



**Determination of Perfluorooctanoic Acid (PFOA)  
in Aqueous Samples**

**Final Report**

**New Jersey Department of Environmental Protection  
Division of Water Supply  
Bureau of Safe Drinking Water  
P.O. Box 426  
Trenton, New Jersey 08625**

**January 2007**

## **Table of Contents**

- I. Introduction**
- II. Project Description**
- III. Sampling Plan**
- IV. Sample Analysis**
- V. Results**
- VI. Discussion**
- VII. Conclusion**
- VIII. References**

**Appendix A: PFOA and PFOS Sample Results, BSDW, January 2007.**

**Appendix B: Related Drinking Water PFOA and PFOS Sample Results,  
Salem County and Sayreville, NJ**

Project Officers: Linda Bonnette, Betty Jane Boros-Russo, Alan Dillon  
NJDEP – Bureau of Safe Drinking Water

Contributors: Ed Apalinski, John Berchtold, Karen Fell, Barker Hamill  
NJDEP – Bureau of Safe Drinking Water  
Marc Ferko, Bernie Wilk  
NJDEP – Office of Quality Assurance

This report and all associated data will be maintained on file at the Bureau of Safe Drinking Water for a minimum of 10 years.

## **I. Introduction**

In the late 1990's, the U.S. Environmental Protection Agency (EPA) began to review information on PFOA (perfluorooctanoic acid, also known as C-8). PFOA is a synthetic (man-made) chemical used in the manufacture of several commercially important products. PFOA is very persistent in the environment and has been found at very low levels both in the environment and in the blood of the general U.S. population. It is not fully understood how individuals are exposed to the chemical, based on the information available to date. These factors have prompted EPA to investigate whether PFOA might pose a risk to human health and the environment at the levels currently being found, or at levels that might be reached in the future as more PFOA continues to be released into the environment.

PFOA is not a specifically regulated contaminant under the requirements of N.J.A.C. 7:10, the New Jersey State Drinking Water Regulations, or the associated Federal Rules at 40 CFR Part 141. Because its' occurrence in drinking water supplies was unknown, the Department decided to develop preliminary occurrence data. In addition, because PFOS (perfluorooctanoic sulfonate) is often associated with PFOA, is currently being further investigated by EPA and is a related and reportable contaminant under the analytical method used by the laboratory, occurrence data was also collected for this compound.

## **II. Project Description**

The Bureau of Safe Drinking Water (BSDW) initiated a preliminary occurrence study in July 2006 to determine whether PFOA could be found in detectable concentrations in raw and treated public water systems throughout the state. Sampling sites were selected based on available information, concentrating in areas where PFOA was most expected to be found. The BSDW developed the "Determination of PFOA in Aqueous Samples, Quality Assurance Project Plan (QAPP)," signed June 26, 2006, for the collection of data. This report discusses the data collected under the specifications of that QAPP.

BSDW personnel collected samples of groundwater and surface water used as drinking water sources, as well as samples of treated water, in various areas throughout the state, in July and August 2006. Severn Trent Laboratories, Inc. (STL Denver) analyzed the samples and transmitted the results electronically to the Department.

## **III. Sampling Plan**

The original sampling plan proposed the collection of 40 samples, including field and trip blanks. The purpose of this study was to collect samples in areas of the State

where the detection of PFOA was most expected. Sites selected included those near facilities where PFOA may have been used, handled, stored and/or manufactured, as well as facilities where previously collected data indicated the presence of a large number of tentatively identified compounds (see item three below). Control sites where PFOA was not expected to be found were also selected.

The sampling locations were determined based upon the following Department information:

- (1) Information from the New Jersey Environmental Monitoring System (NJEMs) database;
- (2) The Known Contaminated Sites List (KCSL);
- (3) The Characterization of Tentatively Identified Compounds (TICs) in Samples from Public Water Systems in New Jersey (March 2003, NJDEP) document; and
- (4) Inherent knowledge by the BSDW of drinking water systems throughout the state.

