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Analytical Report

3M Company

Analysis of PFOA and PFOS in Water Samples from Oakdale Municipality

E05-0243

Exygen Report No. L0004933

Testing Laboratory

Exygen Research
3058 Research Drive
State College, PA 16801

Requester

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1 Introduction

Results are reported for the analysis of perfluorooctanoate (PFOA) and perfluorooctanesulfonate (PFOS) in water samples received at Exygen as requested by Gary Hohenstein of 3M Company. The Exygen project number assigned to the samples is L0004933. Table I lists the target analytes quantitated for the samples.

Table I. Target Analytes for Quantitation

<u>Parameter</u>	<u>Acronym</u>	<u>Formula</u>
Perfluorooctanoate	PFOA or C8 acid	$C_7F_{15}COO^-$
Perfluorooctanesulfonate	PFOS or C8 sulfonate	$C_8F_{17}SO_3^-$

2 Sample Receipt

Twenty-one samples were received at Exygen in 500 mL white plastic narrow-mouth bottles. At the request of 3M, all samples were analyzed. A copy of all sample log-in information is presented in Attachment A.

The samples were received on 03/30/05. The samples were shipped ambient via UPS. The samples were stored refrigerated from time of receipt until analysis.

3 Methods - Analytical and Preparatory

The Exygen method V0001780 was used to prepare and analyze the samples. A summary of the sample preparation can be found in Section 3.1 and a summary of the analysis conditions can be found in Section 3.2.

3.1 Water Sample Preparation

Solid phase extraction (SPE) was used to prepare the water samples for LC/MS/MS analysis. Forty milliliters of the water sample was transferred to a C_{18} SPE cartridge. The cartridge was eluted with 5 mL of 100% methanol. A portion of the extract was transferred to autosampler vials and analyzed using electrospray LC/MS/MS.

3.2 Sample Analysis by LC/MS/MS

In High Pressure Liquid Chromatography (HPLC), an aliquot of extract is injected and passed through a liquid-phase chromatographic column. Based on the affinity of the analyte for the stationary phase in the column relative to the liquid mobile phase, the analyte is retained for a characteristic amount of time. Following HPLC separation, mass spectrometry provides a rapid and accurate means for analyzing a wide range of organic compounds. Molecules are ionized, fragmented, and detected. The ions characteristic of the compounds are observed and quantitated against extracted standards.

An HP1100 system interfaced to an Applied Biosystems API 4000 was used to analyze the sample extracts for quantitation.

Isomer separation was obtained using a gradient elution through a Thermo Fluophase RP, 50 x 2.1 mm x 5µm column. The sum of the isomers is reported as a single value for each of the analytes.

The following gradient was performed:

Mobile Phase (A): 2mM Ammonium Acetate in Water
Mobile Phase (B): Methanol

Time	%A	%B
0.0	65	35
1.0	65	35
8.0	25	75
10.0	25	75
11.0	65	35
18.0	65	35

The following parameters were used for operation of the mass spectrometer:

Parameter	Setting
Ionization Mode	Electrospray
Polarity	Negative
Transitions Monitored	413->369 (PFOA), 499->80 (PFOS), 415->370 (¹³ C-PFOA, surrogate spike)
Gas Temperature	350°C
Drying Gas (N2)	7.0 L/min

4 Analysis

4.1 Calibration

A 7-point calibration curve was analyzed initially and throughout the analytical sequence for PFOA, PFOS and ¹³C PFOA. The calibration points were prepared at 0, 25, 50, 100, 250, 500, and 1000 ng/L (ppt) for LC/MS/MS analysis. Calibration standards are prepared using the same SPE procedure used for samples. The instrument response versus the concentration was plotted for each point. Using linear regression with 1/x weighting, the slope, y-intercept

and coefficient of determination (r^2) were determined. A calibration curve is acceptable if $r^2 \geq 0.985$.

For the results reported here, calibration criteria were met. The calibration curves are included in the raw data in Attachment C.

