

US EPA ARCHIVE DOCUMENT

## 4.0 NATURE AND EXTENT OF CONTAMINATION

All of the laboratory analyses were conducted by either a contract laboratory in accordance with the EPA standard procedures and protocols for the Contract Laboratory Program (CLP), or by SESD's Analytical Support Branch in accordance with the procedures and protocols specified in their *Analytical Support Branch Operations and Quality Control Manual*, October, 1990. Analytical data reports for each sample collected are presented in Appendix B. Also, summary tables are included in Appendix B indicating all detectable concentrations.

Based upon the *Site Inspection Report for the North Belmont PCE Site*, NCDEHNR, July, 1993, the main contaminants at the Site are tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2 dichloroethylene (CIS-1,2 DCE). The following discussion highlights these constituents as well as any chemical constituents which exceed the National Primary Drinking Water Regulations (NPDWR) Maximum Contaminant Levels (MCLs), the National Secondary Drinking Water Regulations (SMCLs), Federal Ambient Water Quality Criteria (AWQC), EPA Region 3 Risk-Based Concentrations (Smith, 1996) and the North Carolina Groundwater Classification and Standards-Groundwater Quality Standards of the North Carolina Administrative Code (15A NCAC 2L 0202(c)), and North Carolina Water Quality Standards applicable to Surface Waters (15A NCAC 2B 0200).

### 4.1 SURFACE WATER AND SEDIMENTS

A summary of the main contaminants found in the surface water and sediments are noted in **Table 4-1**. Reference **Figure 2-4** for surface water/sediment locations.

TABLE 4-1. MAIN CONTAMINANTS IN THE SURFACE WATER/SEDIMENT AT THE NORTH BELMONT PCE SITE.

| STATION              | ALUMINUM Q              | IRON                    | LEAD Q                                  | MANGANESE Q            | ZINC Q                                  | BENZO-A-PYRENE Q  |
|----------------------|-------------------------|-------------------------|-----------------------------------------|------------------------|-----------------------------------------|-------------------|
| <b>SURFACE WATER</b> | UG/L                    | UG/L                    | UG/L                                    | UG/L                   | UG/L                                    | UG/L              |
| NB201SW              | 35 J                    | 270                     | 1 U                                     | 43                     | 10 U                                    | 10 U              |
| NB201SWS             | 58                      | 290                     | 1 U                                     | 42                     | 8 U                                     | 10 U              |
| NB202SW              | 32 J                    | 370                     | 1 U                                     | 77                     | 10 U                                    | 10 U              |
| NB203SW              | 790                     | 2400                    | 4                                       | 280                    | 61                                      | 10 U              |
| CRITERIA             | 87 <sup>(1)</sup>       | 1000 <sup>(1)(2)</sup>  | 1.32 <sup>(1)</sup> , 25 <sup>(2)</sup> | 50 <sup>(2)</sup>      | 58.9 <sup>(1)</sup> , 50 <sup>(2)</sup> | NA                |
| <b>SEDIMENT</b>      | UG/KG                   | UG/KG                   | UG/KG                                   | UG/KG                  | UG/KG                                   | UG/KG             |
| NB201SD              | 3000000                 | 14000000                | 4800                                    | 240000 J               | 42000 J                                 | 870 U             |
| NB201SDS             | 3200000                 | 16000000                | 5300                                    | 250000 J               | 52000 J                                 | 440 U             |
| NB202SD              | 3200000                 | 8600000                 | 25000                                   | 140000 J               | 35000                                   | 420 U             |
| NB203SD              | 1000000                 | 1800000                 | 1300                                    | 150000 J               | 14000                                   | 300 J             |
| CRITERIA             | 78000000 <sup>(3)</sup> | 23000000 <sup>(3)</sup> | 400000 <sup>(3)</sup>                   | 1800000 <sup>(3)</sup> | 23000000 <sup>(3)</sup>                 | 88 <sup>(3)</sup> |

| STATION                                                                                                                                                                                                                                         | ALUMINUM Q | IRON | LEAD Q | MANGANESE Q | ZINC Q | BENZO-A-PYRENE Q |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------|--------|-------------|--------|------------------|
| NOTES: <sup>(1)</sup> RED Values exceed Federal Surface Water Quality Standards; <sup>(2)</sup> GREEN Values exceed NC Water Quality Standards; <sup>(3)</sup> BLUE values exceed Region 3 Risk Based Concentration Values; NA = Not Applicable |            |      |        |             |        |                  |

## 4.2 SUBSURFACE SOILS

The subsurface soils were divided into six zones: 5 feet, 10 feet, 15 feet, 20 feet, 30 feet, and 40 to 110 feet below ground surface. A summary of the COC's in the subsurface soils for the 5, 10 15 and 30 feet zones are noted in **Table 4-2** thru **Table 4-5**, respectively; these samples were submitted for full TCL/TAL analysis scan. The subsurface soils encountered at the 20 feet zone and at the 40 to 100 feet zone except for SPT1/82' and MW6/110' were only analyzed for VOCs; SPT1/82' and MW6/110' were also analyzed for extractable organics and pesticides/pcbs. No constituents exceeded the Region 3 Risk Based Concentration Values for these zones. Reference **Figure 2-1** for subsurface soil sample locations.

**TABLE 4-2. MAIN CONTAMINANTS AT 5 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE**

| STATION                                                            | IRON      | MANGANESE Q |
|--------------------------------------------------------------------|-----------|-------------|
| UNITS                                                              | UG/KG     | UG/KG       |
| NB001SSA                                                           | 50000000  | 130000 J    |
| NB002SSA                                                           | 83000000  | 200000 J    |
| NB003SSA                                                           | 43000000  | 97000 J     |
| NB003SSS                                                           | 44000000  | 110000 J    |
| NB004SSA                                                           | 71000000  | 1800000 J   |
| NB005SSA                                                           | 100000000 | 190000 J    |
| NB001HAA                                                           | 93000000  | 400000 J    |
| CRITERIA                                                           | 23000000  | 1800000     |
| NOTES: BLUE values exceed Region 3 Risk Based Concentration Values |           |             |

**TABLE 4-3. MAIN CONTAMINANTS AT 10 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE**

| STATION                                                            | IRON     | MANGANESE Q |
|--------------------------------------------------------------------|----------|-------------|
| UNITS                                                              | UG/KG    | UG/KG       |
| NB001HAB                                                           | 85000000 | 2300000 J   |
| SPT1/10'                                                           | 44000000 | 1300000     |
| MW6/10'                                                            | 31000000 | 210000      |
| CRITERIA                                                           | 23000000 | 1800000     |
| NOTES: BLUE values exceed Region 3 Risk Based Concentration Values |          |             |



**TABLE 4-4. MAIN CONTAMINANTS AT 15 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE**

| STATION                                                            | IRON     | MANGANESE Q | VANADIUM |
|--------------------------------------------------------------------|----------|-------------|----------|
| UNITS                                                              | UG/KG    | UG/KG       | UG/KG    |
| NB001SSC                                                           | 60000000 | 1700000 J   | 200000   |
| NB002SSC                                                           | 43000000 | 740000 J    | 150000   |
| NB003SSC                                                           | 37000000 | 400000 J    | 100000   |
| NB004SSC                                                           | 72000000 | 190000 J    | 200000   |
| NB005SSC                                                           | 91000000 | 2000000 J   | 440000   |
| NB001HAC                                                           | 88000000 | 5400000 J   | 600000   |
| CRITERIA                                                           | 23000000 | 1800000     | 550000   |
| NOTES: BLUE values exceed Region 3 Risk Based Concentration Values |          |             |          |

