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# TOWN OF KERNERSVILLE
# PUBLIC WORKS DEPARTMENT

**Marvin W. Davis, Town Manager**

**Timothy G. Shields, Director**

P.O. Box 728
Kernersville, N.C. 27285-0728

720 McKaughan Street
Telephone (336) 996-6916
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June 15, 2007

Received
JUN 2007
Solid Waste Section

Mr. Bobby Lutfy
NC Department of Environment and Natural Resources
Division of Solid Waste Management
PO BOX 27687
Raleigh, NC 27611-7687

RE: Kernersville, NC-Landfill Permit #34-04

Dear Mr. Lutfy:

Enclosed are copies of the semi-annual groundwater monitoring data collected at the subject landfill on the following dates: May 17th, 2006, December 22nd, 2006, and May 10th, 2007. Mr. Glenn Price with Research and Analytical Laboratories, Inc (RAL) conducted the groundwater monitoring program in accordance with the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities.

If you should have any questions concerning these reports or require further information, please feel free to contact me at any time.

Regards,

Tim Shields
Public Works Director

Enclosures (3)

# Research & Analytical Laboratories, Inc.

Analytical/Process Consultations

RESEARCH & ANALYTICAL LABS SIDNEY L. CHAMPION NC #34 DIRECTOR CERTIFIED ANALYSIS

## *Table I - Volatile Organic Analysis for Selected Monitoring Wells at the Town of Kernersville Landfill - 10 May 2007*

| I. Volatile Organics EPA Method 8260 B Parameter | Quantitation Limit (mg/L) | GW-1 (mg/L) | GW-2 (mg/L) | GW-3S (mg/L) | GW-3D (mg/L) | GW-3D Duplicate (mg/L) | GW-4 (mg/L) | GW-5 (mg/L) | GW-6 (mg/L) | SW-1 (mg/L) | SW-2 (mg/L) | Field Blank (mg/L) | Travel Blank (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Methylene Chloride | 0.005 | **0.0028 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Trichlorofluoromethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1-Dichloroethene | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1-Dichloroethane | 0.005 | **0.016** | **0.027** | BQL | **0.0058** | **0.0062** | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chloroform | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Carbon Tetrachloride | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2-Dichloropropane | 0.005 | **0.0055** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Trichloroethene | 0.005 | **0.0082** | **0.025** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Dibromochloromethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1,2-Trichloroethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Tetrachloroethene | 0.005 | **0.0093** | **0.0013 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chlorobenzene | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Trans-1,2-Dichloroethene | 0.005 | **0.0014 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2-Dichloroethane | 0.005 | **0.0094** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1,1-Trichloroethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Bromodichloromethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cis-1,3-Dichloropropene | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Benzene | 0.005 | **0.020** | **0.0082** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Trans-1,3-Dichloropropene | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Bromoform | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1,2,2-Tetrachloroethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Toluene | 0.005 | **0.0066** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Ethyl Benzene | 0.005 | **0.0017 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chloromethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Bromomethane | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Vinyl Chloride | 0.005 | **0.0085** | BQL | **0.0010 J** | **0.0058** | **0.0063** | **0.029** | BQL | BQL | BQL | BQL | BQL | BQL |
| Chloroethane | 0.010 | **0.0032 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Acetone | 0.100 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Carbon Disulfide | 0.100 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Vinyl Acetate | 0.050 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 2-Butanone | 0.100 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 4-Methyl-2-Pentanone | 0.100 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 2-Hexanone | 0.050 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Styrene | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Total Xylenes | 0.005 | **0.049** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Acrylonitrile | 0.200 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2-Dichlorobenzene | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,4-Dichlorobenzene | 0.005 | **0.017** | BQL | BQL | BQL | **0.0030 J** | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Trans-1,4-Dichloro-2-butene | 0.100 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cis-1,2-Dichloroethene | 0.005 | **0.265** | **0.055** | **0.0042 J** | **0.068** | **0.058** | **0.022** | BQL | BQL | BQL | BQL | BQL | BQL |
| Methyl Iodide | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Bromochloromethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Dibromomethane | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,1,1,2-Tetrachloroethane | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2,3-Trichloropropane | 0.008 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2-Dibromo-3-Chloropropane(DBCP) | 0.025 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| 1,2-Dibromoethane (EDB) | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| **Sample Number** | | 589444 | 589445 | 589446 | 589447 | 589453 | 589448 | 589449 | 589450 | 589451 | 589452 | 589454 | 589455 |
| **Sample Date** | | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 |
| **Sample Time (hrs)** | | 1312 | 1131 | 1156 | 1231 | 1231 | 1111 | 1046 | 1245 | 1300 | 1326 | 1235 | 0600 |

BQL = Below Quantitation Limits
mg/L = milligrams per Liter = parts per million (ppm)

N/A = Not Available
J = Estimated Concentration. Present but below detection limit.