Five facilities were determined to have potentially used, handled, stored and/or manufactured PFOA or PFOA related materials: the Myers Property site in Franklin, Clariant Corporation in Fair Lawn, the Solvay Group in West Deptford, the 3M Company in Freehold, and PCM in Camden. These facilities were located on a map to identify surface water intakes within 10 miles and any public wells within 1 mile. Sampling sites were then chosen near these areas. In addition, sites were chosen from the March 2003 TICs study document, where a high number of TICs had been noted. Sites with a high number of TICs are thought to be more impacted by releases from industrial and commercial activities, increasing the possibility of detecting PFOA. The public wells around the DuPont Chambers Works facility were not included in this study, as a separate data collection effort was already ongoing in that area.

Initially, a total of 26 samples were to be collected at 22 public water systems around the State as identified in the June 26, 2006, QAPP. Ultimately 29 samples were collected at 23 public water systems. The additions were two sampling sites at the Salem Water Department (PWSID# NJ1712001) and one sampling site at the Rockaway Township Water Department (PWSID#NJ1435002). The two sampling sites were added at the Salem Water Department at the request of that water system facility, due to their proximity to the DuPont Chambers Works facility. The Salem Water Department wells are located approximately nine miles from the DuPont Chambers Works facility. At the Rockaway Township Water Department, a finished water sample was collected from the Greenpond Road Treatment Plant (TP001002), to provide raw and finished water samples at the same facility, and allow comparison of PFOA levels within an additional water system. The other two systems where both raw and finished water samples were collected were the Passaic Valley Water Commission (PWSID# NJ1605002) and the Rahway Water Department (PWSID# NJ2013001).

Control sites were selected based upon the March 2003 TIC study referenced above, and inherent knowledge of the BSDW. Sites where no TICs or relatively few TICs were identified were considered to be “clean” or control sites. The Rosemont Water Department (PWSID# NJ1007002), a groundwater supplied system, and Newton Water & Sewer Utilities (PWSID# NJ1915001), a surface water supplied system, were selected as controls. The remaining sites were chosen in an attempt to collect at least one sample in most New Jersey counties.

Though there is no special equipment used in the sampling for this study, a total of seven trip and field blanks were included to ensure that PFOA is not being found simply as a result of background contamination within the State. Six field blanks were prepared in several locations throughout the State, in areas where the highest and least possibility of contamination were expected. One trip blank was prepared by STL Denver, the laboratory that conducted all analysis for the study, and shipped to the BSDW. The BSDW shipped back the trip blank with a set of samples to the laboratory. These blanks were analyzed and evaluated with other sample results as an assessment of potential contamination. The final study resulted in the collection of 36 samples, including field and trip blanks.

A single grab sample was collected from each location. Locations were from designated sample taps used for all other sample collection under N.J.A.C. 7:10-1 et. seq. Actual sampling locations are listed in Table 1.0, defined by the SDWIS ID number. SDWIS is the Department’s Safe Drinking Water Information System, a database designed by EPA and the states to help states (and EPA regions) manage their drinking water programs and fulfill EPA reporting requirements. The database contains data submitted by states and EPA regions in conformance with reporting requirements established by statute, regulation and guidance. The SDWIS ID number is a unique identifier for a sample location at a water system.

The sample bottles were shipped to the BSDW offices at 401 East State St., Trenton, NJ. Upon arrival, the bottles were secured in a controlled environment, in a locked mid-hallway closet, until use for sampling.

All sampling procedures were in conformance with N.J.A.C. 7:18-1 et seq., 40 CFR 141 and the procedures contained in the study QAPP. BSDW personnel conducted all sampling. Samples were collected in 250 ml polyethylene bottles, prepared and shipped to the BSDW by STL Denver, consistent with STL Denver Quotation 69748R1 and the QAPP. Samples were packed in coolers containing wet ice upon collection and shipped overnight to the testing laboratory. In order to minimize the possibility of introducing PFOA contamination into samples, sampling personnel avoided fluoropolymers, aluminum foil, blue ice, pre-wrapped foods or snacks, did not use Post-it-Notes, wore clothing that had been washed at least six times and used only containers supplied by the contract laboratory. These additional sampling precautions were specified in the study QAPP.

