/06/2018 01:14	1	2018.12.05_537B 030.d	GeminiC18 3x100 3(mm)
ZZZZZ		12/06/2018 01:21	1		GeminiC18 3x100 3(mm)
MB 320-260410/1-A		12/06/2018 01:28	1	2018.12.05_537B 032.d	GeminiC18 3x100 3(mm)
LCS 320-260410/2-A		12/06/2018 01:36	1	2018.12.05_537B 033.d	GeminiC18 3x100 3(mm)
320-45014-1		12/06/2018 01:43	1	2018.12.05_537B 034.d	GeminiC18 3x100 3(mm)
320-45014-2		12/06/2018 01:51	1	2018.12.05_537B 035.d	GeminiC18 3x100 3(mm)
320-45014-3		12/06/2018 01:58	1	2018.12.05_537B 036.d	GeminiC18 3x100 3(mm)
320-45014-3 MS		12/06/2018 02:06	1	2018.12.05_537B 037.d	GeminiC18 3x100 3(mm)
320-45014-3 MSD		12/06/2018 02:13	1	2018.12.05_537B 038.d	GeminiC18 3x100 3(mm)
320-45014-4		12/06/2018 02:21	1	2018.12.05_537B 039.d	GeminiC18 3x100 3(mm)
320-45014-5		12/06/2018 02:28	1	2018.12.05_537B 040.d	GeminiC18 3x100 3(mm)
320-45014-6		12/06/2018 02:36	1	2018.12.05_537B 041.d	GeminiC18 3x100 3(mm)
CCV 320-263318/39 CCVIS		12/06/2018 02:43	1	2018.12.05_537B 042.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 12/06/2018 02:43

Analysis Batch Number: 263320 End Date: 12/06/2018 03:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-263320/39 CCVIS		12/06/2018 02:43	1	2018.12.05_537B 042.d	GeminiC18 3x100 3(mm)
ZZZZZ		12/06/2018 02:51	1		GeminiC18 3x100 3(mm)
320-45014-7		12/06/2018 02:58	1	2018.12.05_537B 044.d	GeminiC18 3x100 3(mm)
320-45014-8		12/06/2018 03:05	1	2018.12.05_537B 045.d	GeminiC18 3x100 3(mm)
320-45014-9		12/06/2018 03:13	1	2018.12.05_537B 046.d	GeminiC18 3x100 3(mm)
320-45014-10		12/06/2018 03:20	1	2018.12.05_537B 047.d	GeminiC18 3x100 3(mm)
320-45014-11		12/06/2018 03:28	1	2018.12.05_537B 048.d	GeminiC18 3x100 3(mm)
320-45014-12		12/06/2018 03:35	1	2018.12.05_537B 049.d	GeminiC18 3x100 3(mm)
CCV 320-263320/47 CCVIS		12/06/2018 03:43	1	2018.12.05_537B 050.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 12/07/2018 15:06

Analysis Batch Number: 263818 End Date: 12/07/2018 16:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-263818/2		12/07/2018 15:06	1	2018.12.07_537I CAL_003.d	GeminiC18 3x100 3(mm)
IC 320-263818/3		12/07/2018 15:13	1	2018.12.07_537I CAL_004.d	GeminiC18 3x100 3(mm)
IC 320-263818/4		12/07/2018 15:21	1	2018.12.07_537I CAL_005.d	GeminiC18 3x100 3(mm)
IC 320-263818/5 ICISAV		12/07/2018 15:28	1	2018.12.07_537I CAL_006.d	GeminiC18 3x100 3(mm)
IC 320-263818/6		12/07/2018 15:36	1	2018.12.07_537I CAL_007.d	GeminiC18 3x100 3(mm)
IC 320-263818/7		12/07/2018 15:43	1	2018.12.07_537I CAL_008.d	GeminiC18 3x100 3(mm)
IC 320-263818/8		12/07/2018 15:50	1	2018.12.07_537I CAL_009.d	GeminiC18 3x100 3(mm)
CCVL 320-263818/10		12/07/2018 16:05	1	2018.12.07_537I CAL_011.d	GeminiC18 3x100 3(mm)
ICB 320-263818/11		12/07/2018 16:13	1		GeminiC18 3x100 3(mm)
ICV 320-263818/12		12/07/2018 16:20	1	2018.12.07_537I CAL_013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 12/11/2018 06:22

