

**Data Evaluation Report of Surface Water Monitoring Study**

PMRA Submission Number {.....}

EPA MRID Number 46733903

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**Test material:** Fipronil

**IUPAC name:** 5-amino-1-(2,6-dichloro- $\alpha,\alpha,\alpha$ -trifluoro-*p*-tolyl)-4-trifluoromethylsulfinylpyrazole-3-carbonitrile

**CAS name:** 5-amino-1-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(trifluoromethyl)sulfinyl]-1*H*-pyrazole-3-carbonitrile

**Primary Reviewer:** James Hetrick, Ph.D.  
EPA

Signature:

Date:

*James A. Hetrick*  
4/30/08

**Secondary Reviewer:** Thuy Nguyen  
EPA

Signature:

Date:

*Thuy Nguyen*  
5/6/08

**CITATION:** Wyatt, Daryl R. 2005. Fipronil Estuarine Monitoring Study following an Application of Chipco Topchoice® to a Golf Course at Gulf Breeze, Florida. Sponsored by BayerCrop Science, RTP, NC. Performed by Bayer Crop Science, Stillwell, KS and AgVise Laboratories, Northward, ND. MRID 46733903.



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## EXECUTIVE SUMMARY:

The fipronil water monitoring study (MRID 46733903) provides acceptable data on the runoff potential of fipronil and its degradation products (MB46136, MB46513, and MB 46950) and its impact into estuarine surface water in Gulf Breeze, FL. This study was submitted to fulfill a condition of registration regarding runoff concerns of fipronil residues from broadcast use of fipronil for control of fire ants. The registrant did not provide any concurrent biological monitoring of the aquatic environment to assess the impact of fipronil and its degradation products on aquatic invertebrates.

The runoff monitoring study was conducted on the 14<sup>th</sup> fairway of the East Course at Tiger Point Golf and Country Club in Gulf Breeze, FL. The catchment area of the site is approximately 1.5 acres. The slope of the site ranges from 3 to 5%. The site was selected because it drains into a brackish water estuary, which is hydraulically connected to the Santa Rosa Sound. The estuary is approximately 0.24 acre surface area with a maximum depth of 10 feet. Water samples were taken at three locations in the estuary where runoff is expected to influence the water quality. In 2003, duplicate grab samples of water were taken at pre-fipronil treatment, day 0, 1, 2, ~10 days, and after each natural rainfall event from 3 to 100 days post treatment, and at least 20 day intervals from 100 to 180 days post-treatment.

In 2004, water samples were taken using an autosampler as well as grab samples.

Autosamplers were designed to take water samples at the edge of the estuary (@ a 1 foot depth below the water surface). The peak concentration of fipronil residues was 0.510 µg/L for fipronil, 0.007 µg/L for MB46513, 0.013 µg/L for MB45950, and 0.026 µg/L for MB46136. MB45950 and MB46136 were detected in sediment samples. The peak concentration of fipronil residues in sediment samples was 0.059 µg/kg for MB45950 and 0.043 µg/kg for MB 46136.

## I. MATERIALS AND METHODS

**GUIDELINE FOLLOWED:** The SETAC-Europe: Procedures for Assessing the Environmental Fate and Ecotoxicity of Pesticides (March 1995; pp. 1, 34) is not applicable.

**COMPLIANCE:** This study was conducted in compliance with USEPA FIFRA Good Laboratory Practices (40 CFR Part 160), which are consistent with the OECD Principles of GLP (p. 3). Signed and dated GLP, Data Confidentiality, Quality Assurance, and Certificate of Authenticity statements were provided (pp. 2-3, 5-6).

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## A. MATERIALS:

The study objective is to assess the runoff potential of fipronil and its degradation products into estuarine aquatic environments from turf use of Chipco Topchoice® for control of fire ants.

### 1. Study Description

The runoff monitoring study was conducted on the 14<sup>th</sup> fairway of the East Course at Tiger Point Golf and Country Club in Gulf Breeze, FL (**Figures B.1, and B.2, pp 63-64**). The catchment area of the site is approximately 1.5 acres. The slope of the site ranges from 3 to 5%. The site was selected because it drains into a brackish water estuary, which is hydraulically connected to the Santa Rosa Sound. The estuary is approximately 0.24 acre surface area with a maximum depth of 10 feet.

The soils in the catchment area are classified as a Leon sand (sandy, siliceous, thermic Aeric Haplaquods). Soil physicochemical properties for surface samples (0-6 inches) are shown in **Table E.1, pp 87**. The soil is classified in the A/D hydrologic group. The D soil classification indicates high runoff potential during periods with a high water table.

Water samples were taken at three locations (Points A, B, C) in the estuary where runoff is expected to influence the water quality (Reference Map). Estuary and irrigation water characterizations are shown in **Table E.2., pp 88**.

In 2003, duplicate grab samples of water were taken at pre-fipronil treatment, day 0, 1, 2, ~10 days, and after each natural rainfall event from 3 to 100 days post treatment, and at least 20 day intervals from 100 to 180 days post-treatment.

In 2004, water samples were taken using an autosampler as well as grab samples. Autosamplers were designed to take water samples at the edge of the estuary (@ a 1 foot depth below the water surface) at sampling points A, B, and C. Duplicate samples were taken from the start of the runoff event and then every 4 hours until 44 hours after the runoff event. Initiation of sampling was triggered using a 600 weir equipped with transducer to monitor runoff water. (Reviewer Note: There was no attempt to measure runoff volumes from the test site). Manual control of the autosamplers was generally performed between 36 to 44 hours after the runoff event. Duplicate grab samples also were taken at the three sampling locations. Samples were taken after runoff events or at 7 to 10 day sample intervals. Water samples were placed on blue ice and then transported to laboratory for frozen storage. Samples stored frozen prior to chemical analysis.

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Four random sediment samples were taken at each sampling location. In 2003, sediment samples were taken immediately before treatment, 87 and 185 days post-treatment. In 2004, sediment samples were taken at two sampling locations immediately before treatment, and at 98 days post-treatment. The four random samples were composited and then a subsample was taken. Subsamples were placed on blue ice and then transported to laboratory for frozen storage. Samples stored frozen prior to chemical analysis.

A rain gauge was used to collect on-site precipitation. The on-site precipitation and irrigation accounted for 62.97 inches in 2003 (167% of the 30 year average) and 30.04 inches in 2004 (100% of the 30 year average) (**Tables D.1 and D.2., pp 73 to 85**). The tidal flux was measured using a flow meter connected to a pressure transducer.

## **2. Site Preparation and Maintenance**

The test site had well maintained Bermudagrass turf. The site was amended with 12/12/12 (N/P/K) fertilizer at 275 lbs/A on February 26, 2004 and 200 lbs/A on April 8, 2004 and June 29, 2004. Pesticide applications on the site include metribuzin, prodiamine, pendimethalin, oxadiazon, MSMA, and MCB (**pp 62**).

## **3. Pesticide Application**

The fipronil application area accounts for ~ 1.53 acres of well maintained golf fairway beside an estuary. Chipco Topchoice® insecticide was broadcast applied at 0.0109 lbs ai/A on May 20, 2003 and 0.0123 lbs ai/A on April 21, 2004. The label maximum application rate is 0.0125 lbs ai/A. Applications were made using calibrated drop spreaders. A 60 foot buffer was maintained around the estuary.

## **4. Analytical**

A total of 264 water samples (105 in 2003 and 160 in 2004) were analyzed during this study. The sample analysis accounts for 64% of the duplicate samples in 2003 and 7.5% of the duplicate samples in 2004. Water samples were stored frozen for a maximum storage period of 342 days (**Tables F.1 and F.2, pp 90-96**). Reviewer Note: The registrant referenced storage stability data for a maximum 750 days (MRID MRID 46733902).

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Residues of fipronil in water samples were analyzed using a LC/MS/MS method entitled Insecticides, Fipronil: Method of Analysis for Possible Residues of Fipronil, MB46513, MB45950, and MB46136 in Water- Revisions 5 and 5 (August, 28, 2003). This method has method detection limit (MDL) of 0.004 µg/L and limit of quantification (LOQ) of 0.010 µg/L. [Reviewer Note: The method procedure requires filtration for cloudy extracts. The extracts are filtered through a nylon filtration disk after an acetonitrile extraction of surface water].

Procedural method verification in estuary water at concentrations of 10, 50, and 100 ng/L showed recoveries of 89.5% for fipronil (n=28), 93.5% for MB46513 (n=28), 93.8% for MB45950 (n=28), and 97.5% for MB46136 (n=28) (**Table IV, pp 36**). Method verification was conducted using estuary water at 0.010 µg/L and 0.100 µg/L. Average recoveries in estuary water were 86%± 10 for fipronil, 97%± 11 for MB46513, 102%± 15 for MB45950, and 98%± 11 for MB46136 (**Table I.1, pp 138**). Field spike fortifications were conducted in estuary water at the 0.10 µg/L and 1.00 µg/L. Recoveries ranged 77 to 86% for fipronil, 88 to 90% for MB46513, 86 to 90% for MB45950, and 99 to 103 % for MB46136 (**Table VI, pp 40**).