#### **IV. Sample Analysis**

All samples were analyzed for PFOA using STL Denver's SOP DEN-LC-0012, Revision No. 4 dated May 30, 2006, and signed by STL Denver on June 6, 2006. Currently, STL Denver is the only laboratory certified by the Department of Environmental Protection to conduct analysis for PFOA. This method uses solid phase extraction with High Performance Liquid Chromatography, tandem mass spectrometry (LC/MS/MS). It is a modification of "SW8321A, Solvent Extractable Nonvolatile Compounds by High Performance Liquid Chromatography/Thermospray/Mass Spectrometry (HPLC/TS/MS) or Ultraviolet (UV) Detection" and was approved by the Department's Office of Quality Assurance (OQA), through certification of the laboratory for the method prior to the study.

In addition, though STL Denver is not NJ certified to conduct analysis for PFOS, it is a reportable parameter under the analytical method used. The results of both values were reported to the Department as part of the study. PFOS, like PFOA, is a fluorinated organic compound being further investigated by the EPA.

N.J.A.C. 7:18-1 et seq. and 40 CFR 141 were followed for all quality assurance and quality control (QA/QC) practices, including precision and accuracy. A practical quantitation limit of 0.01 ug/L was used for data reporting for both PFOA and PFOS. Results detected lower than this value were reported as the value and qualified as "J" by STL Denver. However, as the laboratory uses a low calibration standard of 0.004 ppb, the Department considers any value detected above 0.004 ppb a detected and quantifiable value. Values reported below 0.004 ppb are considered detected but not quantified and are reported. The detection level and reporting level for this study were reviewed by the OQA, through review of STL SOP DEN-LC-0012.

All data were reported as acceptable by the laboratory, as all QA/QC requirements were met for the data.

#### **V. Results**

The results of all analyses are included in Appendix A: PFOA and PFOS Sample Results, BSDW, January 2007. A total of 29 samples from 23 water systems were analyzed in the study for PFOA and PFOS. Of the 23 public water systems sampled for PFOA, five public water systems showed non-detectable levels of PFOA. Fifteen systems, 65% of all of the systems sampled, showed detected and quantifiable levels of PFOA. Detected and quantifiable values ranged from 0.0045 ppb to 0.039 ppb. Additionally, three public water systems showed levels of PFOA that were detected but not quantified, at levels below the low calibration standard of 0.004 ppb. Those values ranged from 0.0030 J ppb to 0.0039 J ppb. In total, PFOA was detected (but not always quantified) at 78% of the systems sampled.

Of the 23 public water systems sampled for PFOS, ten public water systems showed non-detectable levels of PFOS. Seven public water systems, 30% of the systems sampled, showed detected and quantifiable levels of PFOS. Detected and quantifiable values ranged from 0.0042 ppb to 0.019 ppb. Additionally, six public water systems showed levels of PFOS that were detected but not quantified, at levels below the low calibration standard of 0.004 ppb. Those values ranged from 0.0023 J ppb to 0.0039 J ppb. In total, PFOS was detected (but not always quantified) at 57% of systems sampled.

PFOA and PFOS were detected in raw surface water samples, raw ground water samples from unconfined and semi-confined wells, and in finished water samples from surface water treatment plants. PFOA and PFOS were not detected in the raw water sample from the one individual confined well that was sampled (Freehold Township Water Department, Well #8). PFOA and PFOS were also not detected at the treatment plant that treats water from only confined wells (Wildwood City Water Department).

The detection of PFOA and PFOS did not always coincide, i.e., PFOS was not always detected in a sample where PFOA was detected. PFOS was never detected in a sample unless PFOA was detected. In addition, results for PFOS were always lower than those for PFOA for a given sample when both were present.

For those facilities where raw and finished water samples were taken, levels of PFOA were marginally higher in the finished water samples than in the raw water samples. The public water systems where raw and finished water samples were collected are listed in Table 1.0 along with the results.