Analysis Batch Number: 264395 End Date: 12/11/2018 07:29

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-264395/1		12/11/2018 06:22	1	2018.12.10_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-264395/2 CCVIS		12/11/2018 06:30	1	2018.12.10_537A 005.d	GeminiC18 3x100 3(mm)
ZZZZZ		12/11/2018 06:44	1		GeminiC18 3x100 3(mm)
MB 320-264106/1-A		12/11/2018 06:52	1	2018.12.10_537A 010.d	GeminiC18 3x100 3(mm)
LCS 320-264106/2-A		12/11/2018 06:59	1	2018.12.10_537A 011.d	GeminiC18 3x100 3(mm)
LCSD 320-264106/3-A		12/11/2018 07:07	1	2018.12.10_537A 012.d	GeminiC18 3x100 3(mm)
320-45014-4 RE		12/11/2018 07:14	1	2018.12.10_537A 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		12/11/2018 07:22	5		GeminiC18 3x100 3(mm)
CCV 320-264395/10 CCVIS		12/11/2018 07:29	1	2018.12.10_537A 017.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Batch Number: 260410 Batch Start Date: 11/20/18 15:07 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 11/20/18 20:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00088
MB 320-260410/1		537, 537				250.00 mL	10.00 mL	7 SU	500 uL
LCS 320-260410/2		537, 537				250.00 mL	10.00 mL	7 SU	500 uL
320-45014-A-1	WGNA-110618-RW-3785	537, 537	T	313.77 g	27.88 g	285.9 mL	10.00 mL	7 SU	500 uL
320-45014-A-2	WGNA-110618-FRB-3785	537, 537	T	306.61 g	27.14 g	279.5 mL	10.00 mL	7 SU	500 uL
320-45014-A-3	WGNA-110618-RW-3957	537, 537	T	298.17 g	28.22 g	270 mL	10.00 mL	7 SU	500 uL
320-45014-A-3 MS	WGNA-110618-RW-3957	537, 537	T	305.64 g	27.89 g	277.8 mL	10.00 mL	7 SU	500 uL
320-45014-A-3 MSD	WGNA-110618-RW-3957	537, 537	T	307.58 g	27.74 g	279.8 mL	10.00 mL	7 SU	500 uL
320-45014-A-4	WGNA-110618-FRB-3957	537, 537	T	306.22 g	28.21 g	278 mL	10.00 mL	7 SU	500 uL
320-45014-A-5	NAWC-110618-RW-303	537, 537	T	312.75 g	28.70 g	284.1 mL	10.00 mL	7 SU	500 uL
320-45014-A-6	NAWC-110618-FRB-303	537, 537	T	309.46 g	27.41 g	282.1 mL	10.00 mL	7 SU	500 uL
320-45014-A-7	NAWC-110618-RW-124	537, 537	T	306.83 g	27.98 g	278.9 mL	10.00 mL	7 SU	500 uL
320-45014-A-8	NAWC-110618-FRB-124	537, 537	T	315.02 g	27.67 g	287.4 mL	10.00 mL	7 SU	500 uL
320-45014-A-9	WGNA-110618-RW-4024	537, 537	T	318.02 g	27.80 g	290.2 mL	10.00 mL	7 SU	500 uL
320-45014-A-10	WGNA-110618-FRB-4024	537, 537	T	311.98 g	27.49 g	284.5 mL	10.00 mL	7 SU	500 uL
320-45014-A-11	WGNA-110618-RW-3529	537, 537	T	300.17 g	27.75 g	272.4 mL	10.00 mL	7 SU	500 uL
320-45014-A-12	WGNA-110618-FRB-3529	537, 537	T	303.31 g	27.43 g	275.9 mL	10.00 mL	7 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00086	LC537MSP 00001	AnalysisComment			
MB 320-260410/1		537, 537		500 uL		Chlorine: ND			
LCS 320-260410/2		537, 537		500 uL	500 uL	Chlorine: ND			
320-45014-A-1	WGNA-110618-RW-3785	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-2	WGNA-110618-FRB-3785	537, 537	T	500 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.: 320-45014-1

SDG No.: \_\_\_\_\_

Batch Number: 260410 Batch Start Date: 11/20/18 15:07 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 11/20/18 20:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00086	LC537MSP 00001	AnalysisComment			
320-45014-A-3	WGNA-110618-RW-3 957	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-3 MS	WGNA-110618-RW-3 957	537, 537	T	500 uL	500 uL	Chlorine: ND			
320-45014-A-3 MSD	WGNA-110618-RW-3 957	537, 537	T	500 uL	500 uL	Chlorine: ND			
320-45014-A-4	WGNA-110618-FRB- 3957	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-5	NAWC-110618-RW-3 03	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-6	NAWC-110618-FRB- 303	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-7	NAWC-110618-RW-1 24	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-8	NAWC-110618-FRB- 124	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-9	WGNA-110618-RW-4 024	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-10	WGNA-110618-FRB- 4024	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-11	WGNA-110618-RW-3 529	537, 537	T	500 uL		Chlorine: ND			
320-45014-A-12	WGNA-110618-FRB- 3529	537, 537	T	500 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.: 320-45014-1