**TABLE 4-5. MAIN CONTAMINANTS AT 30 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE**

| STATION                                                            | IRON      | MANGANESE Q |
|--------------------------------------------------------------------|-----------|-------------|
| UNITS                                                              | UG/KG     | UG/KG       |
| NB001SSE                                                           | 42000000  | 1300000 J   |
| NB002SSE                                                           | 70000000  | 2500000 J   |
| NB003SSE                                                           | 36000000  | 1400000 J   |
| NB004SSE                                                           | 44000000  | 2900000 J   |
| NB005SSE                                                           | 110000000 | 2600000 J   |
| SPT1/30'                                                           | 46000000  | 1300000     |
| MW6/30'                                                            | 36000000  | 750000      |
| CRITERIA                                                           | 23000000  | 1800000     |
| NOTES: BLUE values exceed Region 3 Risk Based Concentration Values |           |             |

## 4.3 GROUND WATER

### 4.3.1 Ground Water Plume in 1991

A summary of the chemical constituents observed in the 1991 groundwater sampling event is noted in **Table 4-6**. Concentration isopleths are noted on **Figures 4-1** thru **4-3** for PCE, TCE and cis-1,2 DCE. The concentration isopleths were drawn with the use of Surfer® for Windows version 6 by Golden Software, Inc.

**TABLE 4-6. MAIN CONTAMINANTS IN THE GROUNDWATER IN 1991 AT THE NORTH BELMONT PCE SITE.**

| LANDLOT                                                                                                                      | PARCEL | OWNER              | ADDRESS        | PCE Q                                 | TCE Q                                 | cis1,2DCE Q          |
|------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|----------------|---------------------------------------|---------------------------------------|----------------------|
| UNITS                                                                                                                        |        |                    |                | UG/L                                  | UG/L                                  | UG/L                 |
| 15-18                                                                                                                        | 1.00   | SHOP. CNTR WELL    | Woodlawn       | 1.00                                  | 1.00                                  | 1.00                 |
| 15-18A                                                                                                                       | 2.00   | MW-1               | MW-1           | 148.00                                | 7.00                                  | 14.00                |
| 15-18A                                                                                                                       | 2.00   | MW-2               | MW-2           | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 2.00   | MW-3               | MW-3           | 8.70                                  | 0.50 U                                | 3.50                 |
| 15-18A                                                                                                                       | 2.00   | MW-4               | MW-4           | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 13.00  | MW-5               | MW-5           | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 14.00  | PAYSEUR, BETTY     | 201 School     | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 15.00  | LEATHERMAN, J.D.   | 203 School     | 0.64                                  | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 19.00  | SOLOMAN, PAUL      | 213 School     | 0.50 U                                | 0.60                                  | 0.80                 |
| 15-18A                                                                                                                       | 61.00  | FULL GOSPEL CH.    | 116 School     | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 62.00  | FUJIKO, DAVID      | 114 School     | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 64.00  | RUSSELL, BRENDA    | 110 School     | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 65.00  | CONNER,FLETCHER    | 104 Apricot    | 1.00                                  | 1.00                                  | 1.00                 |
| 15-18A                                                                                                                       | 66.00  | CANIPE, ROMA IEM   | 106 Apricot    | 1.00                                  | 1.00                                  | 1.00                 |
| 15-18A                                                                                                                       | 67.00  | KEETER, D.         | 116 Magnolia   | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 68.00  | DEESE, J.C.        | 114 Magnolia   | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 70.00  | GRIFFIN, RENTAL    | 110 Apricot    | 36.70                                 | 1.90                                  | 4.10                 |
| 15-18A                                                                                                                       | 71.00  | DECKER, MARY       | 109 Apricot    | 80.50                                 | 7.90                                  | 20.20                |
| 15-18A                                                                                                                       | 74.00  | HUGHES, ELENE      | 109 Goshen     | 15000.00                              | 194.00                                | 664.00               |
| 15-18A                                                                                                                       | 76.01  | HUFFMAN, BESSIE    | 107 Apricot    | 36.00                                 | 1.80                                  | 4.40                 |
| 15-18A                                                                                                                       | 77.00  | SILER, MABLE       | 105 Apricot    | 865.00                                | 51.00                                 | 111.00               |
| 15-18A                                                                                                                       | 78.00  | WALLACE, BOB       | 103 Apricot    | 1093.00                               | 59.00                                 | 120.00               |
| 15-18A                                                                                                                       | 79.00  | SHERRILL, J.D.     | 101 Apricot    | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 80.00  | N. BEL. ELEM. SCH. | 113 School     | 570.00                                | 78.00                                 | 129.00               |
| 15-18A                                                                                                                       | 84.00  | MAHFAFFY, D.       | 197 Goshen "B" | 4500.00                               | 180.00                                | 560.00               |
| 15-18A                                                                                                                       | 85.00  | PARKER, FRANKIN    | 199 Goshen     | 1.80                                  | 1.00 J                                | 1.00                 |
| 15-18A                                                                                                                       | 87.00  | CLARK, CHARLTON    | 201 Goshen     | 12.00                                 | 7.80                                  | 41.70                |
| 15-18A                                                                                                                       | 87.01  | JORDAN, REBECCA    | 203 Goshen     | 11.50                                 | 6.20                                  | 28.70                |
| 15-18A                                                                                                                       | 87.02  | CAGLE, BERTHA      | 205 Goshen     | 20.80                                 | 8.60                                  | 66.00                |
| 15-18A                                                                                                                       | 88.00  | KUNZMAN, RUTH      | 204 Goshen     | 164.50                                | 39.90                                 | 126.90               |
| 15-18A                                                                                                                       | 91.00  | VAN DYKE, HELEN    | 115 Magnolia   | 1.00                                  | 1.00                                  | 1.00                 |
| 15-18A                                                                                                                       | 92.00  | GALLOWAY, JULIE    | 117 Magnolia   | 3.70                                  | 1.00 J                                | 1.00 J               |
| 15-18A                                                                                                                       | 94.00  | GRIFFIN, BOB       | 121 Magnolia   | 10.00                                 | 0.50 U                                | 1.40                 |
| 15-18A                                                                                                                       | 95.00  | MESSER, ALLIE M.   | 123 Magnolia   | 0.50 U                                | 0.50 U                                | 0.50 U               |
| 15-18A                                                                                                                       | 96.01  | COLLETTE, JAMES    | 2309 Acme      | 0.50 U                                | 0.50 U                                | 0.50 U               |
| CRITERIA                                                                                                                     |        |                    |                | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> | 70.00 <sup>(1)</sup> |
| NOTES: <sup>(1)</sup> RED Values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards |        |                    |                |                                       |                                       |                      |

Figures 4-1 thru 4-3



### 4.3.2 March/April 1996 Groundwater Plume

SESD collected groundwater samples from the on-site permanent monitoring wells and converted residential monitoring wells in March/April, 1996. The wells were sampled to determine the changes in the plume since 1991 and to determine placement of additional permanent monitoring wells for the RI. The results of the sampling are noted in **Table 4-7** and the contaminant isopleth for PCE is shown on **Figure 4-4**.