**Table 1.0: Levels of PFOA and PFOS in Raw and Finished Samples**

PWSID	SDWIS ID	System Name	Source Type	PFOA ppb	PFOS ppb
NJ0327001	IN002048	New Jersey American Water Co. Western Division	Raw, Surface Water Intake	0.0036 J	0.0034 J
NJ0327001	TP002049	New Jersey American Water Co. Western Division	Finished Water	0.0039 J	0.0024 J
NJ1435002	WL001004 & WL001005	Rockaway Township Water Department	Raw, Unconfined Wells	0.0061	ND
NJ1435002	TP001002	Rockaway Township Water Department	Finished Water	0.0062	ND
NJ1605002	IN001004	Passaic Valley Water Commission	Raw, Surface Water Intake	0.026	0.0062
NJ1605002	TP001002	Passaic Valley Water Commission	Finished Water	0.027	0.0049
NJ2013001	IN001006	Rahway Water Department	Raw, Surface Water Intake	0.035	0.0077
NJ2013001	TP001005	Rahway Water Department	Finished Water	0.039	0.014

The controls, the Newton Water & Sewer Utilities and Rosemont Water Department, both showed detected levels of PFOA. PFOS was detected in the Rosemont Water Department sample. These values are listed in Table 2.0.

**Table 2.0: Levels of PFOA and PFOS in Controls**

<b>PWSID</b>	<b>SDWIS ID</b>	<b>System Name</b>	<b>Source Type</b>	<b>PFOA ppb</b>	<b>PFOS ppb</b>
NJ1915001	TP001002	Newton Water & Sewer Utilities	Control, (Surface Water), Finished Water	0.0030 J	ND
NJ1007002	TP001002	Rosemont Water Dept.	Control, (Ground Water) Finished Water	0.0045	0.0038 J

The remaining seven samples consisted of trip and field blanks. These samples were non-detect for both PFOA and PFOS. The locations of all blanks are listed in Appendix A.

## **VI. Discussion**

The results obtained through this occurrence study show that PFOA and PFOS can be found in detectable concentrations in a variety of drinking water sources. PFOA was detected (although not always quantified) in 18 of 23 or 78% of the public water system samples and PFOS was detected (although not always quantified) in 13 of 23 or 57% of the public water system samples. The levels at which these contaminants are detected are within the range of values identified in other samples, throughout the state, which were obtained outside of the constraints of this study. Specifically, data submitted by the Pennsville Township Water Department, the Penns Grove Water Supply Co. and the Borough of Sayreville indicated concentrations of PFOA in the range of 0.0022 J to 0.19 ppb. These data are found in Appendix B.

## **VII. Conclusions**

PFOA and PFOS are currently not specifically regulated under the requirements of the State and Federal drinking water regulations. The data collected in this study indicates the presence of PFOA and PFOS in drinking water sources. It will be used by the Department to determine whether further evaluation and/or regulation of PFOA is necessary in drinking water sources.



## **VIII. References**

The Characterization of Tentatively Identified Compounds (TICs) in Samples from Public Water Systems in New Jersey (March 2003, NJDEP)

Determination of PFOA in Aqueous Samples, Quality Assurance Project Plan, June 26, 2006, NJDEP.

Standard Operating Procedure Perfluorooctanoic Acid (PFOA) and Perfluorooctanoic Sulfonate (PFOS) in Water and Soil by LC/MS/MS, prepared by STL Denver. SOP DEN-LC-0012, Revision No. 4, May 30, 2006.

[www.epa.gov/opptintr/pfoa/index.htm](http://www.epa.gov/opptintr/pfoa/index.htm). USEPA website for PFOA.