SDG No.: \_\_\_\_\_

Batch Number: 260410 Batch Start Date: 11/20/18 15:07 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 11/20/18 20:40

Batch Notes	
Analyst ID - Aliquot Step	JER
Batch Comment	TA labels match client IDs JER
Analyst ID - Final Volume Step	JER
Internal Standard ID#	1408096
Manifold ID	M, Q
Methanol ID	1441322
pH Indicator ID	3718
Pipette ID	I46345G
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	DTH
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	DTH
SPE Cartridge Lot ID	6413968-05
Trizma ID	SLBR5241V
Reagent Water ID	11/17/18

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.



LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-45014-1

SDG No.: \_\_\_\_\_

Batch Number: 264106 Batch Start Date: 12/10/18 05:39 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 12/10/18 11:55

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00091
MB 320-264106/1		537, 537				250 mL	10.00 mL	7.0 SU	500 uL
LCS 320-264106/2		537, 537				250 mL	10.00 mL	7.0 SU	500 uL
LCSD 320-264106/3		537, 537				250 mL	10.00 mL	7.0 SU	500 uL
320-45014-B-4	WGNA-110618-FRB-3957	537, 537	T	304.98 g	27.31 g	277.7 mL	10.00 mL	7.0 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00088	LC537HSP 00001	AnalysisComment			
MB 320-264106/1		537, 537		500 uL		Chlorine ND			
LCS 320-264106/2		537, 537		500 uL	500 uL	Chlorine ND			
LCSD 320-264106/3		537, 537		500 uL	500 uL	Chlorine ND			
320-45014-B-4	WGNA-110618-FRB-3957	537, 537	T	500 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.: 320-45014-1

SDG No.: \_\_\_\_\_

Batch Number: 264106 Batch Start Date: 12/10/18 05:39 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 12/10/18 11:55

Batch Notes	
Analyst ID - Aliquot Step	HJA
Batch Comment	Client labels match TA labels, HJA 12-10-18
Analyst ID - Final Volume Step	HJA
Internal Standard ID#	1451881
Manifold ID	M
Methanol ID	1454398
pH Indicator ID	3718
Pipette ID	I46162G
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	MNV
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	MN
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	MYN
SPE Cartridge Lot ID	6413968-05
Trizma ID	SLBR5241V
Reagent Water ID	12-06-18

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.

PFAS Calibration Calculations:

**Initial Calibration**  
Instrument A8\_N

11/28/2018

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
0.025	47331	3449349	2.5	1.37217	1.3708
0.0501	74285	3411687	2.5	1.08651	1.0876
0.25	364884	3533517	2.5	1.03264	1.0316
1	1489386	3595205	2.5	1.03568	1.0346
2.5	3662288	3368416	2.5	1.08724	1.0862
5.01	7301376	3330862	2.5	1.09383	1.0949
10	13968411	3285815	2.5	1.06278	1.0617
Average				1.11012	1.1096
Standard Deviation				0.1182	
RSD				0.1065	
%RSD				10.64598	10.6

**Continuing Calibration**

12/06/2018 @ 1:14

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
5.01	8232255	3641898	2.5	1.1280	1.6545615	1.129	1.8

**Sample Identification**  
Compound

WGNA-110618-RW-3957  
PFOA

Compound Area	654898	Average RRF	1.1096
Internal Standard Amount (ng)	2.5	Sample Volume(ml)	270
Dilution Factor	1	Volume Extract (ml)	10
Internal Standard Area	3857375		

Concentration	14.1674 ng/L
Reported Result	14.2 ng/L

**MS/MSD %R**

WGNA-110618-RW-3957

PFOA MS %R	Spike amount	MS concentration	Sample Result
69.96	90.1	77.23	14.2

PFOA MSD %R	Spike amount	MSD concentration	Sample Result
61.74	89.4	69.4	14.2

MS/MSD RPD	10.68
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**Surrogate PFHxA**

Compound Area	3626676		
Internal Standard Amount (ng)	10		
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	3857375	Injection Volume (µl)	1
Average RRF	0.9723		