# Research & Analytical Laboratories, Inc.

Analytical/Process Consultations

RESEARCH & ANALYTICAL LABS SIDNEY L. CHAMPION NC #34 DIRECTOR CERTIFIED ANALYSIS

*Table II - Inorganic Analysis (Appendix I - Subtitle D) for Selected Monitoring Wells at the Kernersville Landfill - 10 May 2007*

| II. Inorganics Parameter | EPA Method | Quantitation Limits (mg/L) | GW-1 (mg/L) | GW-2 (mg/L) | GW-3S (mg/L) | GW-3D (mg/L) | GW-3D Duplicate (mg/L) | GW-4 (mg/L) | GW-5 (mg/L) | GW-6 (mg/L) | SW-1 (mg/L) | SW-2 (mg/L) | Field Blank (mg/L) | Travel Blank (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 7041 | 0.006 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Arsenic | 200.7 | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Barium | 200.7 | 0.100 | **0.175** | **0.400** | **0.227** | **1.13** | **1.12** | BQL | **0.194** | BQL | BQL | BQL | BQL | BQL |
| Beryllium | 200.7 | 0.001 | BQL | BQL | BQL | BQL | BQL | BQL | **0.002** | BQL | BQL | BQL | BQL | BQL |
| Cadmium | 200.7 | 0.001 | BQL | BQL | **0.014** | BQL | BQL | BQL | **0.007** | BQL | BQL | BQL | BQL | BQL |
| Chromium | 200.7 | 0.010 | BQL | BQL | **0.014** | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | 200.7 | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | **0.040** | BQL | BQL | BQL | BQL | BQL |
| Nickel | 200.7 | 0.050 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | 200.7 | 0.010 | **0.062** | BQL | BQL | BQL | BQL | BQL | **0.022** | BQL | BQL | BQL | BQL | BQL |
| Selenium | 200.7 | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Silver | 200.7 | 0.010 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Thallium | 200.7 | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Zinc | 200.7 | 0.010 | **0.014** | BQL | **0.158** | BQL | BQL | **0.014** | **0.347** | BQL | BQL | BQL | BQL | **0.012** |
| Vanadium | 200.7 | 0.025 | BQL | BQL | **0.106** | BQL | BQL | BQL | **0.038** | BQL | BQL | BQL | BQL | BQL |
| **Sample Number** | | | 589444 | 589445 | 589446 | 589447 | 589453 | 589448 | 589449 | 589450 | 589451 | 589452 | 589454 | 589455 |
| **Sample Date** | | | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 |
| **Sample Time (hrs)** | | | 1312 | 1131 | 1156 | 1231 | 1231 | 1111 | 1046 | 1245 | 1300 | 1326 | 1235 | 0600 |

mg/L = milligrams per Liter = parts per million (ppm)

# GROUNDWATER MONITORING FIELD LOG

| | | | Personnel Present: | COMMENTS: |
|---|---|---|---|---|
| Facility | Kernersville | | Glenn Price | |
| | Landfill | May 10, 2007 | | |
| Weather | Cloudy 72° F | Date | | |