**Appendix A: PFOA / PFOS Sample Results, NJDEP, BSDW  
January 2007**

<b>PWSID</b>	<b>PUBLIC WATER SYSTEM NAME</b>	<b>WATER SOURCE TYPE</b>	<b>COUNTY</b>	<b>SDWIS ID</b>	<b>JUSTIFICATION</b>	<b>SAMPLING DATE</b>	<b>PFOA PPB</b>	<b>PFOS PPB</b>
NJ0119002	NJ American Water Company, Atlantic Division	Raw, Unconfined Well	Atlantic	WL007018	Well 7 - Route 9 and Kirkland Avenue, South Linwood, shallowest well. Included for an Atlantic County sample, historical SDW knowledge.	7/20/2006	0.0036 J	ND
NJ0217001	Fair Lawn Water Department	Raw, Unconfined Well	Bergen	WL001009	Near Clariant Corp. Well 2/Cadmus Well Field, one of the shallowest and located east of the property. This system was also part of the TIC Study.	6/16/2006	0.026	0.0047
NJ0217001	Fair Lawn Water Department	Raw, Unconfined Well	Bergen	WL001010	Well 7/Cadmus Well Field. Near Clariant Corp.	6/16/2006	0.033	0.0049
NJ0221001	Garfield Water Department	Raw, Unconfined Well	Bergen	WL003023	Well 2 Elmwood field. This facility was part of the TIC study.	6/16/2006	0.033	0.0043
NJ0238001	United Water - New Jersey	Raw, Oradell Reservoir, Surface Water Intake	Bergen	IN011021	Near Clariant Corp. surface water intake within 10 miles, east of the property.	6/16/2006	0.021	0.019
NA	Field Blank		Bergen	NA		7/16/2006	ND	ND
NJ0327001	New Jersey American Water Co. Western Division	Finished Water (Surface Water Source)	Burlington	TP002049	Historical SDW knowledge - Tri-County Treatment Plant.	6/23/2006	0.0039 J	0.0024 J
NJ0327001	New Jersey American Water Co. Western Division	Raw, Surface Water Intake	Burlington	IN002048	Historical SDW knowledge, Delaware River / Tri- County Intake.	6/23/2006	0.0036 J	0.0034 J
NJ0424001	Merchantville - Pennsauken	Raw, Unconfined Well	Camden	WL004022	This facility was part of the TIC Study. Almost 80 TICs found. Well No 2 A.	6/23/2006	ND	ND
NA	Field Blank		Camden	NA		6/23/2006	ND	ND

**Appendix A: PFOA / PFOS Sample Results, NJDEP, BSDW  
January 2007**

<b>PWSID</b>	<b>PUBLIC WATER SYSTEM NAME</b>	<b>WATER SOURCE TYPE</b>	<b>COUNTY</b>	<b>SDWIS ID</b>	<b>JUSTIFICATION</b>	<b>SAMPLING DATE</b>	<b>PFOA PPB</b>	<b>PFOS PPB</b>
NJ0514001	Wildwood City Water Department	Finished Water (Confined Ground Water Source)	Cape May	TP001006	Rio Grande Pump Station, Rte. 47. Cape May County sample, historical SDW knowledge.	7/20/2006	ND	ND
NJ0614003	Vineland Water & Sewer Utility	Raw, Unconfined Well	Cumberland	WL019044	West Weymouth Road Well #14. Included for a Cumberland County sample, historical SDW knowledge.	7/20/2006	ND	ND
NJ0717001	Orange Water Department	Raw, Unconfined Well	Essex	WL001003	Well #3, Shallowest well. Included for an Essex County sample, historical SDW knowledge.	7/17/2006	0.021	0.0042
NJ1007002	Rosemont Water Department	Finished Water (Ground Water Source)	Hunterdon	TP001002	Historical SDW knowledge, intended control site for groundwater sources, no TICs in TIC study.	7/20/2006	0.0045	0.0038 J
NA	Field Blank		Hunterdon	NA		7/21/2006	ND	ND
NJ1107002	Lawrenceville Water Company	Raw, Unconfined Well	Mercer	WL001002	Well 4 Green Avenue. Shallowest well. Included for a Mercer County sample, historical SDW knowledge.	6/23/2006	0.0069	0.0039 J
NJ1219001	Sayreville Water Department	Raw, Surface Water Intake	Middlesex	IN001036	Near Dupont Parlin site, South River intake. (Inactive drinking water source.)	6/23/2006	0.014	0.0023 J
NJ1316001	Freehold Twp Water Department	Raw, Confined Well	Monmouth	WL001004	Near 3M Facility, well 8, Koenig Lange.	6/23/2006	ND	ND
NJ1352005	New Jersey Water Supply Authority / Manasquan	Manasquan Reservoir, Raw Surface Water Intake	Monmouth	IN001002	Near 3M facility, surface water intake within ten miles of the facility.	6/23/2006	0.011	ND
NA	Field Blank		Monmouth	NA		6/23/2006	ND	ND