4.2 Surrogates

^{13}C PFOA ($\text{C}_8\text{F}_{15}[^{13}\text{C}]_2\text{F}_2\text{OOH}$) is used as a surrogate for the water samples. ^{13}C PFOA was added to the empty sample containers before the bottles were sent to the field for sampling. In the field, all sample and quality control bottles were filled to a volumetric fill line with the sample.

^{13}C PFOA recoveries can be found in Attachment B.

4.3 Laboratory Control Spikes

Laboratory control spikes in the analytical set were prepared by adding a known concentration of PFOA, ^{13}C PFOA, and PFOS to laboratory reagents. Laboratory control spikes are used to assess method accuracy. The laboratory control spikes must show recoveries between 70-130% or the data is rejected. For the results reported here, the laboratory control spikes were within the acceptable range.

4.4 Field Matrix Spikes

One matrix spike was prepared for every water sample in the field. Compounds were added to the empty sample containers before the bottles were sent to the field for sampling. Matrix spikes are used to assess method accuracy in the matrix. The matrix spikes should show recoveries between 70-130%. For the results reported here, the matrix spikes were within the acceptable range.

4.5 Sample Related Comments

All water samples were collected in duplicate. Duplicate sample results are reported along with the sample results in Attachment B.

5 Data Summary

Please see Attachment B for a detailed listing of the analytical results. The results are reported in parts per billion (ng/mL) for PFOA and PFOS.

6 Statement of Accuracy

Based on results of laboratory control spikes, field matrix spikes, and surrogate spikes, the analytical accuracy for PFOS and PFOA results for all samples is $\pm 30\%$. All laboratory control spikes, surrogate spikes and field matrix spikes showed recoveries within these ranges.

Specific sample recoveries are given in Attachment B.

7 Data/Sample Retention

Samples will be returned to 3M 60 days after final reporting. All electronic data is archived on retrievable media and hard copy reports are stored in data folders maintained by Exogen. Hardcopy data is stored for a minimum of five years. The client will be notified 30 days prior to the disposal of hardcopy data.

8 Attachments

- 8.1 Attachment A: Analytical Results
- 8.2 Attachment B: Spike Recovery Data
- 8.3 Attachment C: Chain of Custody Forms
- 8.4 Attachment D: Raw Analytical Data

9 Signatures


Karen Risha, Principal Investigator

04/12/05
Date


John M. Flaherty, Vice President

4/12/05
Date

Section A

Summary of PFOA and PFOS in Water Samples E05-0243

Oxygen ID	Sample ID	Analyte Found (ng/mL)	
		C8 Acid PFOA Perfluorooctanoate	C8 Sulfonate PFOS Perfluorooctanesulfonate
L4933-1	O-W5-127287	0.779	1.14
L4933-2	O-W5-127287 Dup	0.710	0.941
L4933-4	O-W1-208462	0.0887	0.0619
L4933-5	O-W1-208462 Dup	0.0939	0.0609
L4933-7	O-W2-208463	0.0823	NQ
L4933-8	O-W2-208463 Dup	0.0817	NQ
L4933-10	O-W8-572608	0.503	0.704
L4933-11	O-W8-572608 Dup	0.457	0.551
L4933-13	O-W9-151575	0.813	0.580
L4933-14	O-W9-151575 Dup	0.763	0.502
L4933-16	O-W3-208454	ND	ND
L4933-17	O-W3-208454 Dup	ND	ND
L4933-19	Field Blank	ND	ND

ND = Not detected at or above 0.025 ng/mL.

NQ = Not quantifiable = Measured concentration between 0.025 ng/mL and the Limit of Quantitation (LOQ) which is 0.050 ng/mL.