Residues of fipronil in sediment samples were analyzed using a LC/MS/MS method entitled Method of Analysis for Possible Residues of Fipronil, MB46513, MB45950, and MB46136 in Sediment (November 19, 2003). This method has method detection limit (MDL) of 0.030 µg/kg and limit of quantification (LOQ) of 0.100 µg/kg. Procedural recoveries from fortified sediment at 0.1 and 0.2 µg/kg ranged from 80.5 to 85.5% for fipronil, 70.1 to 96.3% for MB46513, 93 to 113% for MB45950, and 95.4 to 112% for MB46136 (**Table VII, pp 41**).

### B. REPORTED RESULTS

#### 1. 2003 Fipronil Residues in Estuary Water

Fipronil residues were detected in estuary water samples (**Figures 3, pp 39; Table V, pp 38**). The peak concentrations of fipronil residues was 0.510 µg/L for fipronil at 2 days post treatment, 0.007 µg/L for MB 46513 at 47 days post treatment, 0.013 µg/L for MB 45950 at 41 days post treatment, and 0.026 µg/L for MB 46136 at 2 days posttreatment. Fipronil was detected in all water samples from 2 to 47 days post treatment. Fipronil degradation products had more sporadic detections; MB46136 was the predominate fipronil degradate detected in surface water.

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### 2. 2004 Fipronil Residues in Estuary Water

There were no detectable fipronil residues in water except for a fipronil detection (0.037 µg/L) in a 112 day posttreatment sample (pp 40).

### 3. Concentration of Fipronil Residues in Sediment

MB45950 and MB46136 were detected in sediment samples (Table VIII, pp 42). The peak concentration was 0.059 µg/kg for MB45950, and 0.043 µg/kg for MB46136.

## B. REVIEWER COMMENTS

1. The fipronil water monitoring study (MRID 46733903) provides acceptable data on the runoff potential of fipronil and its degradation products (MB46136, MB46513, and MB 46950) and its impact on fipronil residue occurrence in estuarine surface water from use of Chipco Topchoice® on a turf in Gulf Breeze, FL. This study was submitted to fulfill a condition of registration regarding runoff concerns of fipronil residues from broadcast use of fipronil for control of fire ants. The registrant did not provide any concurrent biological monitoring of the aquatic environment to assess the impact of fipronil and its degradation products on aquatic invertebrates
2. The registrant referenced a storage stability study in a Texas runoff study (MRID 46733902). The Texas runoff study does not provide a detailed description of the storage stability study.
3. The fipronil applications were made in April and May. This application period coincides with highest precipitation months, which implies fipronil runoff and occurrence in surface water is expected to be high.

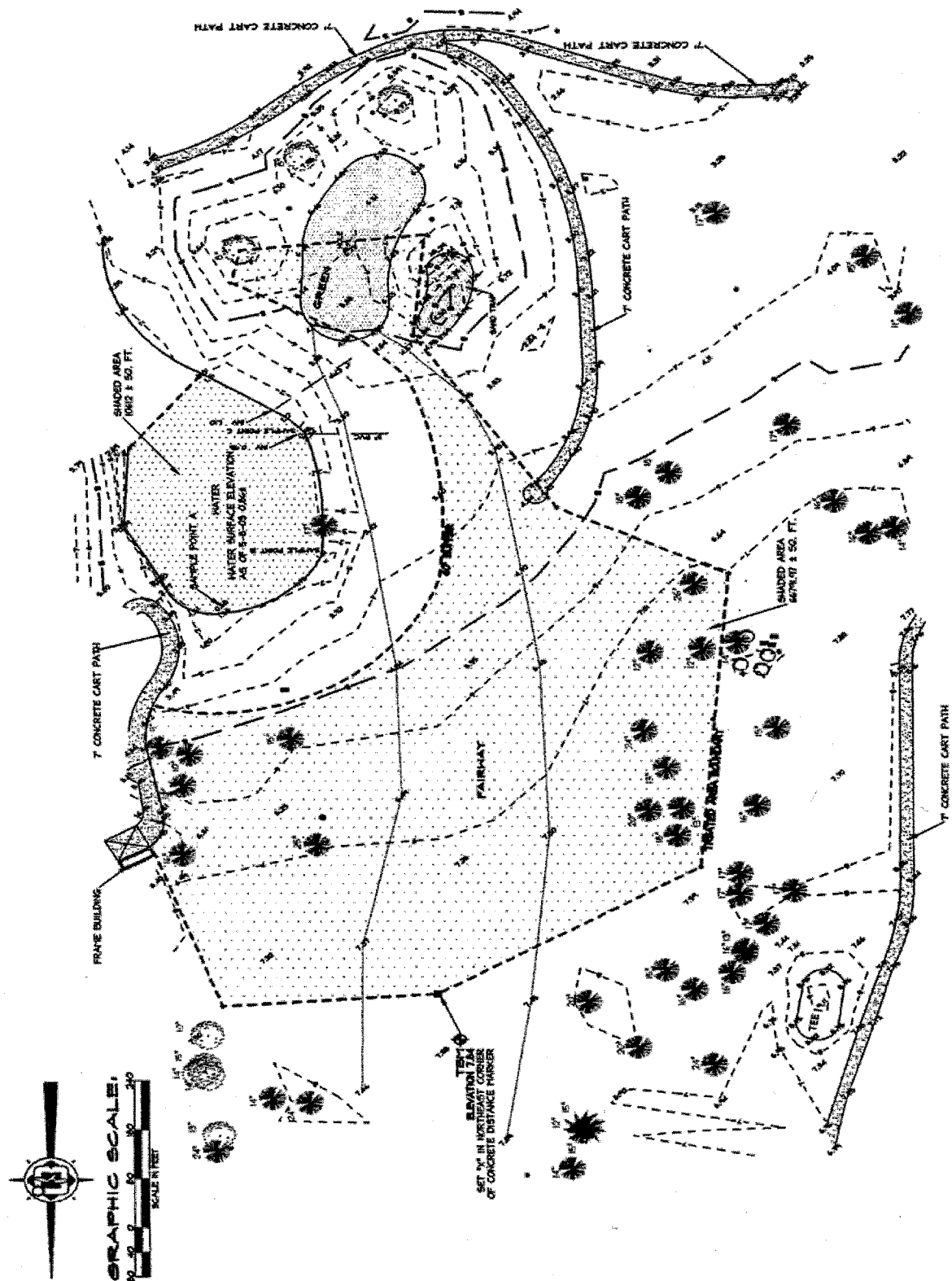


Figure B.1. Study Site Location





Figure B.2. Test Site Topography and Application Area





**Soil**

Soil samples for characterization were collected on 20 May 2003 from within the treated area. The samples were obtained from the top 6 inches of soil. They were shipped to AGVISE Laboratories on 29 May 2003 and received on 2 June 2003. The results are listed in Table E.1.

**Table E.1: Soil Characterization Data**

| Parameter                   | Analytical Result  |
|-----------------------------|--------------------|
| Sample ID                   | 03RAFIX020-SC 0-6" |
| Percent Sand                | 96                 |
| Percent Silt                | 3                  |
| Percent Clay                | 1                  |
| USDA Texture                | Sand               |
| Bulk Density (gm/cc)        | 1.18               |
| CEC (meq/100 g)             | 5.8                |
| Percent Moisture (0 bar)    | 54.1               |
| Percent Moisture (1/10 bar) | 12.1               |
| Percent Moisture (1/3 bar)  | 11.7               |
| Percent Moisture (1.0 bar)  | 6.6                |
| Percent Moisture (5.0 bar)  | 6.4                |
| Percent Moisture (15 bar)   | 6.4                |
| Percent Organic Matter      | 4.6                |
| pH (1:1 soil:water)         | 6.5                |
| Calcium (ppm)               | 574                |
| Magnesium (ppm)             | 117                |
| Sodium (ppm)                | 147                |
| Potassium (ppm)             | 76                 |
| Hydrogen (ppm)              | 11                 |

**Water**

Estuary water characterization sample was collected on 20 May 2003 from Sample Location A in the estuary. Irrigation water characterization sample was collected on 20 May 2003 from the irrigation pond east of the golf course shop building. They were shipped to AGVISE Laboratories on 29 May 2003 and received on 2 June 2003. The results are listed in Table E.2.