**Appendix A: PFOA / PFOS Sample Results, NJDEP, BSDW  
January 2007**

<b>PWSID</b>	<b>PUBLIC WATER SYSTEM NAME</b>	<b>WATER SOURCE TYPE</b>	<b>COUNTY</b>	<b>SDWIS ID</b>	<b>JUSTIFICATION</b>	<b>SAMPLING DATE</b>	<b>PFOA PPB</b>	<b>PFOS PPB</b>
NJ1434001	Rockaway Boro Water Department	Raw, Unconfined Well	Morris	WL001005	From the TIC Study, over 20 TICs found. Well 1 Jackson Avenue. Shallowest well.	7/17/2006	0.0077	0.0028 J
NJ1435002	Rockaway Township Water Department	Finished Water (Ground Water Source)	Morris	TP001002	From the TIC Study, over 30 TICs found. Greenpond Rd Treatment Plant	7/17/2006	0.0062	ND
NJ1435002	Rockaway Township Water Department	Raw, Unconfined Well	Morris	WL001004 & WL001005	Raw water composite sampling tap for wells 6 & 7, for comparison with finished water sample from this facility.	7/17/2006	0.0061	ND
NA	Field Blank		Morris	NA		7/17/2006	ND	ND
NJ1604001	Hawthorne Water Department	Raw, Unconfined Well	Passaic	WL007021	Near Clariant Corp. within 1 mile northwest of site. 1 of 3 wells all about the same depth and unconfined.	6/16/2006	0.029	0.0076
NJ1605002	Passaic Valley Water Commission	Finished Water (Surface Water Source)	Passaic	TP001002	Historical SDW knowledge. Little Falls water treatment facility.	6/16/2006	0.027	0.0049
NJ1605002	Passaic Valley Water Commission	Raw, Surface Water Intake	Passaic	IN001004	Historical SDW knowledge, Passaic River , for comparison with finished water sample from this facility.	6/16/2006	0.026	0.0062
NJ1613001	North Jersey District Water Supply Commission	Raw, Pompton Lake, Surface Water Intake	Passaic	IN003010	Near Clariant Corp. surface water intake within 10 miles, northwest of the property.	6/16/2006	0.0084	0.0034 J
NA	Field Blank		Passaic	NA		6/16/2006	ND	ND
NJ1712001	Salem Water Department	Raw, Surface Water Intake	Salem	IN001006	Added after study initiation at the request of the Salem Water Department. Laurel Lake.	7/20/2006	0.0099	ND