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oxygen.cxm

Section B

Field Matrix Spike Recovery Summary for PFOA and PFOS in Water E05-0243

Sample Description	C8 Acid PFOA				C8 Sulfonate PFOS		
	Amount Spiked (ng/mL)	Amt Found In Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found In Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)
O-W5-127287 Spike (L4933-3, 1 ppb Spike)	1	0.779	1.74	98	1.140	2.11	97
O-W1-208462 Spike (L4933-8, 0.1 ppb Spike)	0.1	0.0887	0.174	85	0.0619	0.134	72
O-W2-208463 Spike (L4933-8, 0.1 ppb Spike)	0.1	0.0823	0.178	98	0.0296	0.124	94
O-W8-572608 Spike (L4933-12, 0.5 ppb Spike)	0.5	0.503	1.05	109	0.704	1.26	111
O-W9-151575 Spike (L4933-15, 1 ppb Spike)	1	0.813	1.89	108	0.580	1.53	95
O-W3-208454 Spike (L4933-18, 0.1 ppb Spike)	0.1	ND	0.106	106	ND	0.111	111
Field Blank Low Spike (L4933-20, 0.1 ppb Spike)	0.1	ND	0.0987	99	ND	0.0983	98
Field Blank High Spike (L4933-21, 1 ppb Spike)	1	ND	0.953	95	ND	0.839	84

*Sample residue exceeds the spiking level significantly; therefore, an accurate recovery value cannot be calculated

ND = Not detected at or above 0.025 ng/mL

NQ = Not quantifiable = Measured concentration between 0.025 ng/mL and the Limit of Quantitation (LOQ) which is 0.050 ng/mL.

Surrogate Spike Recovery Summary for ¹³C-PFOA in Water E05-0243

Oxygen ID	Sample Description	¹³ C-PFOA		
		Amount Spiked (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)
L4933-1	O-W5-127287	0.5	0.430	86
L4933-2	O-W5-127287 Dup	0.5	0.411	82
L4933-3	O-W5-127287 1.0 ppb Spk	1.0	1.03	103
L4933-4	O-W1-208462	0.5	0.460	92
L4933-5	O-W1-208462 Dup	0.5	0.484	99
L4933-6	O-W1-208462 0.1 ppb Spk	0.1	0.0966	97
L4933-7	O-W2-208463	0.5	0.438	87
L4933-8	O-W2-208463 Dup	0.5	0.422	84
L4933-9	O-W2-208463 0.1 ppb Spk	0.1	0.0991	99
L4933-10	O-W8-572608	0.5	0.424	85
L4933-11	O-W8-572608 Dup	0.5	0.418	83
L4933-12	O-W8-572608 0.5 ppb Spk	0.5	0.478	95
L4933-13	O-W9-151575	0.5	0.460	92
L4933-14	O-W9-151575 Dup	0.5	0.394	79
L4933-15	O-W9-151575 1.0 ppb Spk	1.0	1.02	102
L4933-16	O-W3-208454	0.5	0.450	90
L4933-17	O-W3-208454 Dup	0.5	0.437	87
L4933-18	O-W3-208454 0.1 ppb Spk	0.1	0.104	104
L4933-19	Field Blank	0.5	0.489	98
L4933-20	Field Blank 0.1 ppb Spk	0.1	0.0991	99
L4933-21	Field Blank 1.0 ppb Spk	1.0	0.984	98

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Section C



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Login

Login Group: L0004933

Login #: 5043
Project: P0000990
Company Name: 3M
Submitted By: Kent Lindstrom
Login Type: Immediate Receipt of Samples
Started: True
Date Start: 03/30/2005
Due Date: 04/09/2005
Received Date: 03/30/2005
Received By: Ammerman, Mark
Spread Sample:
Label:
Exygen SD/PI: Risha, Karen
Project Title/Type: Analysis of Fluorochemicals by LCMSMS for NRG Sampling of Oakdale Site / ROUTINE
Login Notes:
Conform Notes:

Conform COC Sample: True
Conform COC: True
Conform Sample: True
Conform Request: True