**Table E.2: Water Characterization Data**

| Parameter                                         | Analytical Result                |                                      |
|---------------------------------------------------|----------------------------------|--------------------------------------|
|                                                   | 03RAFIX020-WC<br>(estuary water) | 03RAFIX020-IWC<br>(irrigation water) |
| Sample ID                                         |                                  |                                      |
| pH                                                | 7.7                              | 7.4                                  |
| Sodium (ppm)                                      | 983                              | 64                                   |
| Calcium (ppm)                                     | 38                               | 15                                   |
| Magnesium (ppm)                                   | 108                              | 3                                    |
| Hardness<br>mg equivalent CaCO <sub>3</sub> (ppm) | 547                              | 49                                   |
| Conductivity (mmhos/cm)                           | 6.33                             | 0.51                                 |
| Sodium Absorption Ratio                           | 18.42                            | 3.97                                 |
| Total Dissolved Solids (ppm)                      | 3474                             | 234                                  |
| Turbidity (NTU)                                   | 4.05                             | 2.38                                 |

**Test Site Maintenance**

The bermudagrass turf at the test site had been well established prior to conducting this study. It was subject to regular mowing on a daily basis by the golf course ground crew. The test site area was maintained as a top level golf course facility.

| Date                           | Product                  | Rate               |
|--------------------------------|--------------------------|--------------------|
| <b>Fertilizer Applications</b> |                          |                    |
| 02/26/2004                     | 12/12/12                 | 275 lbs/A          |
| 04/08/2004                     | 12/12/12                 | 200 lbs/A          |
| 06/29/2004                     | 12/12/12                 | 200 lbs/A          |
| <b>Chemical Applications</b>   |                          |                    |
| 10/09/2003                     | MSMA/Sencor (metribuzin) | 32 oz. + 1.5 oz./A |
| 10/17/2003                     | MSMA/Sencor (metribuzin) | 32 oz. + 1.5 oz./A |
| 11/03/2003                     | Barricade (prodiamine)   | 1 lb/A             |
| 11/05/2003                     | Pendimethalin            | 0.5 gallons/A      |
| 03/01/2004                     | Ronstar (oxadiazon)      | 3 lbs/A            |
| 03/15/2004                     | Pendimethalin            | 0.5 gallons/A      |
| 07/13/2004                     | MSMA/Sencor (metribuzin) | 32 oz. + 1.5 oz./A |
| 07/29/2004                     | MSMA/Sencor (metribuzin) | 32 oz. + 1.5 oz./A |
| 08/09/2004                     | MSMA/Sencor (metribuzin) | 32 oz. + 1.5 oz./A |
| 08/19/2004                     | Snare MCB                | 100 lbs/A          |

The test area had in-ground irrigation capabilities. The precipitation and irrigation applied to the test site is provided in Appendix D of this report.



## 5.4 Water Analysis

### 5.4.1 Method Verification

The analytical method for water has been validated internally and has undergone a successful independent laboratory validation. The results of these studies are presented in separate reports (References 2 and 3).

The analytical method was verified prior to beginning analysis of the field samples using a fortification solution of a mixture of fipronil and its metabolites. The verification set consisted of 2 control samples of pre-application bulk water, 3 samples of bulk water fortified at the LOQ (0.01 ng/mL), 3 samples of bulk water fortified at 10XLOQ (0.10 ng/mL). Results of the method verification were satisfactory and are shown in Table I.1 (Appendix I).

### 5.4.2 Procedural Recoveries

Each sample set contained at least one control sample (pre-application bulk water) fortified with a mixture of fipronil, MB46513, MB45950 and MB46136. The fortification levels were 0.005, 0.010 or 0.100 ng/mL. The procedural recoveries are summarized in Table IV. In addition, all quantitative data for the procedural recoveries are included in Appendix I.

**Table IV: Mean Procedural Recoveries from Fortified Bulk Water**

| Analyte  | Fortification Level (ng/mL) | Number | Mean Percent Recovery |
|----------|-----------------------------|--------|-----------------------|
| Fipronil | 0.010                       | 4      | 89.9                  |
|          | 0.050                       | 5      | 90.3                  |
|          | 0.100                       | 19     | 88.2                  |
|          | Mean                        | 28     | 89.5                  |
| MB46513  | 0.010                       | 4      | 92.9                  |
|          | 0.050                       | 5      | 88.7                  |
|          | 0.100                       | 19     | 98.8                  |
|          | Mean                        | 28     | 93.5                  |
| MB45950  | 0.010                       | 4      | 95.7                  |
|          | 0.050                       | 5      | 88.1                  |
|          | 0.100                       | 19     | 97.6                  |
|          | Mean                        | 28     | 93.8                  |
| MB46136  | 0.010                       | 4      | 98.9                  |
|          | 0.050                       | 5      | 96.9                  |
|          | 0.100                       | 19     | 96.7                  |
|          | Mean                        | 28     | 97.5                  |



Table D.1. 2003 Daily Climate Data

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 81                 | 69                 |
| 02 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 85                 | 67                 |
| 03 May 2003                                      | ----                   | ----                | ----                      | 0.58                           | 80                 | 65                 |
| 04 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 84                 | 68                 |
| 05 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 81                 | 75                 |
| 06 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 82                 | 77                 |
| 07 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 84                 | 76                 |
| 08 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 84                 | 76                 |
| 09 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 85                 | 75                 |
| 10 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 86                 | 76                 |
| 11 May 2003                                      | ----                   | ----                | ----                      | 0.03                           | 89                 | 72                 |
| 12 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 86                 | 68                 |
| 13 May 2003                                      | ----                   | ----                | ----                      | T                              | 85                 | 64                 |
| 14 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 84                 | 61                 |
| 15 May 2003                                      | ----                   | ----                | ----                      | 0.30                           | 85                 | 73                 |
| 16 May 2003                                      | ----                   | ----                | ----                      | T                              | 87                 | 70                 |
| 17 May 2003                                      | ----                   | ----                | ----                      | 0.00                           | 86                 | 77                 |
| 18 May 2003                                      | ----                   | ----                | ----                      | 3.51                           | 84                 | 69                 |
| 19 May 2003                                      | -1                     | 0.00                | 3.75                      | 0.05                           | 82                 | 69                 |
| 20 May 2003 <sup>b</sup>                         | 0                      | 0.00                | 0.00                      | 0.01                           | 82                 | 71                 |
| 21 May 2003                                      | 1                      | 0.11                | 0.30                      | 0.64                           | 81                 | 71                 |
| 22 May 2003                                      | 2                      | 0.00                | 2.50                      | 1.14                           | 83                 | 69                 |
| 23 May 2003                                      | 3                      | 0.14                | 0.00                      | 0.00                           | 85                 | 67                 |
| 24 May 2003                                      | 4                      | 0.14                | 0.00                      | 0.00                           | 83                 | 65                 |
| 25 May 2003                                      | 5                      | 0.14                | 0.00                      | 0.00                           | 84                 | 64                 |
| 26 May 2003                                      | 6                      | 0.14                | 0.00                      | 0.00                           | 87                 | 69                 |
| 27 May 2003                                      | 7                      | 0.14                | 0.00                      | 0.00                           | 82                 | 65                 |
| 28 May 2003                                      | 8                      | 0.14                | 0.00                      | 0.00                           | 84                 | 62                 |
| 29 May 2003                                      | 9                      | 0.14                | 0.00                      | 0.00                           | 88                 | 65                 |
| 30 May 2003                                      | 10                     | 0.14                | 0.00                      | 0.00                           | 91                 | 69                 |
| 31 May 2003                                      | 11                     | 0.14                | 0.00                      | 0.00                           | 87                 | 74                 |
| Total Rainfall (19-31 May)                       |                        | 1.37                | 6.55                      | 6.26                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 4.30                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .<sup>b</sup> Date of Application of Test Substance and Initiation of Sampling.



Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Jun 2003                                      | 12                     | 0.14                | 0.00                      | 0.00                           | 88                 | 76                 |
| 02 Jun 2003                                      | 13                     | 0.14                | 0.00                      | 0.09                           | 89                 | 71                 |
| 03 Jun 2003                                      | 14                     | 0.12                | 0.20                      | 0.94                           | 85                 | 70                 |
| 04 Jun 2003                                      | 15                     | 0.14                | 0.00                      | 0.00                           | 86                 | 73                 |
| 05 Jun 2003                                      | 16                     | 0.14                | 0.00                      | T                              | 86                 | 72                 |
| 06 Jun 2003                                      | 17                     | 0.14                | 0.00                      | 2.16                           | 78                 | 71                 |
| 07 Jun 2003                                      | 18                     | 0.00                | 1.50                      | 0.16                           | 82                 | 75                 |
| 08 Jun 2003                                      | 19                     | 0.90                | 0.50                      | 0.24                           | 88                 | 73                 |
| 09 Jun 2003                                      | 20                     | 0.08                | 0.60                      | T                              | 88                 | 73                 |
| 10 Jun 2003                                      | 21                     | 0.11                | 0.00                      | T                              | 88                 | 74                 |
| 11 Jun 2003                                      | 22                     | 0.11                | 0.00                      | 0.14                           | 88                 | 75                 |
| 12 Jun 2003                                      | 23                     | 0.11                | 0.00                      | 0.11                           | 87                 | 74                 |
| 13 Jun 2003                                      | 24                     | 0.11                | 0.00                      | 0.20                           | 87                 | 74                 |
| 14 Jun 2003                                      | 25                     | 0.00                | 1.25                      | 0.50                           | 89                 | 69                 |
| 15 Jun 2003                                      | 26                     | 0.11                | 0.00                      | 0.37                           | 87                 | 74                 |
| 16 Jun 2003                                      | 27                     | 0.11                | 0.30                      | T                              | 89                 | 74                 |
| 17 Jun 2003                                      | 28                     | 0.00                | 1.80                      | 0.15                           | 78                 | 72                 |
| 18 Jun 2003                                      | 29                     | 0.12                | 0.20                      | 1.01                           | 85                 | 73                 |
| 19 Jun 2003                                      | 30                     | 0.11                | 0.10                      | 1.29                           | 86                 | 75                 |
| 20 Jun 2003                                      | 31                     | 0.00                | 1.00                      | 0.73                           | 89                 | 74                 |
| 21 Jun 2003                                      | 32                     | 0.11                | 0.30                      | 0.31                           | 87                 | 73                 |
| 22 Jun 2003                                      | 33                     | 0.11                | 0.30                      | 0.20                           | 86                 | 74                 |
| 23 Jun 2003                                      | 34                     | 0.13                | 0.10                      | 0.00                           | 87                 | 74                 |
| 24 Jun 2003                                      | 35                     | 0.14                | 0.00                      | 0.02                           | 87                 | 77                 |
| 25 Jun 2003                                      | 36                     | 0.14                | 0.00                      | T                              | 88                 | 74                 |
| 26 Jun 2003                                      | 37                     | 0.14                | 0.00                      | 0.00                           | 87                 | 71                 |
| 27 Jun 2003                                      | 38                     | 0.14                | 0.00                      | T                              | 87                 | 72                 |
| 28 Jun 2003                                      | 39                     | 0.00                | 1.00                      | 0.16                           | 81                 | 73                 |
| 29 Jun 2003                                      | 40                     | 0.00                | 0.50                      | 0.45                           | 83                 | 73                 |
| 30 Jun 2003                                      | 41                     | 0.00                | 4.20                      | 5.26                           | 80                 | 70                 |
| Total Rainfall                                   |                        | 3.60                | 13.85                     | 14.49                          |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 6.22                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .



Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Jul 2003                                      | 42                     | 0.00                | 4.20                      | 1.44                           | 85                 | 74                 |
| 02 Jul 2003                                      | 43                     | 0.00                | 1.70                      | 0.33                           | 83                 | 75                 |
| 03 Jul 2003                                      | 44                     | 0.14                | 0.00                      | 0.24                           | 86                 | 73                 |
| 04 Jul 2003                                      | 45                     | 0.90                | 0.50                      | 0.49                           | 81                 | 71                 |
| 05 Jul 2003                                      | 46                     | 0.00                | 1.50                      | 2.29                           | 79                 | 70                 |
| 06 Jul 2003                                      | 47                     | 0.14                | 0.00                      | T                              | 88                 | 72                 |
| 07 Jul 2003                                      | 48                     | 0.14                | 0.00                      | 0.01                           | 87                 | 75                 |
| 08 Jul 2003                                      | 49                     | 0.14                | 0.00                      | 0.00                           | 87                 | 76                 |
| 09 Jul 2003                                      | 50                     | 0.14                | 0.00                      | 0.00                           | 89                 | 75                 |
| 10 Jul 2003                                      | 51                     | 0.60                | 0.80                      | 0.00                           | 91                 | 77                 |
| 11 Jul 2003                                      | 52                     | 0.14                | 0.00                      | T                              | 91                 | 76                 |
| 12 Jul 2003                                      | 53                     | 0.00                | 1.00                      | 0.22                           | 89                 | 72                 |
| 13 Jul 2003                                      | 54                     | 0.14                | 0.00                      | 0.00                           | 87                 | 73                 |
| 14 Jul 2003                                      | 55                     | 0.10                | 0.40                      | 0.05                           | 82                 | 74                 |
| 15 Jul 2003                                      | 56                     | 0.14                | 0.00                      | 0.00                           | 86                 | 74                 |
| 16 Jul 2003                                      | 57                     | 0.14                | 0.00                      | 0.00                           | 90                 | 72                 |
| 17 Jul 2003                                      | 58                     | 0.12                | 0.20                      | 0.63                           | 92                 | 71                 |
| 18 Jul 2003                                      | 59                     | 0.14                | 0.00                      | 0.00                           | 89                 | 72                 |
| 19 Jul 2003                                      | 60                     | 0.13                | 0.10                      | 1.42                           | 89                 | 71                 |
| 20 Jul 2003                                      | 61                     | 0.14                | 0.00                      | 0.04                           | 88                 | 71                 |
| 21 Jul 2003                                      | 62                     | 0.90                | 0.50                      | 0.49                           | 82                 | 72                 |
| 22 Jul 2003                                      | 63                     | 0.20                | 1.20                      | 1.11                           | 89                 | 71                 |
| 23 Jul 2003                                      | 64                     | 0.00                | 1.25                      | 0.33                           | 80                 | 72                 |
| 24 Jul 2003                                      | 65                     | 0.70                | 0.75                      | 0.40                           | 86                 | 73                 |
| 25 Jul 2003                                      | 66                     | 0.14                | 0.00                      | 0.00                           | 86                 | 72                 |
| 26 Jul 2003                                      | 67                     | 0.14                | 0.00                      | 0.01                           | 86                 | 73                 |
| 27 Jul 2003                                      | 68                     | 0.14                | 0.00                      | 0.01                           | 88                 | 74                 |
| 28 Jul 2003                                      | 69                     | 0.14                | 0.00                      | 0.01                           | 89                 | 75                 |
| 29 Jul 2003                                      | 70                     | 0.90                | 0.50                      | 0.29                           | 87                 | 71                 |
| 30 Jul 2003                                      | 71                     | 0.14                | 0.00                      | 0.01                           | 88                 | 71                 |
| 31 Jul 2003                                      | 72                     | 0.14                | 0.50                      | 0.16                           | 89                 | 74                 |
| Total Rainfall                                   |                        | 6.93                | 15.10                     | 9.98                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 8.28                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL.



Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Aug 2003                                      | 73                     | 0.14                | 0.00                      | 1.11                           | 86                 | 73                 |
| 02 Aug 2003                                      | 74                     | 0.14                | 0.00                      | 0.29                           | 86                 | 73                 |
| 03 Aug 2003                                      | 75                     | 0.60                | 0.80                      | 0.02                           | 88                 | 75                 |
| 04 Aug 2003                                      | 76                     | 0.13                | 0.10                      | 0.18                           | 90                 | 75                 |
| 05 Aug 2003                                      | 77                     | 0.60                | 0.80                      | 0.01                           | 89                 | 77                 |
| 06 Aug 2003                                      | 78                     | 0.90                | 0.50                      | 0.56                           | 87                 | 74                 |
| 07 Aug 2003                                      | 79                     | 0.80                | 0.60                      | 0.21                           | 85                 | 74                 |
| 08 Aug 2003                                      | 80                     | 0.80                | 0.60                      | 0.00                           | 89                 | 73                 |
| 09 Aug 2003                                      | 81                     | 0.14                | 0.00                      | 0.00                           | 91                 | 72                 |
| 10 Aug 2003                                      | 82                     | 0.14                | 0.00                      | 0.00                           | 89                 | 73                 |
| 11 Aug 2003                                      | 83                     | 0.14                | 0.00                      | 0.01                           | 87                 | 73                 |
| 12 Aug 2003                                      | 84                     | 0.60                | 0.80                      | 0.80                           | 80                 | 72                 |
| 13 Aug 2003                                      | 85                     | 0.90                | 0.50                      | 1.00                           | 89                 | 73                 |
| 14 Aug 2003                                      | 86                     | 0.14                | 0.00                      | 0.00                           | 93                 | 73                 |
| 15 Aug 2003                                      | 87                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.01                           | 91                 | 76                 |
| 16 Aug 2003                                      | 88                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.05                           | 90                 | 76                 |
| 17 Aug 2003                                      | 89                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.67                           | 88                 | 76                 |
| 18 Aug 2003                                      | 90                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.31                           | 89                 | 75                 |
| 19 Aug 2003                                      | 91                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 90                 | 75                 |
| 20 Aug 2003                                      | 92                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.03                           | 88                 | 76                 |
| 21 Aug 2003                                      | 93                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.12                           | 84                 | 75                 |
| 22 Aug 2003                                      | 94                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.23                           | 86                 | 74                 |
| 23 Aug 2003                                      | 95                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.10                           | 89                 | 74                 |
| 24 Aug 2003                                      | 96                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 89                 | 74                 |
| 25 Aug 2003                                      | 97                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 91                 | 76                 |
| 26 Aug 2003                                      | 98                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 90                 | 75                 |
| 27 Aug 2003                                      | 99                     | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 89                 | 76                 |
| 28 Aug 2003                                      | 100                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 90                 | 76                 |
| 29 Aug 2003                                      | 101                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.07                           | 90                 | 76                 |
| 30 Aug 2003                                      | 102                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.12                           | 90                 | 75                 |
| 31 Aug 2003                                      | 103                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 89                 | 75                 |
| Total Rainfall                                   |                        | 6.17<br>(8/1-8/14)  | 4.70<br>(8/1-8/14)        | 5.90                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 6.10                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL.<sup>b</sup> Data not available.





Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Sep 2003                                      | 104                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 90                 | 76                 |
| 02 Sep 2003                                      | 105                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 91                 | 77                 |
| 03 Sep 2003                                      | 106                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 89                 | 75                 |
| 04 Sep 2003                                      | 107                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.35                           | 94                 | 74                 |
| 05 Sep 2003                                      | 108                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.01                           | 91                 | 73                 |
| 06 Sep 2003                                      | 109                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.05                           | 80                 | 73                 |
| 07 Sep 2003                                      | 110                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 83                 | 70                 |
| 08 Sep 2003                                      | 111                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 86                 | 70                 |
| 09 Sep 2003                                      | 112                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 85                 | 71                 |
| 10 Sep 2003                                      | 113                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 88                 | 73                 |
| 11 Sep 2003                                      | 114                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 87                 | 70                 |
| 12 Sep 2003                                      | 115                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 85                 | 68                 |
| 13 Sep 2003                                      | 116                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.78                           | 86                 | 72                 |
| 14 Sep 2003                                      | 117                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.18                           | 85                 | 72                 |
| 15 Sep 2003                                      | 118                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 88                 | 70                 |
| 16 Sep 2003                                      | 119                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 87                 | 67                 |
| 17 Sep 2003                                      | 120                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 88                 | 68                 |
| 18 Sep 2003                                      | 121                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 88                 | 68                 |
| 19 Sep 2003                                      | 122                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 87                 | 69                 |
| 20 Sep 2003                                      | 123                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 89                 | 71                 |
| 21 Sep 2003                                      | 124                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.62                           | 83                 | 74                 |
| 22 Sep 2003                                      | 125                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.72                           | 82                 | 69                 |
| 23 Sep 2003                                      | 126                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 87                 | 66                 |
| 24 Sep 2003                                      | 127                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 87                 | 66                 |
| 25 Sep 2003                                      | 128                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.15                           | 84                 | 71                 |
| 26 Sep 2003                                      | 129                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 84                 | 70                 |
| 27 Sep 2003                                      | 130                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 85                 | 72                 |
| 28 Sep 2003                                      | 131                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 83                 | 62                 |
| 29 Sep 2003                                      | 132                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 75                 | 56                 |
| 30 Sep 2003                                      | 133                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 79                 | 56                 |
| Total Rainfall                                   |                        | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 2.86                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 4.15                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .<sup>b</sup> Data not available.



Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Oct 2003                                      | 134                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 82                 | 61                 |
| 02 Oct 2003                                      | 135                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 76                 | 55                 |
| 03 Oct 2003                                      | 136                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 77                 | 55                 |
| 04 Oct 2003                                      | 137                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 81                 | 63                 |
| 05 Oct 2003                                      | 138                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 82                 | 63                 |
| 06 Oct 2003                                      | 139                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 82                 | 66                 |
| 07 Oct 2003                                      | 140                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 83                 | 66                 |
| 08 Oct 2003                                      | 141                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 85                 | 68                 |
| 09 Oct 2003                                      | 142                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.01                           | 79                 | 66                 |
| 10 Oct 2003                                      | 143                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 1.25                           | 76                 | 69                 |
| 11 Oct 2003                                      | 144                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.29                           | 71                 | 68                 |
| 12 Oct 2003                                      | 145                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 78                 | 68                 |
| 13 Oct 2003                                      | 146                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 81                 | 69                 |
| 14 Oct 2003                                      | 147                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | T                              | 86                 | 62                 |
| 15 Oct 2003                                      | 148                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 76                 | 52                 |
| 16 Oct 2003                                      | 149                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 75                 | 50                 |
| 17 Oct 2003                                      | 150                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 79                 | 54                 |
| 18 Oct 2003                                      | 151                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 77                 | 58                 |
| 19 Oct 2003                                      | 152                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 80                 | 54                 |
| 20 Oct 2003                                      | 153                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 83                 | 53                 |
| 21 Oct 2003                                      | 154                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 86                 | 58                 |
| 22 Oct 2003                                      | 155                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 88                 | 64                 |
| 23 Oct 2003                                      | 156                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 81                 | 61                 |
| 24 Oct 2003                                      | 157                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 82                 | 58                 |
| 25 Oct 2003                                      | 158                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 80                 | 64                 |
| 26 Oct 2003                                      | 159                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.89                           | 79                 | 67                 |
| 27 Oct 2003                                      | 160                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.13                           | 70                 | 57                 |
| 28 Oct 2003                                      | 161                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.01                           | 67                 | 51                 |
| 29 Oct 2003                                      | 162                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 76                 | 50                 |
| 30 Oct 2003                                      | 163                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 77                 | 56                 |
| 31 Oct 2003                                      | 164                    | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 0.00                           | 79                 | 61                 |
| Total Rainfall                                   |                        | ---- <sup>b</sup>   | ---- <sup>b</sup>         | 2.58                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 4.38                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .<sup>b</sup> Data not available.



Table D.1. 2003 Daily Climate Data (continued)

| Date                                             | Days After Application | Irrigation (inches) | On-Site Rainfall (inches) | NOAA Weather Data <sup>a</sup> |                    |                    |
|--------------------------------------------------|------------------------|---------------------|---------------------------|--------------------------------|--------------------|--------------------|
|                                                  |                        |                     |                           | Rainfall (inches)              | Maximum Temp. (°F) | Minimum Temp. (°F) |
| 01 Nov 2003                                      | 165                    | 0.14                | 0.00                      | 0.00                           | 82                 | 63                 |
| 02 Nov 2003                                      | 166                    | 0.00                | 0.00                      | 0.00                           | 84                 | 62                 |
| 03 Nov 2003                                      | 167                    | 0.00                | 0.00                      | T                              | 84                 | 58                 |
| 04 Nov 2003                                      | 168                    | 0.14                | 0.00                      | 0.30                           | 79                 | 70                 |
| 05 Nov 2003                                      | 169                    | 0.00                | 0.00                      | T                              | 82                 | 70                 |
| 06 Nov 2003                                      | 170                    | 0.00                | 0.00                      | 0.00                           | 86                 | 68                 |
| 07 Nov 2003                                      | 171                    | 0.14                | 0.00                      | 0.00                           | 80                 | 63                 |
| 08 Nov 2003                                      | 172                    | 0.00                | 0.00                      | 0.00                           | 77                 | 58                 |
| 09 Nov 2003                                      | 173                    | 0.00                | 0.00                      | 0.00                           | 68                 | 58                 |
| 10 Nov 2003                                      | 174                    | 0.14                | 0.00                      | 0.00                           | 74                 | 53                 |
| 11 Nov 2003                                      | 175                    | 0.00                | 0.00                      | 0.00                           | 77                 | 58                 |
| 12 Nov 2003                                      | 176                    | 0.00                | 0.00                      | T                              | 82                 | 59                 |
| 13 Nov 2003                                      | 177                    | 0.14                | 0.00                      | 0.00                           | 71                 | 49                 |
| 14 Nov 2003                                      | 178                    | 0.00                | 0.00                      | 0.00                           | 66                 | 41                 |
| 15 Nov 2003                                      | 179                    | 0.00                | 0.00                      | 0.00                           | 76                 | 47                 |
| 16 Nov 2003                                      | 180                    | 0.14                | 0.00                      | T                              | 82                 | 58                 |
| 17 Nov 2003                                      | 181                    | 0.00                | 0.00                      | T                              | 77                 | 65                 |
| 18 Nov 2003                                      | 182                    | 0.00                | 0.00                      | 1.00                           | 79                 | 66                 |
| 19 Nov 2003                                      | 183                    | 0.00                | 1.75                      | 0.00                           | 68                 | 48                 |
| 20 Nov 2003                                      | 184                    | 0.00                | 0.00                      | 0.00                           | 75                 | 46                 |
| 21 Nov 2003                                      | 185 <sup>b</sup>       | 0.00                | 0.00                      | 0.00                           | 74                 | 47                 |
| 22 Nov 2003                                      | 186                    | 0.14                | 0.00                      | 0.00                           | 74                 | 50                 |
| 23 Nov 2003                                      | 187                    | 0.00                | 0.00                      | 0.26                           | 78                 | 60                 |
| 24 Nov 2003                                      | 188                    | 0.00                | 0.62                      | 0.43                           | 70                 | 38                 |
| 25 Nov 2003                                      | 189                    | 0.00                | 0.00                      | 0.00                           | 55                 | 33                 |
| 26 Nov 2003                                      | 190                    | 0.00                | 0.00                      | 0.00                           | 68                 | 39                 |
| 27 Nov 2003                                      | 191                    | 0.00                | 0.00                      | 0.55                           | 81                 | 63                 |
| 28 Nov 2003                                      | 192                    | 0.00                | 1.6                       | 0.10                           | 69                 | 41                 |
| 29 Nov 2003                                      | 193                    | 0.00                | 0.00                      | 0.00                           | 55                 | 33                 |
| 30 Nov 2003                                      | 194                    | 0.00                | 0.00                      | 0.00                           | 60                 | 32                 |
| Total Rainfall                                   |                        | 0.98                | 3.97                      | 2.64                           |                    |                    |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup> |                        |                     | 3.91                      |                                |                    |                    |

<sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .<sup>b</sup> Field Phase Complete



Table D.2. 2004 Daily Climate Data

| Date                                                                                                                                                 | DAA | Air Temperature (°C) |      |      | Relative Humidity (%) |      |      | Estuary Temperature (°C) |      |      | On-site Rain.     | NOAA Rain. | Irrig. |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|------|------|-----------------------|------|------|--------------------------|------|------|-------------------|------------|--------|
|                                                                                                                                                      |     | Min                  | Max  | Avg  | Min                   | Max  | Avg  | Min                      | Max  | Avg  | (in.)             | (in.)      | (in.)  |
| 04/01/04                                                                                                                                             | -20 | 9.8                  | 26.6 | 17.1 | 16.8                  | 62.3 | 40.4 | 9.3                      | 26.5 | 16.5 | 0.01              | 0.00       |        |
| 04/02/04                                                                                                                                             | -19 | 8.0                  | 17.1 | 12.9 | 33.1                  | 74.3 | 58.0 | 7.7                      | 23.7 | 16.6 | 0.03              | 0.00       |        |
| 04/03/04                                                                                                                                             | -18 | 11.2                 | 23.9 | 16.2 | 20.4                  | 84.8 | 52.8 | 19.8                     | 23.2 | 21.4 | 0.01              | 0.00       |        |
| 04/04/04                                                                                                                                             | -17 | 11.8                 | 23.9 | 16.8 | 21.5                  | 81.5 | 49.6 | 20.8                     | 24.3 | 22.2 | 0.02              | 0.00       |        |
| 04/05/04                                                                                                                                             | -16 | 12.6                 | 26.3 | 17.5 | 18.5                  | 70.1 | 48.6 | 20.6                     | 25.3 | 22.4 | 0.02              | 0.00       |        |
| 04/06/04                                                                                                                                             | -15 | 11.4                 | 18.3 | 15.0 | 27.5                  | 76.9 | 46.5 | 18.5                     | 23.1 | 20.8 | 0.00              | 0.00       |        |
| 04/07/04                                                                                                                                             | -14 | 12.7                 | 20.5 | 17.3 | 35.4                  | 78.1 | 64.4 | 18.4                     | 23.9 | 20.8 | 0.48              | 0.94       |        |
| 04/08/04                                                                                                                                             | -13 | 17.5                 | 21.6 | 18.5 | 69.1                  | 90.8 | 85.7 | 19.3                     | 21.0 | 20.0 | 0.00              | 0.00       |        |
| 04/09/04                                                                                                                                             | -12 | 18.4                 | 22.1 | 20.2 | 73.0                  | 90.7 | 82.5 | 19.6                     | 22.9 | 21.2 | 0.06              | 0.00       |        |
| 04/10/04                                                                                                                                             | -11 | 14.9                 | 23.4 | 19.3 | 53.1                  | 90.2 | 75.2 | 20.6                     | 24.0 | 22.2 | 0.00              | 0.00       |        |
| 04/11/04                                                                                                                                             | -10 | 15.3                 | 23.4 | 19.8 | 58.5                  | 91.9 | 78.6 | 20.8                     | 26.2 | 23.4 | 0.31              | 0.24       |        |
| 04/12/04                                                                                                                                             | -9  | 16.9                 | 23.0 | 19.1 | 55.3                  | 90.9 | 81.3 | 20.0                     | 23.2 | 21.3 | 0.01              | 0.01       |        |
| 04/13/04                                                                                                                                             | -8  | 16.2                 | 21.6 | 19.5 | 64.8                  | 90.3 | 81.5 | 20.0                     | 22.4 | 21.3 | 0.00              | 0.00       |        |
| 04/14/04                                                                                                                                             | -7  | 10.1                 | 16.2 | 11.7 | 47.2                  | 74.8 | 59.8 | 16.1                     | 22.2 | 18.7 | 0.00              | 0.00       |        |
| 04/15/04                                                                                                                                             | -6  | 10.3                 | 21.9 | 15.1 | 21.6                  | 62.1 | 41.5 | 14.0                     | 18.8 | 16.5 | 0.00              | 0.00       |        |
| 04/16/04                                                                                                                                             | -5  | 9.8                  | 20.9 | 15.2 | 27.0                  | 83.4 | 54.5 | 17.0                     | 25.1 | 20.0 | 0.00              | 0.00       |        |
| 04/17/04                                                                                                                                             | -4  | 11.0                 | 21.2 | 17.2 | 40.6                  | 90.7 | 70.4 | 19.9                     | 28.1 | 23.2 | 0.02              | 0.00       |        |
| 04/18/04                                                                                                                                             | -3  | 13.2                 | 20.9 | 17.3 | 65.6                  | 91.6 | 80.8 | 20.6                     | 28.7 | 24.0 | 0.00              | 0.00       |        |
| 04/19/04                                                                                                                                             | -2  | 13.7                 | 21.7 | 17.7 | 68.1                  | 93.1 | 84.5 | 21.1                     | 28.8 | 24.6 | 0.01 <sup>b</sup> | 0.00       |        |
| 04/20/04                                                                                                                                             | -1  | 14.3                 | 21.3 | 18.5 | 58.1                  | 93.1 | 81.6 | 21.8                     | 28.1 | 24.4 | 0.01 <sup>b</sup> | 0.00       | 0.14   |
| 04/21/04                                                                                                                                             | 0   | 18.6                 | 21.0 | 19.7 | 62.0                  | 87.4 | 78.9 | 21.6                     | 26.8 | 23.5 | 0.00              | 0.00       |        |
| 04/22/04                                                                                                                                             | 1   | 19.8                 | 22.1 | 20.7 | 72.3                  | 89.1 | 83.5 | 21.0                     | 25.0 | 22.7 | 0.01              | T          |        |
| 04/23/04                                                                                                                                             | 2   | 20.1                 | 22.6 | 21.1 | 76.6                  | 90.2 | 83.6 | 21.2                     | 25.9 | 23.1 | 0.08              | 0.00       | 0.14   |
| 04/24/04                                                                                                                                             | 3   | 19.5                 | 22.6 | 20.9 | 73.3                  | 90.4 | 83.6 | 21.4                     | 26.6 | 23.8 | 0.05              | 0.00       |        |
| 04/25/04                                                                                                                                             | 4   | 17.8                 | 23.4 | 21.2 | 73.5                  | 92.6 | 84.8 | 22.7                     | 27.8 | 24.8 | 0.00              | 0.00       |        |
| 04/26/04                                                                                                                                             | 5   | 20.5                 | 23.8 | 22.0 | 71.0                  | 91.2 | 82.6 | 22.9                     | 27.6 | 25.1 | 0.36              | 0.53       | 0.14   |
| 04/27/04                                                                                                                                             | 6   | 19.0                 | 24.5 | 21.4 | 68.2                  | 92.2 | 79.5 | 23.4                     | 26.9 | 25.0 | 0.12              | 0.00       |        |
| 04/28/04                                                                                                                                             | 7   | 15.7                 | 26.4 | 20.5 | 28.2                  | 70.4 | 50.2 | 22.0                     | 26.8 | 24.3 | 0.00              | 0.00       |        |
| 04/29/04                                                                                                                                             | 8   | 15.6                 | 22.3 | 19.6 | 30.7                  | 70.7 | 51.8 | 21.0                     | 25.5 | 23.4 | 0.21              | 0.70       | 0.14   |
| 04/30/04                                                                                                                                             | 9   | 16.2                 | 21.8 | 20.4 | 62.4                  | 89.9 | 79.0 | 19.0                     | 22.9 | 22.0 | 0.44              | 0.45       |        |
| Total                                                                                                                                                |     |                      |      |      |                       |      |      |                          |      |      | 2.26              | 2.87       | 0.56   |
| Cumulative Rainfall and Irrigation                                                                                                                   |     |                      |      |      |                       |      |      |                          |      |      | 2.82              |            |        |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>                                                                                                     |     |                      |      |      |                       |      |      |                          |      |      | 3.92              |            |        |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .                                                                                        |     |                      |      |      |                       |      |      |                          |      |      |                   |            |        |
| <sup>b</sup> Rain gauge calibration water input values of 0.89 and 0.96 inches were removed from data totals on 04/19/04 and 04/20/04, respectively. |     |                      |      |      |                       |      |      |                          |      |      |                   |            |        |