| Monitoring Well No.. | GW-1 | GW-2 | GW-3S | GW-3D | GW-4 | GW-5 | GW-6 | SW-1 | SW-2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Depth (FT.) | 34.69 | 13.18 | 24.00 | 56.95 | 14.40 | 11.36 | 24.00 | | | | | | |
| Surface Depth (FT.) | 32.13 | 3.03 | 13.50 | 11.69 | 6.05 | 3.68 | 16.63 | | | | | | |
| Water Depth (FT.) | 2.56 | 10.15 | 10.50 | 45.26 | 8.35 | 7.68 | 7.37 | | | | | | |
| Diameter (IN.) | 2" | 2" | 2" | 2" | 2" | 2" | 2" | | | | | | |
| Conversion Factor | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | | | | | | |
| Well Volume (GAL.) | 0.44 | 1.73 | 1.79 | 7.69 | 1.42 | 1.31 | 1.25 | | | | | | |
| Volume (GAL.) X 3 | 1.31 | 5.18 | 5.36 | 23.08 | 4.26 | 3.92 | 3.76 | | | | | | |
| # Bails (L) | 6 | 21 | 22 | 94 | 18 | 16 | 16 | | | | | | |
| Purge Date | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | | | | | | |
| Purge Time (hrs.) | 1010 | 1120 | 1145 | 1159 | 1100 | 1030 | 0955 | | | | | | |
| Purge Method | Bailer | Bailer | Bailer | Bailer | Bailer | Bailer | Bailer | | | | | | |
| Volume Removed (GAL.) | 0.50-Dry | 5.25 | 5.50 | 24.00 | 1.50-Dry | 4.00 | 4.00 | | | | | | |
| Sampling Date | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | 05/10/07 | | | | |
| Sampling Time (hrs.) | 1312 | 1131 | 1156 | 1231 | 1111 | 1046 | 1245 | 1300 | 1326 | | | | |
| Sampling Method | Bailer | Bailer | Bailer | Bailer | Bailer | Bailer | Bailer | Grab | Grab | | | | |
| pH (Standard Units) | 5.79 | 5.56 | 5.99 | 6.10 | 5.88 | 5.58 | 5.87 | 6.26 | 6.21 | | | | |
| Temperature (EC) | 17.9 | 18.1 | 18.4 | 19.2 | 17.5 | 18.6 | 18.7 | 17.9 | 17.9 | | | | |
| Conductivity (µmhos/cm) | 161 | 433 | 402 | 383 | 405 | 72.2 | 50.0 | 105 | 130 | | | | |
| Dissolved Oxygen (mg/L) | | | | | | | | | | | | | |
| Observations\Sampling | Clear | Clear | Milky | Clear | Clear | Turbid | Clear | Clear | Clear | | | | |

* Duplicate

# RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical / Process Consultations
Phone (336) 996-2841

## CHAIN OF CUSTODY RECORD

| | |
|---|---|
| COMPANY: Kernersville Landfill | JOB NO. |
| STREET ADDRESS | PROJECT |
| CITY, STATE, ZIP | SAMPLER NAME (PLEASE PRINT): Glenn Rice |
| CONTACT / PHONE | SAMPLER SIGNATURE: [signature] |

WATER / WASTEWATER | MISC.

| SAMPLE NUMBER (LAB USE ONLY) | DATE | TIME | COMP | GRAB | TEMP °C | RES Cl | CHLORINE REMOVED (Y or N) | SAMPLE MATRIX (S or W) | SAMPLE LOCATION / I.D. | NO. OF CONTAINERS | 2L G (BNA, Herb. / Pest.) | 2 40ml Vials (VOA) HCL | 250ml G (TOX) | 250ml P (TOC) $H_2SO_4$ | 1L P, G (BOD, TSS, Unpreserved, etc.) | 1L G (Phenol, Oil & Grease) $H_2SO_4$ | 1L P, G (COD, N, P) $H_2SO_4$ | 1L P, G (Metals, Hardness) $HNO_3$ | 1L P, G (CYANIDE) NaOH | Sterile P, G (Coliform) | | | | REQUESTED ANALYSIS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 589444 | 5/10/07 | 1312 | | ✓ | | | | W | GW-1 | 6 | | 4 | | | 1 | | | 1 | | | | | | *See Remarks |
| 445 | | 1131 | | ✓ | | | | W | GW-2 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 446 | | 1156 | | ✓ | | | | W | GW-3S | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 447 | | 1231 | | ✓ | | | | W | GW-3D | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 448 | | 1111 | | ✓ | | | | W | GW-4 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 449 | | 1046 | | ✓ | | | | W | GW-5 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 450 | | 1245 | | ✓ | | | | W | GW-6 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 451 | | 1300 | | ✓ | | | | W | SW-1 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 452 | | 1326 | | ✓ | | | | W | SW-2 | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 453 | | 1231 | | ✓ | | | | W | Duplicate | 6 | | 4 | | | 1 | | | 1 | | | | | | |
| 454 | | 1235 | | ✓ | | | | W | FB | 5 | | 4 | | | | | | 1 | | | | | | FB |
| 455 | | 0600 | | ✓ | | | | W | TB | 5 | | 4 | | | | | | 1 | | | | | | TB |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
|---|---|---|
| [signature] | 5/10/07 | [signature] |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| | 5-10-07 1413 | |

REMARKS: * Sb, As, Ba, Be, Cd, Cr, Co, Pb, Ni, Se, Ag, Ti, V, Zn, VOA (8260), cond

ONRC

SAMPLE TEMPERATURE AT RECEIPT 3.0 °C