Packages / Containers

Package	Carton	Date / Condition		Shipper / ID	Temp. Control/Temp.	Direction / Handled By
PK0005816		Received Date: 3/30/2005 12:00:00AM Package & Contents Uncompromised		UPS 1Z57955E0141403526	None 23.2	RECEIVED Ammerman, Mark
Container #	Gross Weight	pH	Container Type	Preservative	Mfg. Lot	Mfg. ID
C0066673	278.20 g		500 ml Clear Plastic Narrow	NONE		
C0066674	268.30 g		500 ml Clear Plastic Narrow	NONE		
C0066675	257.30 g		500 ml Clear Plastic Narrow	NONE		
C0066676	258.00 g		500 ml Clear Plastic Narrow	NONE		
C0066677	248.50 g		500 ml Clear Plastic Narrow	NONE		
C0066678	252.60 g		500 ml Clear Plastic Narrow	NONE		
C0066679	243.10 g		500 ml Clear Plastic Narrow	NONE		
C0066680	246.10 g		500 ml Clear Plastic Narrow	NONE		
C0066681	245.90 g		500 ml Clear Plastic Narrow	NONE		
C0066682	254.80 g		500 ml Clear Plastic Narrow	NONE		
C0066683	243.70 g		500 ml Clear Plastic Narrow	NONE		
C0066684	247.00 g		500 ml Clear Plastic Narrow	NONE		
C0066685	240.90 g		500 ml Clear Plastic Narrow	NONE		
C0066686	251.20 g		500 ml Clear Plastic Narrow	NONE		

3/30/2005
Login.rpt

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Instance: R0156202

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 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1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 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1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337

Login

Login Group: L0004933

Login #: 5043
 Project: P0000990
 Company Name: 3M
 Submitted By: Kent Lindstrom
 Login Type: Immediate Receipt of Samples
 Started: True
 Date Start: 03/30/2005
 Due Date: 04/09/2005
 Received Date: 03/30/2005
 Received By: Ammerman, Mark
 Spread Sample:
 Label:
 Exygen SD/PI: Risha, Karen
 Project Title/Type: Analysis of Fluorochemicals by LCMSMS for NRG Sampling of Oakdale Site / ROUTINE
 Login Notes:
 Conform Notes:

Conform COC Sample: True
 Conform COC: True
 Conform Sample: True
 Conform Request: True

Packages / Containers

Package	Carton	Date / Condition	Shipper / ID	Temp. Control/Temp.	Direction / Handled By	
PK0005818		Received Date: 3/30/2005 12:00:00AM Package & Contents Uncompromised	UPS 1Z57955E0141403828	None 23.2	RECEIVED Ammerman, Mark	
Container #	Gross Weight	pH	Container Type	Preservative	Mfg. Lot	Mfg. ID
C0066687	248.70 g		500 ml Clear Plastic Narrow	NONE		
C0066688	267.80 g		500 ml Clear Plastic Narrow	NONE		
C0066689	243.50 g		500 ml Clear Plastic Narrow	NONE		
C0066690	252.80 g		500 ml Clear Plastic Narrow	NONE		
C0066691	255.30 g		500 ml Clear Plastic Narrow	NONE		
C0066692	257.20 g		500 ml Clear Plastic Narrow	NONE		
C0066693	257.50 g		500 ml Clear Plastic Narrow	NONE		