Table D.2. 2004 Daily Climate Data (continued)

| Date                                                          | DAA | Air Temperature (°C) |      |      | Relative Humidity (%) |      |      | Estuary Temperature (°C) |      |      | On-site Rain. | NOAA Rain. | Irrig. |
|---------------------------------------------------------------|-----|----------------------|------|------|-----------------------|------|------|--------------------------|------|------|---------------|------------|--------|
|                                                               |     | Min                  | Max  | Avg  | Min                   | Max  | Avg  | Min                      | Max  | Avg  | (in.)         | (in.)      | (in.)  |
| 05/01/04                                                      | 10  | 18.2                 | 21.1 | 19.8 | 83.1                  | 91.8 | 89.2 | 20.7                     | 22.3 | 21.8 | 0.00          | 0.00       |        |
| 05/02/04                                                      | 11  | 19.5                 | 23.2 | 21.7 | 86.7                  | 93.2 | 90.9 | 20.9                     | 26.9 | 23.5 | 0.24          | 0.44       |        |
| 05/03/04                                                      | 12  | 15.6                 | 22.8 | 20.2 | 69.2                  | 91.2 | 80.8 | 22.8                     | 25.0 | 24.0 | 0.04          | 0.00       |        |
| 05/04/04                                                      | 13  | 13.5                 | 24.3 | 18.1 | 24.2                  | 80.4 | 54.9 | 20.7                     | 24.3 | 22.3 | 0.00          | 0.00       | 0.14   |
| 05/05/04                                                      | 14  | 12.5                 | 21.5 | 16.8 | 28.9                  | 75.6 | 58.8 | 18.3                     | 25.7 | 21.2 | 0.01          | 0.00       |        |
| 05/06/04                                                      | 15  | 13.9                 | 23.3 | 19.5 | 40.4                  | 88.8 | 71.1 | 19.5                     | 27.1 | 22.7 | 0.04          | 0.00       |        |
| 05/07/04                                                      | 16  | 16.4                 | 25.5 | 21.3 | 36.7                  | 91.3 | 71.6 | 20.8                     | 27.9 | 23.8 | 0.05          | 0.00       | 0.14   |
| 05/08/04                                                      | 17  | 16.9                 | 25.9 | 21.7 | 43.9                  | 90.3 | 71.2 | 21.5                     | 28.5 | 24.6 | 0.02          | 0.00       |        |
| 05/09/04                                                      | 18  | 18.8                 | 30.3 | 23.3 | 33.8                  | 87.0 | 67.7 | 23.6                     | 27.5 | 25.3 | 0.00          | 0.00       |        |
| 05/10/04                                                      | 19  | 20.8                 | 25.4 | 23.4 | 59.1                  | 88.5 | 75.7 | 23.9                     | 29.3 | 26.2 | 0.01          | 0.00       | 0.14   |
| 05/11/04                                                      | 20  | 19.1                 | 24.6 | 22.7 | 66.6                  | 89.9 | 80.9 | 23.1                     | 28.8 | 26.0 | 0.00          | 0.00       |        |
| 05/12/04                                                      | 21  | 20.5                 | 24.4 | 22.8 | 64.7                  | 89.7 | 80.3 | 24.0                     | 28.9 | 26.5 | 0.00          | 0.00       |        |
| 05/13/04                                                      | 22  | 22.1                 | 24.6 | 23.3 | 76.6                  | 89.4 | 84.1 | 25.1                     | 27.8 | 26.5 | 0.00          | T          | 0.14   |
| 05/14/04                                                      | 23  | 22.4                 | 24.5 | 23.3 | 78.5                  | 90.2 | 86.3 | 25.3                     | 27.5 | 26.3 | 0.00          | 0.00       |        |
| 05/15/04                                                      | 24  | 22.0                 | 24.5 | 23.2 | 75.8                  | 87.5 | 81.8 | 24.6                     | 28.6 | 26.4 | 0.07          | 0.00       |        |
| 05/16/04                                                      | 25  | 21.0                 | 25.2 | 23.1 | 76.8                  | 88.1 | 83.5 | 24.6                     | 28.1 | 26.5 | 0.00          | 0.00       | 0.14   |
| 05/17/04                                                      | 26  | 21.1                 | 25.3 | 23.1 | 74.8                  | 88.6 | 82.7 | 25.3                     | 28.9 | 26.8 | 0.02          | 0.00       |        |
| 05/18/04                                                      | 27  | 19.9                 | 25.1 | 23.2 | 75.8                  | 90.1 | 83.2 | 24.7                     | 29.2 | 26.9 | 0.03          | 0.00       |        |
| 05/19/04                                                      | 28  | 20.0                 | 25.4 | 23.4 | 76.0                  | 91.6 | 84.8 | 26.0                     | 30.1 | 27.7 | 0.01          | 0.00       | 0.14   |
| 05/20/04                                                      | 29  | 21.2                 | 25.3 | 23.7 | 67.2                  | 91.2 | 80.3 | 26.5                     | 31.2 | 28.4 | 0.02          | T          |        |
| 05/21/04                                                      | 30  | 19.9                 | 26.2 | 23.8 | 63.7                  | 91.2 | 78.5 | 26.1                     | 30.5 | 28.1 | 0.01          | 0.00       |        |
| 05/22/04                                                      | 31  | 21.4                 | 28.0 | 24.9 | 44.3                  | 90.6 | 73.7 | 26.2                     | 30.8 | 28.1 | 0.00          | 0.00       | 0.14   |
| 05/23/04                                                      | 32  | 21.8                 | 26.5 | 24.8 | 64.1                  | 84.4 | 74.2 | 25.4                     | 30.8 | 27.7 | 0.00          | T          |        |
| 05/24/04                                                      | 33  | 24.0                 | 26.6 | 25.3 | 66.6                  | 80.2 | 75.6 | 24.9                     | 29.9 | 27.2 | 0.00          | 0.00       |        |
| 05/25/04                                                      | 34  | 24.3                 | 27.0 | 25.6 | 64.5                  | 78.3 | 72.7 | 25.4                     | 30.6 | 27.5 | 0.00          | 0.00       | 0.14   |
| 05/26/04                                                      | 35  | 23.1                 | 27.5 | 25.6 | 59.6                  | 76.2 | 69.0 | 25.5                     | 30.6 | 27.9 | 0.00          | 0.00       |        |
| 05/27/04                                                      | 36  | 24.2                 | 27.8 | 25.9 | 57.1                  | 76.1 | 68.8 | 25.7                     | 30.7 | 28.2 | 0.00          | 0.00       |        |
| 05/28/04                                                      | 37  | 24.4                 | 27.5 | 26.0 | 64.3                  | 78.9 | 72.7 | 26.0                     | 31.3 | 28.4 | 0.00          | 0.00       | 0.14   |
| 05/29/04                                                      | 38  | 23.6                 | 27.6 | 25.7 | 62.7                  | 78.7 | 72.9 | 26.0                     | 31.3 | 28.4 | 0.00          | T          |        |
| 05/30/04                                                      | 39  | 24.0                 | 27.7 | 26.1 | 73.8                  | 86.9 | 79.6 | 26.5                     | 32.3 | 28.8 | 0.00          | T          |        |
| 05/31/04                                                      | 40  | 25.7                 | 28.2 | 27.0 | 77.3                  | 87.0 | 82.3 | 27.4                     | 32.6 | 29.6 | 0.55          | 0.48       |        |
| Total                                                         |     |                      |      |      |                       |      |      |                          |      |      | 1.12          | 0.92       | 1.26   |
| Cumulative Rainfall and Irrigation                            |     |                      |      |      |                       |      |      |                          |      |      | 2.38          |            |        |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>              |     |                      |      |      |                       |      |      |                          |      |      | 4.30          |            |        |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL . |     |                      |      |      |                       |      |      |                          |      |      |               |            |        |



Table D.2. 2004 Daily Climate Data (continued)