**TABLE 4-7. MAIN CONTAMINANTS IN THE GW IN MARCH/APRIL 1996 AT THE NORTH BELMONT PCE SITE.**

| LOT                                                                                                                                                                             | STATION  | PCE Q                                 | TCE Q                                 | cis1,2DCE Q         | CLFM Q              | PB Q              | AL Q                  | MN Q                | FE Q               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------|---------------------------------------|---------------------|---------------------|-------------------|-----------------------|---------------------|--------------------|
|                                                                                                                                                                                 |          | UG/L                                  | UG/L                                  | UG/L                | UG/L                | UG/L              | UG/L                  | UG/L                | UG/L               |
| 2                                                                                                                                                                               | NB001TCF | 260.0                                 | 7.9                                   | 15.0                | 0.5 J               | NA                | NA                    | NA                  | NA                 |
| 74                                                                                                                                                                              | NB002TCG | 160.0                                 | 4.5 J                                 | 15.0                | 1.0 U               | NA                | NA                    | NA                  | NA                 |
| 80                                                                                                                                                                              | NB003TCI | 7.4                                   | 1.6                                   | 1.6                 | 1.0 U               | NA                | NA                    | NA                  | NA                 |
| 2                                                                                                                                                                               | NB006MW  | 2.5                                   | 5.0 U                                 | 5.0 U               | 1.8                 | 10 U              | 74                    | 9.8                 | 12 U               |
| 2                                                                                                                                                                               | NB007MW  | 68.0                                  | 3.6                                   | 11.0                | 5.0 U               | 10 U              | 150                   | 47.0                | 110                |
| 2                                                                                                                                                                               | NB008MW  | 5.0 U                                 | 5.0 U                                 | 5.0 U               | 5.0 U               | 10 U              | 50 U                  | 2.5 U               | 12 U               |
| 48                                                                                                                                                                              | NB015MW  | 5.0 U                                 | 5.0 U                                 | 5.0 U               | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 74                                                                                                                                                                              | NB025MW  | 440.0                                 | 51.0                                  | 25.0                | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 84                                                                                                                                                                              | NB028MW  | 5.0 U                                 | 5.0 U                                 | 5.0 U               | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 84                                                                                                                                                                              | NB029MW  | 1100.0                                | 27.0                                  | 93.0                | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 87.02                                                                                                                                                                           | NB030MW  | 1.7                                   | 5.0 U                                 | 5.0 U               | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 88                                                                                                                                                                              | NB031MW  | 3100.0                                | 270.0                                 | 920.0               | 5.0 U               | 10 U              | 50 U                  | 2.5 U               | 12 U               |
| 94                                                                                                                                                                              | NB032MW  | 200.0                                 | 8.4                                   | 13.0                | 5.0 U               | NA                | NA                    | NA                  | NA                 |
| 102                                                                                                                                                                             | NB035MW  | 5.0 U                                 | 5.0 U                                 | 5.0 U               | 5.0 U               | 13                | 61                    | 260.0               | 6800               |
| 102                                                                                                                                                                             | NB35DMW  | 5.0 U                                 | 5.0 U                                 | 5.0 U               | 5.0 U               | 100               | 55 U                  | 33.0                | 7700               |
| CRITERIA                                                                                                                                                                        |          | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> | 70.0 <sup>(1)</sup> | 0.19 <sup>(2)</sup> | 15 <sup>(2)</sup> | 50-200 <sup>(3)</sup> | 50.0 <sup>(3)</sup> | 300 <sup>(3)</sup> |
| NOTES: <sup>(1)</sup> RED Values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards; <sup>(3)</sup> GREEN Values exceed Secondary MCLs |          |                                       |                                       |                     |                     |                   |                       |                     |                    |

### 4.3.3 Shallow Groundwater Plume

SESD collected groundwater samples from shallow temporary monitoring wells in June, 1996. The wells were sampled to determine the shallow groundwater plume. The shallow groundwater plume is approximately 30 to 35 feet below the land surface. The contaminant isopleths for PCE, TCE and cis-1,2 DCE are shown on **Figures 4-5 thru 4-7**, and the results of the sampling are noted in **Table 4-8**.

**FIGURES 4-4, Figures 4-5 thru 4-7**



**TABLE 4-8. MAIN CONTAMINANTS IN THE SHALLOW GW PLUME IN JUNE 1996 AT THE SITE.**

| STATION                                                                                                                      | PCE                                   | Q | TCE                                   | Q | CIS -1,2 DCE      | Q |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---|---------------------------------------|---|-------------------|---|
| UNITS                                                                                                                        | UG/L                                  |   | UG/L                                  |   | UG/L              |   |
| NB001TWA(STW)                                                                                                                | 1                                     | U | 1                                     | U | 1                 | U |
| NB002TWA(STW)                                                                                                                | 1                                     | U | 1                                     | U | 1                 | U |
| NB003TWA(STW)                                                                                                                | 520                                   |   | 13                                    |   | 130               |   |
| NB004TWA(STW)                                                                                                                | 1                                     | U | 1                                     | U | 1                 | U |
| NB005TWA(STW)                                                                                                                | 20                                    |   | 1                                     |   | 1                 |   |
| NB006TWA(STW)                                                                                                                | 2200                                  |   | 49                                    |   | 1100              |   |
| NB007TWA(STW)                                                                                                                | 1                                     | U | 1                                     | U | 1                 | U |
| NB008TWA(STW)                                                                                                                | 100                                   |   | 4                                     |   | 2.9               |   |
| NB009TWA(STW)                                                                                                                | 1                                     | U | 1                                     | U | 1                 | U |
| NB010TWA(STW)                                                                                                                | 1.2                                   |   | 1                                     |   | 1                 |   |
| CRITERIA                                                                                                                     | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> |   | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> |   | 70 <sup>(1)</sup> |   |
| NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards |                                       |   |                                       |   |                   |   |

#### 4.3.4 Top of Bedrock Groundwater Plume

SESD collected groundwater samples from top of bedrock (TOB) temporary monitoring wells in July/August, 1996. The analytical results of this sampling event are noted on **Table 4-9**. The PCE and TCE plumes were modeled using surfer, and the resulting isopleths aided in the design of the permanent monitoring well system. **Figure 4-8** depicts the PCE plume defined by the temporary top of bedrock wells.