Login

Samples

Sample ID	Container	Matrix	Fraction	Sample	Date Sampled	Date Due
L0004933-0001	C0066673	LIQUID	Water	O-W5-127287	03/29/2005	04/09/2005
L0004933-0002	C0066674	LIQUID	Water	O-W5-127287 Dup	03/29/2005	04/09/2005
L0004933-0003	C0066675	LIQUID	Water	O-W5-127287 1.0 spike	03/29/2005	04/09/2005
L0004933-0004	C0066676	LIQUID	Water	O-W1-208462	03/29/2005	04/09/2005
L0004933-0005	C0066677	LIQUID	Water	O-W1-208462 Dup	03/29/2005	04/09/2005
L0004933-0006	C0066678	LIQUID	Water	O-W1-208462 0.1 spike	03/29/2005	04/09/2005
L0004933-0007	C0066679	LIQUID	Water	O-W2-208483	03/29/2005	04/09/2005
L0004933-0008	C0066680	LIQUID	Water	O-W2-208483 Dup	03/29/2005	04/09/2005
L0004933-0009	C0066681	LIQUID	Water	O-W2-208483 0.1 spike	03/29/2005	04/09/2005
L0004933-0010	C0066682	LIQUID	Water	O-W8-572608	03/29/2005	04/09/2005
L0004933-0011	C0066683	LIQUID	Water	O-W8-572608 Dup	03/29/2005	04/09/2005
L0004933-0012	C0066684	LIQUID	Water	O-W8-572608 0.5 ppb spike	03/29/2005	04/09/2005
L0004933-0013	C0066685	LIQUID	Water	O-W9-151575	03/29/2005	04/09/2005
L0004933-0014	C0066686	LIQUID	Water	O-W9-151575 Dup	03/29/2005	04/09/2005
L0004933-0015	C0066687	LIQUID	Water	O-W9-151575 1.0 ppb spike	03/29/2005	04/09/2005
L0004933-0016	C0066688	LIQUID	Water	O-W3-208454	03/29/2005	04/09/2005
L0004933-0017	C0066689	LIQUID	Water	O-W3-208454 Dup	03/29/2005	04/09/2005
L0004933-0018	C0066690	LIQUID	Water	O-W3-208454 0.1 ppb spike	03/29/2005	04/09/2005
L0004933-0019	C0066691	LIQUID	Water	Field Blank		04/09/2005
L0004933-0020	C0066692	LIQUID	Water	Field Blank 0.1 ppb spike		04/09/2005
L0004933-0021	C0066693	LIQUID	Water	Field Blank 1.0 ppb spike		04/09/2005

0011

4/4/2005
Login.rpt

Report Version: Mar 2 2005 11:50AM
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Instance: R0156913

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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Login

Login Reviewed By:

Sea

Date/Time:

2/30/2015 1735

3M Environmental Laboratory

Form 36778 - PWD

Shipping Address:
3M Bldg. 2-3E-09
300 Bush Avenue
St. Paul, MN 55108
Telephone:
Sample Receipts: (651) 778-4848
Alternate: (651) 778-6763
FAX: (651) 778-6176

Chain of Custody / Request for Laboratory Analytical 08912

3M Env. Lab Project #
For Internal Use Only

EOS-0243

Project ID/Project Name	OAKDALE Munk 721 Well EC's IV
Template #	
Project Lead	Kent Lindstrom
Dept. # (main)	530 Z11
Class/Job/Project #	0022674499
Contact Name	Gary Johnson
Company	3M
Mailing Address	
City, State, Zip	
Telephone #	
FAX #	
Date Available	
Date Due	
Contract Lab	EXY 3ELH

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, reporting units, etc.)

Item #	Client Sample Identification	3M LIMS#	Date Sampled	Time Sampled	Matrix/Media	Preservatives:				Total Number of Containers	Analysis Requested: Complete below. Attach any associated information.
						HNO ₃	H ₂ SO ₄	VOCA	None		
1.	Field Blank 1.0 MB Spike	81129	8/29/05	10:00	W					1	See Attached Lab Request EOS-0243
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

Enter the number of containers of each

(Enter an 'X' in the box below to indicate request)

Collected by (print):	Brad Jacobson - Rec	Collector's signature:	<i>Brad Jacobson</i>
Item #	1	Shipped Via	Express
Date	8/29/05	Date	8/29/05
Time	1600	Time	11:30
Location	Field Blank 1.0 MB Spike	Location	Field Blank 1.0 MB Spike
Matrix/Media	W	Matrix/Media	W