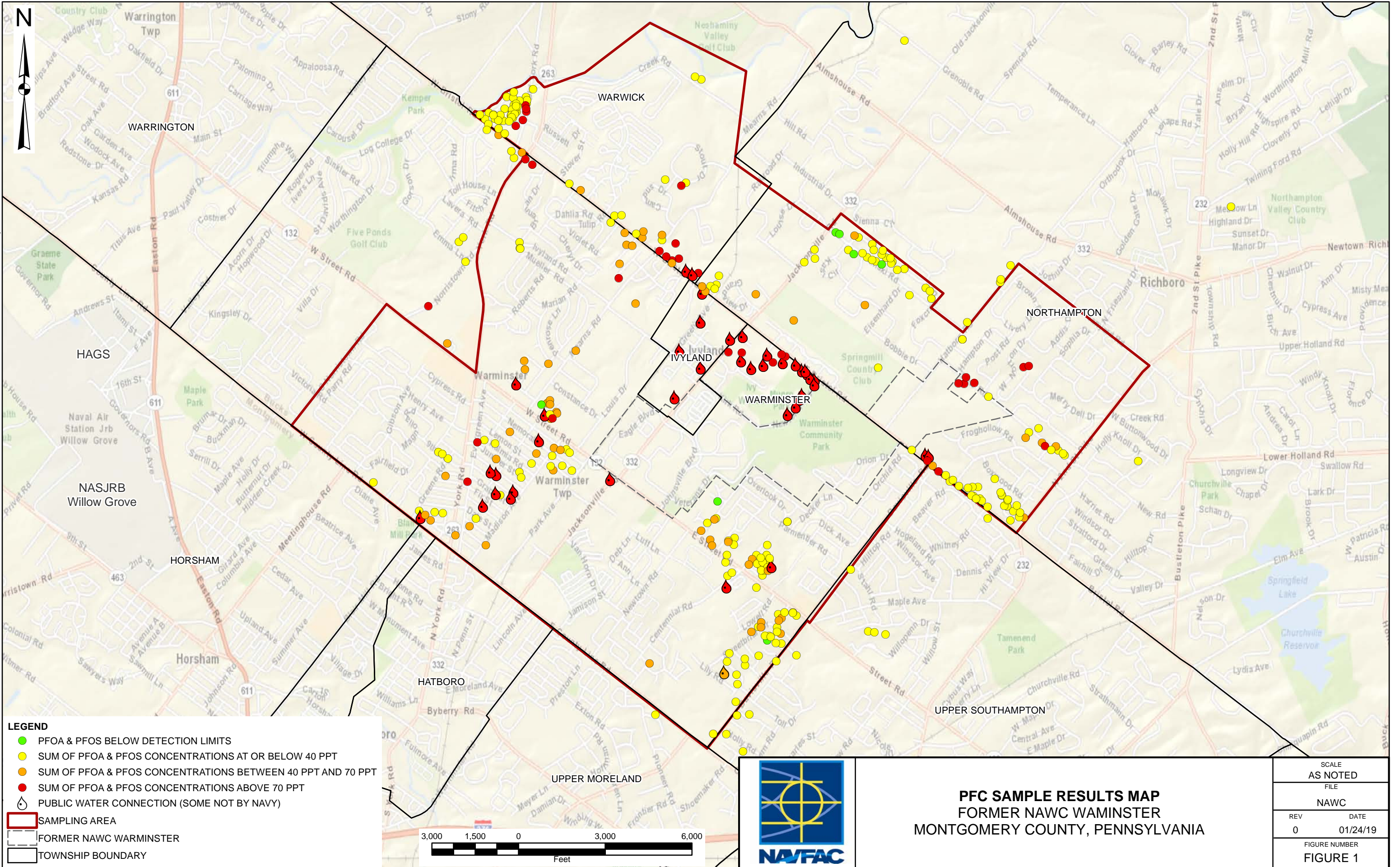
Concentration	9.6698		
Surrogate %R	96.70	Spike amount	10

**LCS %R**

320-260410/2-A

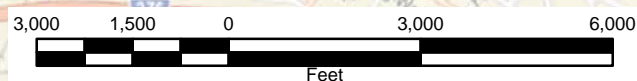
PFOA	Spike amount	LCS concentration
73.21	100	73.21

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**LEGEND**

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- 👉 PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARMINSTER
- TOWNSHIP BOUNDARY



**PFC SAMPLE RESULTS MAP**  
 FORMER NAWC WARMINSTER  
 MONTGOMERY COUNTY, PENNSYLVANIA

SCALE AS NOTED	
FILE	
NAWC	
REV 0	DATE 01/24/19
FIGURE NUMBER	
FIGURE 1	