**TABLE 4-9. MAIN CONTAMINANTS IN TEMPORARY TOB GW PLUME JULY/AUG 1996 AT THE SITE.**

| STATION                                                                                                                      | PCE                                   | Q | TCE                                   | Q | METHYLENE CHLORIDE | Q  |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---|---------------------------------------|---|--------------------|----|
| UNITS                                                                                                                        | UG/L                                  |   | UG/L                                  |   | UG/L               |    |
| SPT1/TOR                                                                                                                     | 1400.0                                |   | 1                                     | J |                    | NA |
| TW2                                                                                                                          | 10.0                                  | U | 10                                    | U |                    | NA |
| TW3                                                                                                                          | 460.0                                 | J | 19                                    | J | 50.0               | U  |
| TW3D                                                                                                                         | 560.0                                 | J | 24                                    | J | 62.0               | J  |
| TW4                                                                                                                          | 1.0                                   | U | 1                                     | U | 5.4                |    |
| TW5                                                                                                                          | 1.7                                   |   | 1                                     | U | 5.0                | U  |
| TW5A                                                                                                                         | 1.0                                   | U | 1                                     | U | 5.0                | U  |
| TW6                                                                                                                          | 2.0                                   |   | 1                                     | U | 5.0                | U  |
| TW7                                                                                                                          | 10.0                                  | U | 10                                    | U |                    | NA |
| TW8                                                                                                                          | 10.0                                  | U | 10                                    | U |                    | NA |
| TW9                                                                                                                          | 5.1                                   |   | 1                                     | U | 5.0                | U  |
| TW10                                                                                                                         | 3.1                                   |   | 1                                     | U | 5.0                | U  |
| TW11                                                                                                                         | 1.0                                   | U | 1                                     | U | 5.0                | U  |
| TW12                                                                                                                         | 1.0                                   | U | 1                                     | U | 5.0                | U  |
| TW13                                                                                                                         | 4.2                                   |   | 1                                     | U | 5.0                | U  |
| TW14                                                                                                                         | 1.0                                   | U | 1                                     | U | 5.0                | U  |
| CRITERIA                                                                                                                     | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> |   | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> |   | 5 <sup>(2)</sup>   |    |
| NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards |                                       |   |                                       |   |                    |    |

FIGURE 4-8



The permanent monitoring wells were sampled in October/November 1996 and the main contaminants are noted in **Table 4-10A** and **Table 4-10B**. The top of bedrock groundwater plume varies from approximately 35 feet to 110 feet below the land surface. The top of bedrock sampling results were combined for both the temporary and the permanent groundwater monitoring wells to obtain the contaminant isopleths for PCE, TCE and cis-1,2 DCE as shown on **Figures 4-9 thru 4-11**.

**TABLE 4-10A. MAIN INORGANIC CONTAMINANTS IN THE PERM TOB GW PLUME OCT 1996 AT THE SITE.**

| STATION  | CD               | Q | AL                      | Q | MN                | Q | FE                 | Q |
|----------|------------------|---|-------------------------|---|-------------------|---|--------------------|---|
| UNITS    | UG/L             |   | UG/L                    |   | UG/L              |   | UG/L               |   |
| MW2      | 1                | U | 160                     | U | 4.0               | U | 60                 | U |
| MW4      | 1.2              | U | 62                      |   | 2.6               |   | 500                |   |
| MW5      | 1                | U | 60                      | U | 1.0               | U | 20                 | U |
| MW6      | 1.2              | U | 1100                    |   | 52.0              |   | 1200               |   |
| MW7      | 1.2              | U | 1300                    |   | 340.0             |   | 1400               |   |
| MW8      | 1.2              | U | 2700                    |   | 180.0             |   | 1900               |   |
| MW9      | 1.2              | U | 1600                    |   | 340.0             |   | 2400               |   |
| MW10     | 1.2              | U | 98                      |   | 110.0             |   | 120                |   |
| MW11     | 7.2              |   | 4800                    |   | 160.0             |   | 3400               |   |
| MW12     | 1.2              | U | 37                      |   | 130.0             |   | 12                 | U |
| MW13     | 1.2              | U | 38                      |   | 2.5               | U | 12                 | U |
| CRITERIA | 5 <sup>(1)</sup> |   | 50 - 200 <sup>(2)</sup> |   | 50 <sup>(2)</sup> |   | 300 <sup>(2)</sup> |   |

NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs and North Carolina GW Standards ; <sup>(2)</sup> GREEN values exceed Secondary MCLs

**TABLE 4-10B. MAIN ORGANIC CONTAMINANTS IN THE PERM TOB GW PLUME OCT 1996 AT THE SITE.**

| STATION  | 1,1-DCE               | Q  | cis-1,2-DCE       | Q | CLEM                | Q | TCE                                   | Q  | PCE                                   | Q |
|----------|-----------------------|----|-------------------|---|---------------------|---|---------------------------------------|----|---------------------------------------|---|
| MW2      | 1.0                   | UR | 1.00              | U | 2.0                 |   | 1.00                                  | U  | 2.00                                  |   |
| MW4      | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| MW5      | 1.0                   | UR | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| MW6      | 50.0                  | U  | 76.00             |   | 50.0                | U | 49.00                                 | J  | 2500.00                               |   |
| MW7      | 2.7                   | A  | 0.56              | J | 1.0                 | U | 0.54                                  | AJ | 1.00                                  | U |
| MW8      | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | J |
| MW9      | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 14.00                                 |   |
| MW10     | 5.0                   | U  | 5.00              | U | 5.0                 | U | 5.00                                  | U  | 80.00                                 |   |
| MW11     | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.70                                  |   |
| MW12     | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 37.00                                 |   |
| MW13     | 12.0                  |    | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| MW13D    | 9.4                   |    | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| CW1      | 20.0                  | U  | 53.00             |   | 20.0                | U | 16.00                                 | J  | 630.00                                |   |
| CW8      | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| CW8D     | 1.0                   | U  | 1.00              | U | 1.0                 | U | 1.00                                  | U  | 1.00                                  | U |
| CRITERIA | 7.0 <sup>(1)(2)</sup> |    | 70 <sup>(1)</sup> |   | 0.19 <sup>(2)</sup> |   | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> |    | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> |   |

NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards; CW-8 had concentrations of Heptachlor Epoxide of 0.0097J which exceeds North Carolina GW Standard of 0.004.



FIGURES 4-9, 4-10, 4-11



#### 4.3.5 Bedrock GroundWater Plume

The bedrock groundwater plume was evaluated by using data from the permanent monitoring wells installed within the bedrock aquifer as well as the residential drinking water wells in the study area. SESD sampled all permanent bedrock monitoring wells in October/November 1996. The main contaminants of the bedrock monitoring wells are noted in **Table 4-11A** and **Table 4-11B**. SESD sampled residential drinking water wells during the period of March to September 1996. Based upon the well survey and interviews with residents, the majority of the drinking water wells were drilled into the bedrock aquifer. **Table 4-12** notes the results of the sampling activities with respect to the main contaminants as well as the depth of the well, if available. The contaminant isopleths for PCE, TCE, cis-1,2 DCE and 1,1 DCE were modeled using the data from both the permanent bedrock monitoring wells and the residential drinking water wells; these isopleths are noted on **Figures 4-12** thru **4-14**.