Sample Condition Upon Receipt:	Acceptable	O Other:	
Temperature:	RT °C	O Received on Ice	
Other Associated CoCs:	08914, 08915	Copies to:	KRC
Comments:	① Expts filled blanks and shipped 10 bottles order - 8/29/05 Put in fridge 8-1 upon receipt 3M Enviro Lab (AE) 8/29/05 See Reverse Side for Instructions TO EXY GEN		

3/29/2005

3M ENVIRONMENTAL LABORATORY
CONTRACT LABORATORY WORK ORDER BY SAMPLE

Page 1 of 3

Project: E05-0243

Contract Lab(s): EXYGEN

Requester: Hohenstein, Gary A (0042-02E-27)

Department: 530711

Project Number: 0022674449

Date Received: 3/28/2005

Project Description: Oakdale Municipal Well FC's IV

Completion Date:

Project Lead: Kent Lindstrom

Phone Number: 651-778-5352

Email Address: krlindstrom@mmm.com

Ship Date:

3/29/05

Comments:

Pace field sampling.

3M Sample Number	Sampled Date	Sample Description		
E05-0243-81103	3/29/2005	O-W1-208462		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	
E05-0243-81104	3/29/2005	O-W1-208462 Dup		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	
E05-0243-81105	3/29/2005	O-W1-208462 0.1 PPB Spike		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	
E05-0243-81106	3/29/2005	O-W2-208463		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	
E05-0243-81107	3/29/2005	O-W2-208463 Dup		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	
E05-0243-81108	3/29/2005	O-W2-208463 0.1 PPB Spike		
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>	
PFOA	PFOA	PFOA	4/20/2005	
PFOS	PFOS by ESMS	PFOS	4/20/2005	

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**3M ENVIRONMENTAL LABORATORY
CONTRACT LABORATORY WORK ORDER BY SAMPLE**

Project: E05-0243 (cont.)

Contract Lab(s): EXYGEN

3M Sample Number	Sampled Date	Sample Description	
E05-0243-81109	3/29/2005	O-W3-208454	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81110	3/29/2005	O-W3-208454 Dup	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81111	3/29/2005	O-W3-208454 0.1 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81112	3/29/2005	O-W5-127287	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81113	3/29/2005	O-W5-127287 Dup	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81114	3/29/2005	O-W5-127287 1.0 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81118	3/29/2005	O-W8-572608	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81119	3/29/2005	O-W8-572608 Dup	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81120	3/29/2005	O-W8-572608 0.5 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005

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3/29/2005

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**3M ENVIRONMENTAL LABORATORY
CONTRACT LABORATORY WORK ORDER BY SAMPLE**

Project: E05-0243 (cont.).

Contract Lab(s): EXYGEN

<u>3M Sample Number</u>	<u>Sampled Date</u>	<u>Sample Description</u>	
E05-0243-81121	3/29/2005	O-W9-151575	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81122	3/29/2005	O-W9-151575 Dup	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81123	3/29/2005	O-W9-151575 1.0 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81127	3/29/2005	Field Blank	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81128	3/29/2005	Field Blank 0.1 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005
E05-0243-81129	3/29/2005	Field Blank 1.0 PPB Spike	
<u>Analysis Code</u>	<u>Analytical Method</u>	<u>Components</u>	<u>Analysis Due Date</u>
PFOA	PFOA	PFOA	4/20/2005
PFOS	PFOS by ESMS	PFOS	4/20/2005

0018

PAT FERRETTI
(651) 778-8753
3A ENVIRONMENTAL LAB
939 BUSH AVENUE
SAINT PAUL MN 55106

25 LBS

1 OF 1

SHIP TO:

JOHN FLAHERTY/SAMPLE CHECK-IN

(814) 231-8832

OXYGEN RESEARCH

117 RESEARCH DR

TATE COLLEGE PA 16801-2752



PA 168 0-10



UPS NEXT DAY AIR

TRACKING #: 1Z 579 55E 02 4148 3528

1



BILLING: P/P

Dept No.: 538711; 0622574448
REF 2: 895-8243

UOM 5.0.27 UPS Thermal & 25.00 01/2000



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