**Appendix A: PFOA / PFOS Sample Results, NJDEP, BSDW  
January 2007**

<b>PWSID</b>	<b>PUBLIC WATER SYSTEM NAME</b>	<b>WATER SOURCE TYPE</b>	<b>COUNTY</b>	<b>SDWIS ID</b>	<b>JUSTIFICATION</b>	<b>SAMPLING DATE</b>	<b>PFOA PPB</b>	<b>PFOS PPB</b>
NJ1712001	Salem Water Department	Raw, Semi-confined Well	Salem	WL001003	Added after study initiation at the request of the Salem Water Department. Well #2 (laboratory duplicate).	7/20/2006	0.027/ 0.025	ND
NJ1915001	Newton Water & Sewer Utilities	Finished Water (Surface Water Source)	Sussex	TP001002	Historical SDW knowledge, intended control for surface water sources.	7/21/2006	0.0030 J	ND
NJ2013001	Rahway Water Department	Finished Water (Surface Water Source)	Union	TP001005	Historical SDW knowledge, Surface Water Plant, 35-40 TICS found in TIC study.	7/17/2006	0.039	0.014
NJ2013001	Rahway Water Department	Raw, Surface Water Intake	Union	IN001006	Historical SDW knowledge, Rahway River intake for comparison with finished water sample from this facility.	7/17/2006	0.035	0.0077
NJ2119001	Aqua NJ Inc. Phillipsburg	Raw, Unconfined Well	Warren	WL001003	Historical SDW knowledge, Well D along Delaware River.	7/21/2006	ND	ND
NA	Trip Blank			NA		6/23/2006	ND	ND

PWSID = Public Water System Identification Number based on State Drinking  
SDWIS = Safe Drinking Water System Information System Identification  
ND = Not Detected  
J = Detected but not quantified, below the low calibration standard of 0.004 ppb.  
NA = Not Applicable

## Appendix B: Salem County Related Drinking Water PFOA and PFOS Sample Results

	DATA SOURCE	WATER SOURCE TYPE	COUNTY	PWSID	SDWIS ID	DEPTH (FT)	DESCRIPTION	SAMPLING DATE	PFOA PPB	PFOS PPB
1	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.00938	<0.00198
2	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.00584	<0.00198
3	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.00531	<0.00197
4	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.0648	0.00539
5	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.063	0.0031
6	Delaware Riverkeeper letter of 3/6/06	Tap water from homes	Salem	NA	NA	NA	Samples analyzed by Axys.	11/27/2005	0.0448	0.00775
10	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Shallow Unconfined well	Salem	NJ1707001	WL001003	60-70	Sample number 3003310: Route 48 wellfield. (Ranney well field) Well RF1A . Samples analyzed by two labs, Exygen / Axys.	2/27/2006	0.123 / 0.0378	NA
11	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Shallow Unconfined well	Salem	NJ1707001	WL001003	60-70	Sample number 3003310: Subsequent Exygen re-analysis.	2/27/2006	0.0986	NA
12	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Deep unconfined well	Salem	NJ1707001	WL001006	360	Sample number 3000563: Route 48 wellfield. (Ranney well field). Samples analyzed by two labs, Exygen / Axys.	2/27/2006	ND / ND	NA
13	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Deep unconfined well	Salem	NJ1707001	WL001006	360	Sample number 3000563: Subsequent Exygen re-analysis.	2/27/2006	ND	NA
14	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Shallow Unconfined well	Salem	NJ1707001	WL002014	64-76	Sample number 3001815: Layton well field, Well 4. Samples analyzed by two labs, Exygen and Axys.	2/27/2006	0.171 / 0.057	NA

## Appendix B: Salem County Related Drinking Water PFOA and PFOS Sample Results

	DATA SOURCE	WATER SOURCE TYPE	COUNTY	PWSID	SDWIS ID	DEPTH (FT)	DESCRIPTION	SAMPLING DATE	PFOA PPB	PFOS PPB
15	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Shallow Unconfined well	Salem	NJ1707001	WL002014	64-76	Sample number 3001815: Subsequent Exygen re-analysis.	2/27/2006	0.19	NA
16	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Deep Unconfined well	Salem	NJ1707001	WL002008	394	Sample number 5000098: Layton well field. Samples analyzed by two labs, Exygen / Axys.	2/27/2006	ND / ND	NA
17	Pennsgrove Water Supply Company, 5/10/06 letter from DuPont to DEP	Raw, Deep Unconfined well	Salem	NJ1707001	WL002008	394	Sample number 5000098: Subsequent Exygen re-analysis.	2/27/2006	ND	NA
18	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL003005	246	Well 1 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
19	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL003004	232	Well 2 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
20	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL004007	104	Well 3 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
21	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL005012	130	Well 4 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
22	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL005011	122	Well 5 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
23	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL004008	117	Well 6 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA
24	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL003015	267	Well 7 - Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA

## Appendix B: Salem County Related Drinking Water PFOA and PFOS Sample Results

	DATA SOURCE	WATER SOURCE TYPE	COUNTY	PWSID	SDWIS ID	DEPTH (FT)	DESCRIPTION	SAMPLING DATE	PFOA PPB	PFOS PPB
25	Pennsville Twp Water Department	Raw, Unconfined Water Supply Well	Salem	NJ1708001	WL003014	144	Well 8 - Route 49 & Churchtown Road. Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	0.0179 / 0.0176	NA
26	Pennsville Twp Water Department	Finished, Point of Entry	Salem	NJ1708001	TP003003	NA	Water Street. Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	0.00806 / 0.00697	NA
27	Pennsville Twp Water Department	Finished, Point of Entry	Salem	NJ1708001	TP004006	NA	Heron Avenue. Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	0.00645 / 0.00657	NA
28	Pennsville Twp Water Department	Finished, Point of Entry	Salem	NJ1708001	TP005010	NA	Tuft Rd. Results are for a sample and a laboratory duplicate. Samples analyzed by Exygen.	5/24/2006	NQ / NQ	NA

NA - Not Applicable

NQ - Compound detected but not quantified at a level between the limit of detection and the limit of quantitation, levels of 0.0012 and 0.006 ug/l respectively. For data collected by NJDEP, contained in Appendix A, detected but not quantified values are identified with a "J."



## Appendix B: Sayreville Related Drinking Water PFOA and PFOS Sample Results

	DATA SOURCE	WATER SOURCE	COUNTY	PWSID	SDWIS ID	DEPTH (FT)	DESCRIPTION	SAMPLING DATE	PFOA PPB	PFOS PPB
1	United Steelworkers - WEC	Drinking water tap	Middlesex	NA	Tap sample	NA	#3 Kendal L8955-4(A), Analyzed by Axys	Received 5/31/06	0.00318	0.00172
2	United Steelworkers - WEC	Drinking water tap	Middlesex	NA	Tap sample	NA	#3 Kendal L8955-4(A) laboratory duplicate, Analyzed by Axys	Received 5/31/06	0.0041	ND*
3	United Steelworkers - WEC	Drinking water tap	Middlesex	NA	Tap sample	NA	#4 Buttonwood L8955-5, Analyzed by Axys	Received 5/31/06	0.00327	0.00138
4	United Steelworkers - WEC	Drinking water tap	Middlesex	NA	Tap sample	NA	#5 Library L8955-6, Analyzed by Axys	Received 5/31/06	0.00377	0.00168
5	United Steelworkers - WEC	Drinking water tap	Middlesex	NA	Tap sample	NA	#6 Washington L8955-7, Analyzed by Axys	Received 5/31/06	0.00343	0.00136
6	Borough of Sayreville	Middlesex interconnection	Middlesex	NJ1219001	CC001001	NA	Samples collected by Sayreville, analyzed by STL Denver, in response to data analyzed by Axys. (Revised 9/11/06)	7/19/2006	0.0059 J	NA
7	Borough of Sayreville	Raw, Bordentown System	Middlesex	NJ1219001	(Duhernal System) WL001034	NA	Samples collected by Sayreville, analyzed by STL Denver, in response to data analyzed by Axys. (Revised 9/11/06)	7/19/2006	0.0034 J	NA
8	Borough of Sayreville	Finished, Bordentown system	Middlesex	NJ1219001	TP001001	NA	Samples collected by Sayreville, analyzed by STL Denver, in response to data analyzed by Axys. (Revised 9/11/06)	7/19/2006	0.0048 J	NA
9	Borough of Sayreville	Public Library	Middlesex	NJ1219001	Tap sample	NA	Samples collected by Sayreville, analyzed by STL Denver, in response to data analyzed by Axys. (Revised 9/11/06)	7/19/2006	0.0022 J	NA

NA - Not Applicable

ND\* - Not detected, Detection Limit of 0.002 ppb.

J - Compound detected but not quantified.