**TABLE 4-11A. MAIN ORGANIC CONTAMINANTS IN THE BEDROCK GW PLUME, PERMANENT MONITORING WELLS, OCT/NOV 1996 AT THE NORTH BELMONT PCE SITE.**

| STATION  | cis-1,2-DCE       | Q | CLEM                | Q | TCE                                   | Q | PCE                                   | Q |
|----------|-------------------|---|---------------------|---|---------------------------------------|---|---------------------------------------|---|
| UNITS    | UG/L              |   | UG/L                |   | UG/L                                  |   | UG/L                                  |   |
| NB002CW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 0.50                                  | J |
| NB002CWS | 1.00              | U | 1.00                | U | 1.00                                  | U | 0.50                                  | J |
| NB003CW  | 13.00             |   | 1.00                | U | 3.00                                  |   | 77.00                                 |   |
| NB003MW  | 11.00             |   | 1.00                | U | 4.00                                  |   | 69.00                                 |   |
| NB004CW  | 0.80              | J | 1.00                | U | 1.00                                  | U | 2.00                                  |   |
| NB005CW  | 26.00             |   | 20.00               | U | 20.00                                 | U | 520.00                                |   |
| NB006CW  | 940.00            |   | 50.00               | U | 280.00                                |   | 3500.00                               |   |
| NB007CW  | 9.40              |   | 4.00                | U | 7.40                                  |   | 160.00                                |   |
| NB009CW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 1.00                                  | U |
| NB014MW  | 7.10              |   | 2.40                | J | 4.00                                  | U | 160.00                                |   |
| NB015MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 1.00                                  | U |
| NB016MW  | 110.00            |   | 1.40                |   | 30.00                                 |   | 320.00                                |   |
| NB017MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 1.00                                  | U |
| NB018MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 1.00                                  | U |
| NB019MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 4.20                                  |   |
| NB020MW  | 1.00              | U | 0.83                | J | 1.00                                  | U | 3.10                                  |   |
| NB021MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 1.00                                  | U |
| NB022MW  | 1.00              | U | 1.00                | U | 1.00                                  | U | 2.00                                  |   |
| NB022MWD | 1.00              | U | 1.00                | U | 1.00                                  | U | 2.00                                  |   |
| CRITERIA | 70 <sup>(1)</sup> |   | 0.19 <sup>(2)</sup> |   | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> |   | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> |   |

NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards

**TABLE 4-11B. MAIN INORGANIC CONTAMINANTS IN THE BEDROCK GROUNDWATER PLUME, PERMANENT MONITORING WELLS, OCT/NOV 1996 AT THE NORTH BELMONT PCE SITE.**

| STATION  | CD                  | Q | PB                | Q | ZN                                        | Q | AL                      | Q | MN                   | Q | FE                    | Q |
|----------|---------------------|---|-------------------|---|-------------------------------------------|---|-------------------------|---|----------------------|---|-----------------------|---|
| UNITS    | UG/L                |   | UG/L              |   | UG/L                                      |   | UG/L                    |   | UG/L                 |   | UG/L                  |   |
| NB002CW  | 2                   | U | 3.0               | U | 7400.0                                    |   | 20                      | U | 25.0                 |   | 30                    | U |
| NB002CWS | 2                   | U | 2.0               | U | 7300.0                                    |   | 20                      | U | 23.0                 |   | 120                   |   |
| NB003CW  | 1                   | U | 15.0              |   | 180.0                                     |   | 20                      | U | 20.0                 |   | 1800                  |   |
| NB003MW  | 1                   | U | 2.0               | U | 20.0                                      | U | 30                      | U | 8.0                  | U | 40000                 | U |
| NB004CW  | 1                   | U | 3.0               | U | 48.0                                      |   | 20                      | U | 29.0                 |   | 540                   |   |
| NB005CW  | 1.2                 | U | 5.3               |   | 290.0                                     |   | 50                      | U | 280.0                |   | 29000                 |   |
| NB006CW  | 1.2                 | U | 1.2               | U | 2.5                                       | U | 50                      | U | 2.5                  | U | 12                    | U |
| NB007CW  | 1.2                 | U | 48.0              |   | 520.0                                     |   | 67                      |   | 17.0                 |   | 1800                  |   |
| NB009CW  | 10                  |   | 280.0             |   | 4400.0                                    |   | 92                      |   | 100.0                |   | 21000                 |   |
| NB014MW  | 1.2                 | U | 1.2               | U | 13.0                                      |   | 810                     |   | 72.0                 |   | 2700                  |   |
| NB015MW  | 1.2                 | U | 1.2               | U | 2.5                                       | U | 260                     |   | 230.0                |   | 7000                  |   |
| NB016MW  | 1.2                 | U | 1.2               | U | 5.2                                       |   | 1300                    |   | 170.0                |   | 5400                  |   |
| NB017MW  | 1.2                 | U | 1.2               |   | 18.0                                      |   | 5300                    |   | 110.0                |   | 5800                  |   |
| NB018MW  | 1.2                 | U | 1.2               | U | 8.2                                       |   | 150                     |   | 180.0                |   | 16000                 |   |
| NB020MW  | 1.2                 | U | 1.2               | U | 27.0                                      |   | 160                     |   | 43.0                 |   | 1600                  |   |
| NB021MW  | 1.2                 | U | 1.2               | U | 2.5                                       | U | 51                      |   | 12.0                 |   | 880                   |   |
| NB022MW  | 1.2                 | U | 1.2               | U | 5.7                                       |   | 120                     |   | 260.0                |   | 18000                 |   |
| NB022MWD | 1.2                 | U | 1.2               | U | 7.7                                       |   | 170                     |   | 260.0                |   | 19000                 |   |
| CRITERIA | 5 <sup>(1)(2)</sup> |   | 15 <sup>(2)</sup> |   | 2100 <sup>(2)</sup> , 5000 <sup>(3)</sup> |   | 50 - 200 <sup>(3)</sup> |   | 50 <sup>(2)(3)</sup> |   | 300 <sup>(2)(3)</sup> |   |

NOTES: <sup>(1)</sup> RED Values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards; <sup>(3)</sup> GREEN Values exceed Secondary MCLs

#### 4.3.6 OTHER CONSTITUENTS

During the investigation of the groundwater plume, additional contaminants were found which characterized a second plume. These contaminants were not found in the original site plume; the top of bedrock aquifer contains 1,1-dichloroethene and the bedrock aquifer contains 1,1-dichloroethene, 1,1,1-trichloroethane and trichlorofluoromethane. These compounds were not noted in the above sections because they did not exceed regulatory guidelines or criteria in the groundwater monitoring wells. **Figure 4-15** denotes the concentration of the 1,1-dichloroethene at the respective locations in the top of rock monitoring wells. **Figures 4-16** and **4-17** denote the concentration of 1,1-dichloroethene and trichlorofluoromethane at the respective locations in the bedrock monitoring wells and the residential wells (1,1,1-trichloroethane was not plotted due to its similarity in concentration with 1,1-dichloroethene). The supporting data may be found in the summary tables of Appendix A.

**TABLE 4-12A. MAIN ORGANIC CONTAMINANTS IN THE BEDROCK GW PLUME, RESIDENTIAL DRINKING WATER WELLS, MARCH THRU SEPTEMBER 1996 AT THE NORTH BELMONT PCE SITE.**

| STATION    | LOT    | PARCEL | DEPTH     | CASING | PCE                                   | Q  | TCE                                   | Q  | 1,1DCE              | Q  | CLEM                | Q  |
|------------|--------|--------|-----------|--------|---------------------------------------|----|---------------------------------------|----|---------------------|----|---------------------|----|
| UNITS      |        |        | FT        | FT     | UG/L                                  |    | UG/L                                  |    | UG/L                |    | UG/L                |    |
| NB-309-PW  | 15-18  | 2.01   | 510       |        | 18.00                                 | A  | 0.94                                  | AJ | 1.00                | U  | 1.00                | U  |
| NB-003-PW  | 15-18  | 2.01   | 510       |        | 12.00                                 | A  | 0.68                                  | AJ | 5.00                | U  | 5.00                | U  |
| NB-004-PW  | 15-18  | 3.05   | 528       | 400    | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-350-PW  | 15-18  | 4.06   |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-351-PW  | 15-18  | 4.08   |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-312-PWS | 15-18  | 12     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-312-PW  | 15-18  | 12     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-305-PW  | 15-18A | 21     |           |        | 36.00                                 |    | 2.20                                  |    | 1.50                |    | 1.00                | U  |
| NB-011-PW  | 15-18A | 29     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-046-PW  | 15-18A | 31     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 0.87                | AJ |
| NB-012-PW  | 15-18A | 39     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-355-DPW | 15-18A | 40     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-355-PW  | 15-18A | 40     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-047-PW  | 15-18A | 42     | 70        |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-013-PW  | 15-18A | 43     | 180       | 140    | 50.00                                 | U  | 50.00                                 | U  | 50.00               | U  | 50.00               | U  |
| NB-001-PW  | 15-18A | 43     | 180       | 140    | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-014-PW  | 15-18A | 44     |           |        | 25.00                                 | U  | 25.00                                 | U  | 25.00               | U  | 25.00               | U  |
| NB-002-PW  | 15-18A | 44     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-356-PW  | 15-18A | 46     | 110       | 80     | 1.00                                  | U  | 1.00                                  | U  | 0.87                | AJ | 1.00                | U  |
| NB-310-PW  | 15-18A | 52     |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 0.58                | AJ |
| NB-017D-PW | 15-18A | 58     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-017-PW  | 15-18A | 58     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-018-PW  | 15-18A | 61     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 0.66                | AJ |
| NB-019S-PW | 15-18A | 62     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 0.64                | AJ |
| NB-019-PW  | 15-18A | 62     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 0.62                | AJ |
| NB-021-PW  | 15-18A | 65     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-001-PW  | 15-10A | 78     | 64        |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-033-PW  | 15-18A | 96.01  |           |        | 480.00                                |    | 22.00                                 |    | 1.30                |    | 5.00                | U  |
| NB-033S-PW | 15-18A | 96.01  |           |        | 320.00                                |    | 21.00                                 |    | 1.10                |    | 5.00                | U  |
| NB-034-PW  | 15-18A | 99     |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-352-PW  | 15-18A | 106    |           |        | 1.00                                  | U  | 1.00                                  | U  | 4.60                | A  | 1.00                | U  |
| NB-307-PW  | 15-18A | 108    | 100       | 70     | 1.00                                  | U  | 1.00                                  | U  | 9.40                | A  | 1.00                | U  |
| NB-048-PW  | 15-18A | 108    | 100       | 70     | 5.00                                  | U  | 0.50                                  | AJ | 9.40                | A  | 5.00                | U  |
| NB-049-PW  | 15-18A | 109.03 |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-308-PW  | 15-18A | 110    | 130       | 105    | 1.00                                  | U  | 1.00                                  | U  | 5.40                | A  | 1.00                | U  |
| NB-306-PW  | 15-18A | 112    |           |        | 6.80                                  | A  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-311-PW  | 15-18A | 112.01 | >80       |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-353-PW  | 15-18A | 112.02 |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-003-PW  | 15-18A | 112.03 |           |        | 4.30                                  | A  | 0.80                                  | AJ | 3.00                | A  | 1.00                | U  |
| NB-037-PW  | 15-18A | 114    | 130       | 100    | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-038-PW  | 15-18A | 116    | 300 - 350 |        | 5.00                                  | U  | 5.00                                  | U  | 3.00                | A  | 5.00                | U  |
| NB-302-PW  | 15-18A | 116    | 300 - 350 |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-301-PW  | 15-18A | 118    | 300       |        | 1.00                                  | U  | 0.70                                  | AJ | 14.00               | A  | 1.00                | U  |
| NB-039-PW  | 15-18A | 118    | 300       |        | 5.00                                  | U  | 5.00                                  | U  | 3.40                | A  | 5.00                | U  |
| NB-357-PW  | 15-18A | 119    | 100       | 60     | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-040-PW  | 15-18A | 121    | 140       | 90     | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-042-PW  | 15-18A | 123    | 105 - 110 | 60     | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-041-PW  | 15-18A | 123    | 80        | 55     | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-303-PW  | 15-18A | 125    |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-304-PW  | 15-18A | 127    | 64        |        | 0.92                                  | J  | 1.00                                  | U  | 1.00                | U  | 1.70                | U  |
| NB-044-PW  | 15-18A | 128    | 140       |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| NB-359-PW  | 15-18A | 132    | 125       | 90     | 0.62                                  | AJ | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-354-PW  | 15-18A | 138    |           |        | 1.00                                  | U  | 1.00                                  | U  | 1.00                | U  | 1.00                | U  |
| NB-045-PW  | 15-18A | 142    |           |        | 5.00                                  | U  | 5.00                                  | U  | 5.00                | U  | 5.00                | U  |
| CRITERIA   |        |        |           |        | 5 <sup>(1)</sup> , 0.7 <sup>(2)</sup> |    | 5 <sup>(1)</sup> , 2.8 <sup>(2)</sup> |    | 7 <sup>(1)(2)</sup> |    | 0.19 <sup>(2)</sup> |    |

NOTES: <sup>(1)</sup> RED values exceed Primary MCLs or MCLGs; <sup>(2)</sup> BLUE values exceed North Carolina GW Standards.

**TABLE 4-12B. MAIN INORGANIC CONTAMINANTS IN THE GW PLUME, RESIDENTIAL DRINKING WATER WELLS, SEPTEMBER 1996 AT THE NORTH BELMONT PCE SITE.**

| STATION    | PARCEL NO. | ZN                  | AL                      | Q | MN                | Q | FE                 | Q |
|------------|------------|---------------------|-------------------------|---|-------------------|---|--------------------|---|
| UNITS      |            | UG/L                | UG/L                    |   | UG/L              |   | UG/L               |   |
| NB-004-PW  | 3.05       | 6000                | 30                      |   | 59.0              |   | 2300               |   |
| NB-013-PW  | 43         | 27                  | 50                      | U | 2.5               | U | 20                 |   |
| NB-038-PW  | 116        | 5400                | 79                      |   | 31.0              |   | 25                 | U |
| NB-041-PW  | 123        | 150                 | 50                      | U | 2.9               |   | 93                 |   |
| NB-350-PW  | 4.06       | 16                  | 40                      | U | 2.1               |   | 18                 |   |
| NB-351-PW  | 4.08       | 8.3                 | 42                      |   | 2                 |   | 40                 |   |
| NB-352-PW  | 106        | 9.8                 | 59                      |   | 3.8               |   | 97                 |   |
| NB-353-PW  | 112.02     | 400                 | 40                      | U | 2                 | U | 10                 | U |
| NB-354-PW  | 138        | 3.7                 | 40                      | U | 2                 | U | 10                 | U |
| NB-355-PW  | 40         | 87                  | 40                      | U | 2                 | U | 10                 | U |
| NB-355-PWD | 40         | 86                  | 40                      | U | 2                 | U | 10                 | U |
| NB-356-PW  | 46         | 31                  | 40                      | U | 2                 | U | 15                 |   |
| NB-357-PW  | 119        | 4.8                 | 40                      | U | 2                 | U | 38                 |   |
| NB-359-PW  | 132        | 2.7                 | 40                      | U | 2                 | U | 63                 |   |
| CRITERIA   |            | 5000 <sup>(1)</sup> | 50 - 200 <sup>(1)</sup> |   | 50 <sup>(1)</sup> |   | 300 <sup>(1)</sup> |   |

NOTE: <sup>(1)</sup> GREEN Values exceed Secondary MCLs

#### 4.4 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control (QA/QC) procedures began in the planing stage and continued through sample collection, analyses, reporting and final review. The field project coordinator had overall responsibility for field QA/QC. All samples were collected in general accordance with Section 5 of the *EISOPQAM*. The QA/QC procedures described in this manual insure that representative samples were collected from the various media sampled. Split/duplicate samples were collected for ten percent of the samples collected. The split samples provided a check on sampling technique and laboratory analysis. The duplicate indicated the variability across the Site. Water trip blanks were prepared with organic free water for volatile organic compound analyses. The trip blanks were handled and stored with the samples collected from the Site. This provided a check to determine if samples may have been contaminated during handling and storage. Equipment rinse blanks were collected from equipment cleaned on site, using organic-free water, and analyzed for the Target Compound List/Target Analyte List (TCL/TAL) compounds. Equipment rinse blanks were collected to insure the sampling equipment was properly field cleaned. **Table 4-13** denotes the results of the analytical results for the QA/QC samples.

**TABLE 4-13A. QA/QC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.**

| STATION ID      | DATE    | QA/QC                 | MATRIX |
|-----------------|---------|-----------------------|--------|
| NB-901-FB       | Mar-96  | Field                 | Water  |
| NB-902-TB       | Mar-96  | Trip                  | Water  |
| NB-903-WSB      | Mar-96  | Water Source          | Water  |
| NB-904-OFS      | Mar-96  | Organic Free System   | Water  |
| NB-905-ERB      | Mar-96  | Equipment Rinseate    | Water  |
| NB-906-WSB      | Mar-96  | Water Source          | Water  |
| NB-907-ERB      | Mar-96  | Equipment Rinseate    | Water  |
| NB-908-ERB      | Mar-96  | Equipment Rinseate    | Water  |
| NB-909-ERB      | Mar-96  | Equipment Rinseate    | Water  |
| NB-910-TB       | Mar-96  | Trip                  | Water  |
| NB-911-PB       | Mar-96  | Preservative, Nitric  | Water  |
| NB-912-TB       | Apr-96  | Trip                  | Water  |
| NB-901-TB       | Jun-96  | Trip                  | Water  |
| NB-902-OB       | Jun-96  | Organic Free System   | Water  |
| NB-903-FB       | Jun-96  | Field                 | Water  |
| NB-904-STB      | Jun-96  | Trip                  | Soil   |
| NB-905-RB       | Jun-96  | Equipment Rinseate    | Water  |
| NB-906-FB       | Jul-96  | Field                 | Water  |
| NB-907-WTB      | Jul-96  | Trip                  | Water  |
| NB-908-STB      | Jul-96  | Trip                  | Soil   |
| NB-358-TB       | Sept-96 | Trip                  | Water  |
| NB-001-ERB      | Oct-96  | Equipment Rinseate    | Water  |
| NB-001-QC (TPB) | Oct-96  | Trip and Preservative | Water  |
| NB-001-TB       | Oct-96  | Trip                  | Water  |
| NB-002-QC (WSB) | Oct-96  | Water Source          | Water  |
| NB-002-TB       | Oct-96  | Trip                  | Water  |
| NB-001-EB       | Nov-96  | Equipment             | Water  |
| NB-002-EB       | Nov-96  | Equipment             | Water  |
| NB-003-EB       | Nov-96  | Equipment             | Water  |
| NB-004-EB       | Nov-96  | Equipment             | Water  |
| NB-005-EB       | Nov-96  | Equipment             | Water  |
| NB-006-EB       | Nov-96  | Equipment             | Water  |
| NB-007-SB       | Nov-96  | Organic Free System   | Water  |
| NB-007-SBA      | Nov-96  | Organic Free System   | Water  |
| NB-008-TB       | Nov-96  | Trip                  | Water  |

**TABLE 4-13B. QA/QC - VOC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.**

| STATION    | VINYL<br>CHL | Q  | CLFM | Q  | BDCLM | Q  | DBCLM | Q  | TOLUENE | Q  | ACETAL-<br>DEHYDE | Q  | COMMENTS                                            |
|------------|--------------|----|------|----|-------|----|-------|----|---------|----|-------------------|----|-----------------------------------------------------|
| NB-901-FB  | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-902-TB  | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-903-WSB | 5.0          | U  | 24   |    | 5.4   |    | 0.70  | J  | 5.00    | U  | 5                 | U  | Water Source; did not treat sample for chlorination |
| NB-904-OFS | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-905-ERB | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-906-WSB | 5.0          | U  | 25   |    | 5.5   |    | 0.69  | J  | 5.00    | U  | 5                 | U  | Water Source; did not treat sample for chlorination |
| NB-907-ERB | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-908-ERB | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-909-ERB | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-910-TB  | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-912-TB  | 5.0          | U  | 5    | U  | 5.0   | U  | 5.00  | U  | 5.00    | U  | 5                 | U  |                                                     |
| NB-901-TB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-902-OB  | 1.8          | A  | 1    | U  | 1.0   | U  | 1.00  | U  | 2.00    | A  | 30                | JN | Carbon filter breakthrough; changed filter          |
| NB-903-FB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.20    |    | 1                 | U  | Background; odor observed in air                    |
| NB-904-STB | 46.0         | U  | 46   | U  | 46.0  | U  | 46.00 | U  | 46.00   | U  | 46                | U  |                                                     |
| NB-905-RB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 0.97    | J  | 1                 | U  | Background; see field blank NB-903-FB               |
| NB-906-FB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-907-WTB | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-908-STB | 56.0         | U  | 56   | U  | 56.0  | U  | 56.00 | U  | 56.00   | U  | 56                | U  |                                                     |
| NB-358-TB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-001-ERB | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-001-QC  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-001-TB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-002-QC  | 1            | U  | 32   |    | 7.8   |    | 1.4   |    | 1       | U  | 1                 | U  | Water Source; did not treat sample for chlorination |
| NB-002-TB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | 1                 | U  |                                                     |
| NB-001-EB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |
| NB-002-EB  |              | NA |      | NA |       | NA |       | NA |         | NA | NA                |    | Sample not received by CLP laboratory, missing      |
| NB-003-EB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |
| NB-004-EB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |
| NB-005-EB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |
| NB-006-EB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |
| NB-007-SB  |              | NA |      | NA |       | NA |       | NA |         | NA | NA                |    | Sample not received by CLP laboratory; missing      |
| NB-007-SBA | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | U  | 1.00    | U  | NA                |    | Organic Free System Blank to replace NB-007-SB      |
| NB-008-TB  | 1.0          | U  | 1    | U  | 1.0   | U  | 1.00  | UR | 1.00    | U  | NA                |    |                                                     |

**TABLE 4-13C. QA/QC - INORGANIC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.**

| STATION    | AL Q  | BA Q  | SR Q  | ZN Q  | CA Q  | CR Q  | CO Q  | CU Q  | MG Q | MN Q  | FE Q  | NA Q  | NI Q | K Q   | COMMENTS                                         |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|--------------------------------------------------|
| NB-903-WSB | 50 U  | 11.0  | 28.0  | 210.0 | 3300  | 2.5 U | 2.5 U | 2.5 U | 1300 | 2.5 U | 21    | 13000 | 5 U  | 1500  | Water Source                                     |
| NB-904-OFS | 50 U  | 2.5 U | 2.5 U | 2.5 U | 120 U | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U |                                                  |
| NB-905-ERB | 50 U  | 2.5 U | 2.5 U | 4.6   | 120 U | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U |                                                  |
| NB-906-WSB | 50 U  | 12.0  | 28.0  | 230.0 | 3100  | 2.5 U | 2.5 U | 2.5 U | 1300 | 2.5 U | 12 U  | 13000 | 5 U  | 1900  | Water Source                                     |
| NB-907-ERB | 50 U  | 2.5 U | 2.5 U | 2.7   | 210   | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U | Tap water residual;<br>see NB-906-WSB            |
| NB-908-ERB | 50 U  | 2.5 U | 2.5 U | 6.3   | 120 U | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U | Tap water residual;<br>see NB-906-WSB            |
| NB-909-ERB | 50 U  | 2.5 U | 2.5 U | 2.9   | 120 U | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U | Tap water residual;<br>see NB-906-WSB            |
| NB-911-PB  | 50 U  | 2.5 U | 2.5 U | 2.5 U | 130   | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 710   | 5 U  | 500 U | Constituents not a<br>concern                    |
| NB-902-OB  | 27 U  | 1.0 J | NA    | 9.0 U | 80 U  | 4 U   | 4 U   | 3 U   | 36 U | 1 U   | 20 U  | 110 U | 11 U | 700 U | Carbon filter<br>breakthrough;<br>changed filter |
| NB-905-RB  | 27 U  | 1.0 U | NA    | 47.0  | 70 U  | 4 U   | 5 U   | 3 U   | 36 U | 1 U   | 20 U  | 110 J | 11 U | 700 U | Tap water residual;<br>see NB-906-WSB            |
| NB-001-ERB | 29    | 2.5 U | 2.5 U | 140   | 160   | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 29    | 250 U | 5 U  | 500 U | Tap water residual;<br>see NB-906-WSB            |
| NB-001-QC  | 50 U  | 2.5 U | 2.5 U | 3 U   | 120 U | 2.5 U | 2.5 U | 2.5 U | 25 U | 2.5 U | 12 U  | 500 U | 5 U  | 500 U |                                                  |
| NB-002-QC  | 50 U  | 12    | 34    | 170   | 4000  | 2.5 U | 2.5 U | 2.5 U | 1600 | 2.5 U | 12 U  | 18000 | 5 U  | 1600  | Water Source                                     |
| NB-001-EB  | 130 U | 4 U   | NA    | 34    | 380 U | 64    | 2 J   | 7 J   | 80 U | 50    | 700   | 160 U | 61   | 100   | Used purging decon<br>versus sampling decon      |
| NB-002-EB  | 20 U  | 1 U   | NA    | 23    | 80 U  | 7 J   | 1 U   | 6 J   | 18   | 16    | 140 U | 160 U | 6 J  | 49 J  | Used purging decon<br>versus sampling decon      |
| NB-003-EB  | 20 U  | 1 U   | NA    | 20 U  | 80 U  | 1 U   | 1 U   | 2 U   | 20 U | 2 U   | 20 U  | 160 U | 1 U  | 37 J  | Tap water residual;<br>see NB-002-QC             |
| NB-004-EB  | 20 U  | 1 U   | NA    | 26    | 70 U  | 1 U   | 1 U   | 2 U   | 20 U | 2 U   | 30 U  | 160 U | 1 U  | 32 J  | Tap water residual;<br>see NB-002-QC             |
| NB-005-EB  | 20 U  | 1 U   | NA    | 82    | 70 U  | 1 U   | 1 U   | 2 U   | 20 U | 3 U   | 20 U  | 160 U | 1 U  | 31    | Tap water residual;<br>see NB-002-QC             |
| NB-006-EB  | 20 U  | 1 U   | NA    | 57    | 50 U  | 1 U   | 1 U   | 2 U   | 20 U | 1 U   | 70 U  | 160 U | 2 U  | 33    | Tap water residual;<br>see NB-002-QC             |
| NB-007-SB  | 20 U  | 1 U   | NA    | 6 U   | 20 U  | 1 U   | 1 U   | 2 U   | 20 U | 1 U   | 20 U  | 160 U | 1 U  | 22    | Tap water residual;<br>see NB-002-QC             |

TABLE 4-13D. QA/QC -BNA SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.

| STATION    | CCPD Q | CCHEX Q | DCCHEX Q | CMBF Q | BIS-ETHER Q | BENZO BUTYL Q<br>PHTH | UNKNOWN Q |
|------------|--------|---------|----------|--------|-------------|-----------------------|-----------|
| NB-903-WSB | 30 JN  | 200 JN  | 60 JN    | U      | 10 U        | 10 U                  | U         |
| NB-904-OFS | U      | U       | U        | U      | 10 U        | 10 U                  | U         |
| NB-905-ERB | U      | U       | U        | U      | 10 U        | 10 U                  | U         |
| NB-906-WSB | 20 JN  | 500 JN  | 200 JN   | 20 JN  | 10 U        | 10 U                  | U         |
| NB-907-ERB | U      | U       | U        | U      | 10 U        | 10 U                  | U         |
| NB-908-ERB | U      | U       | U        | U      | 10 U        | 10 U                  | U         |
| NB-909-ERB | U      | U       | U        | U      | 10 U        | 10 U                  | U         |
| NB-902-OB  | U      | U       | U        | U      | 1 J         | 1 J                   | U         |
| NB-905-RB  | 25 U   | 25 U    | 25 U     | 25 U   | 10 U        | 10 U                  | U         |
| NB-001-QC  | U      | U       | U        | U      | 2 U         | 2 U                   | U         |
| NB-002-QC  | U      | U       | U        | U      | 3 U         | 3.4 U                 | U         |
| NB-001-EB  | U      | U       | U        | U      | 5 UJ        | 5 UJ                  | U         |
| NB-002-EB  | U      | U       | U        | U      | 5 U         | 5 U                   | U         |
| NB-003-EB  | U      | U       | U        | U      | 5 UJ        | 5 UJ                  | U         |
| NB-004-EB  | U      | U       | U        | U      | 5 U         | 5 U                   | U         |
| NB-005-EB  | U      | U       | U        | U      | 5 U         | 5 U                   | U         |
| NB-006-EB  | U      | U       | U        | U      | 5 U         | 5 U                   | 30 J      |
| NB-007-SB  | U      | U       | U        | U      | 5 U         | 5 U                   | U         |