| Date                                                          | DAA | Air Temperature (°C) |      |      | Relative Humidity (%) |      |      | Estuary Temperature (°C) |      |      | On-site Rain. (in.) | NOAA Rain. (in.) | Irrig. (in.) |
|---------------------------------------------------------------|-----|----------------------|------|------|-----------------------|------|------|--------------------------|------|------|---------------------|------------------|--------------|
|                                                               |     | Min                  | Max  | Avg  | Min                   | Max  | Avg  | Min                      | Max  | Avg  |                     |                  |              |
| 06/01/04                                                      | 41  | 23.0                 | 28.4 | 26.3 | 69.5                  | 88.9 | 81.3 | 26.9                     | 32.3 | 28.6 | 0.97                | 1.58             |              |
| 06/02/04                                                      | 42  | 20.0                 | 27.1 | 23.9 | 63.2                  | 89.8 | 82.4 | 24.9                     | 27.9 | 26.9 | 0.16                | 0.20             |              |
| 06/03/04                                                      | 43  | 20.8                 | 26.3 | 23.9 | 71.1                  | 87.9 | 80.1 | 24.6                     | 27.3 | 25.5 | 0.37                | 0.23             |              |
| 06/04/04                                                      | 44  | 19.8                 | 26.9 | 24.4 | 69.2                  | 90.8 | 80.9 | 24.4                     | 27.0 | 25.5 | 0.03                | 0.00             |              |
| 06/05/04                                                      | 45  | 23.0                 | 27.3 | 25.0 | 61.3                  | 88.2 | 76.9 | 24.8                     | 29.6 | 26.8 | 0.07                | T                |              |
| 06/06/04                                                      | 46  | 21.5                 | 26.7 | 24.5 | 61.0                  | 86.6 | 77.7 | 25.8                     | 29.9 | 27.7 | 0.18                | 0.13             |              |
| 06/07/04                                                      | 47  | 22.6                 | 26.8 | 25.0 | 63.9                  | 88.6 | 79.1 | 26.2                     | 29.7 | 28.3 | 0.02                | 0.01             |              |
| 06/08/04                                                      | 48  | 22.2                 | 27.8 | 25.3 | 67.0                  | 90.4 | 81.2 | 25.8                     | 31.1 | 28.5 | 0.04                | 0.02             |              |
| 06/09/04                                                      | 49  | 23.0                 | 27.9 | 26.2 | 69.6                  | 90.8 | 80.5 | 26.6                     | 32.1 | 29.3 | 0.00                | T                |              |
| 06/10/04                                                      | 50  | 23.1                 | 28.8 | 26.4 | 59.4                  | 91.0 | 75.9 | 27.7                     | 33.3 | 30.5 | 0.00                | 0.24             |              |
| 06/11/04                                                      | 51  | 23.7                 | 29.0 | 27.0 | 57.9                  | 87.7 | 73.1 | 28.4                     | 34.3 | 31.6 | 0.00                | 0.03             |              |
| 06/12/04                                                      | 52  | 26.1                 | 29.2 | 27.7 | 66.8                  | 79.4 | 73.7 | 29.4                     | 33.2 | 30.8 | 0.00                | T                |              |
| 06/13/04                                                      | 53  | 26.0                 | 29.6 | 28.0 | 59.9                  | 83.4 | 73.6 | 28.7                     | 33.9 | 30.6 | 0.15                | 0.84             |              |
| 06/14/04                                                      | 54  | 23.9                 | 28.8 | 27.1 | 66.2                  | 89.4 | 76.1 | 29.1                     | 33.2 | 30.7 | 2.24                | 3.09             |              |
| 06/15/04                                                      | 55  | 22.0                 | 27.1 | 24.3 | 75.3                  | 91.5 | 86.1 | 26.0                     | 29.7 | 27.6 | 0.30                | 0.22             |              |
| 06/16/04                                                      | 56  | 23.2                 | 28.6 | 26.7 | 76.8                  | 89.3 | 82.7 | 25.7                     | 30.2 | 27.0 | 0.00                | T                |              |
| 06/17/04                                                      | 57  | 26.8                 | 29.4 | 27.9 | 73.2                  | 86.0 | 80.8 | 27.2                     | 32.4 | 28.6 | 0.02                | T                |              |
| 06/18/04                                                      | 58  | 25.3                 | 29.5 | 27.8 | 70.3                  | 88.4 | 79.0 | 27.7                     | 32.0 | 30.0 | 0.03                | T                |              |
| 06/19/04                                                      | 59  | 25.0                 | 30.4 | 28.1 | 58.4                  | 89.6 | 75.8 | 28.8                     | 34.0 | 31.5 | 0.01                | T                |              |
| 06/20/04                                                      | 60  | 24.1                 | 30.9 | 27.9 | 61.0                  | 87.1 | 76.5 | 28.6                     | 34.4 | 32.1 | 0.61                | 2.40             |              |
| 06/21/04                                                      | 61  | 21.8                 | 31.7 | 26.6 | 45.8                  | 90.0 | 79.2 | 30.0                     | 32.3 | 31.1 | 0.10                | T                |              |
| 06/22/04                                                      | 62  | 22.5                 | 29.9 | 26.7 | 63.7                  | 91.7 | 78.5 | 29.7                     | 32.8 | 30.9 | 0.66                | 0.72             |              |
| 06/23/04                                                      | 63  | 20.7                 | 29.0 | 25.4 | 60.2                  | 88.9 | 78.6 | 26.7                     | 32.0 | 29.2 | 0.29                | 0.22             |              |
| 06/24/04                                                      | 64  | 22.9                 | 29.8 | 26.9 | 62.4                  | 88.8 | 78.0 | 26.2                     | 30.0 | 28.0 | 0.17                | 0.79             |              |
| 06/25/04                                                      | 65  | 23.4                 | 29.3 | 27.8 | 69.0                  | 87.3 | 75.6 | 26.4                     | 32.7 | 29.6 | 0.65                | 0.18             |              |
| 06/26/04                                                      | 66  | 21.9                 | 29.1 | 26.6 | 60.6                  | 90.2 | 74.7 | 27.2                     | 31.3 | 29.0 | 0.03                | T                |              |
| 06/27/04                                                      | 67  | 24.3                 | 29.7 | 27.4 | 54.5                  | 84.0 | 72.7 | 27.2                     | 33.5 | 29.7 | 0.05                | T                |              |
| 06/28/04                                                      | 68  | 23.5                 | 29.7 | 26.8 | 58.5                  | 79.6 | 71.3 | 27.4                     | 31.6 | 29.2 | 0.13                | 0.28             |              |
| 06/29/04                                                      | 69  | 22.8                 | 29.2 | 25.7 | 65.9                  | 87.7 | 77.7 | 27.2                     | 30.8 | 29.3 | 0.34                | 0.33             |              |
| 06/30/04                                                      | 70  | 20.8                 | 27.3 | 24.8 | 61.6                  | 88.5 | 80.7 | 27.1                     | 29.4 | 28.7 | 0.02                | T                |              |
| Total                                                         |     |                      |      |      |                       |      |      |                          |      |      | 7.64                | 11.51            | 0.00         |
| Cumulative Rainfall and Irrigation                            |     |                      |      |      |                       |      |      |                          |      |      | 7.64                |                  |              |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>              |     |                      |      |      |                       |      |      |                          |      |      | 6.22                |                  |              |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL . |     |                      |      |      |                       |      |      |                          |      |      |                     |                  |              |



Table D.2. 2004 Daily Climate Data (continued)

| Date                                                          | DAA | Air Temperature (°C) |      |      | Relative Humidity (%) |      |      | Estuary Temperature (°C) |      |      | On-site Rain. | NOAA Rain. | Irrig. |
|---------------------------------------------------------------|-----|----------------------|------|------|-----------------------|------|------|--------------------------|------|------|---------------|------------|--------|
|                                                               |     | Min                  | Max  | Avg  | Min                   | Max  | Avg  | Min                      | Max  | Avg  | (in.)         | (in.)      | (in.)  |
| 07/01/04                                                      | 71  | 22.9                 | 28.2 | 25.7 | 68.2                  | 89.2 | 80.3 | 27.2                     | 32.5 | 29.3 | 0.01          | T          |        |
| 07/02/04                                                      | 72  | 22.8                 | 29.1 | 26.4 | 67.5                  | 86.4 | 78.2 | 28.2                     | 32.6 | 29.9 | 0.11          | 1.25       | 0.14   |
| 07/03/04                                                      | 73  | 23.4                 | 28.7 | 26.4 | 64.9                  | 87.3 | 77.8 | 28.0                     | 32.4 | 30.2 | 0.00          | 0.13       |        |
| 07/04/04                                                      | 74  | 24.2                 | 28.8 | 27.2 | 62.1                  | 83.6 | 73.3 | 27.2                     | 31.7 | 29.1 | 0.04          | 0.05       |        |
| 07/05/04                                                      | 75  | 25.5                 | 30.1 | 28.2 | 65.1                  | 81.8 | 73.1 | 27.1                     | 32.9 | 29.5 | 0.03          | 0.11       |        |
| 07/06/04                                                      | 76  | 26.8                 | 30.3 | 28.8 | 62.2                  | 77.8 | 70.6 | 28.0                     | 33.7 | 30.2 | 0.04          | 0.65       |        |
| 07/07/04                                                      | 77  | 25.2                 | 30.7 | 27.8 | 57.8                  | 84.5 | 73.7 | 29.5                     | 34.7 | 31.6 | 0.05          | T          |        |
| 07/08/04                                                      | 78  | 23.7                 | 30.5 | 27.4 | 55.9                  | 87.7 | 73.3 | 30.3                     | 34.8 | 32.0 | 0.04          | T          |        |
| 07/09/04                                                      | 79  | 22.8                 | 28.6 | 26.3 | 65.2                  | 84.8 | 73.1 | 28.6                     | 31.4 | 30.2 | 0.00          | T          | 0.14   |
| 07/10/04                                                      | 80  | 24.3                 | 29.9 | 28.2 | 59.6                  | 82.2 | 68.8 | 27.9                     | 34.7 | 30.8 | 0.03          | 0.12       |        |
| 07/11/04                                                      | 81  | 26.2                 | 32.6 | 28.8 | 57.3                  | 86.7 | 71.1 | 29.5                     | 36.0 | 32.4 | 0.03          | T          |        |
| 07/12/04                                                      | 82  | 25.6                 | 31.6 | 28.7 | 55.7                  | 85.9 | 71.9 | 31.5                     | 36.1 | 33.2 | 0.07          | 0.00       | 0.14   |
| 07/13/04                                                      | 83  | 26.2                 | 33.3 | 29.2 | 46.4                  | 79.3 | 68.2 | 30.1                     | 33.3 | 31.6 | 0.76          | 2.46       |        |
| 07/14/04                                                      | 84  | 22.7                 | 32.2 | 27.2 | 48.7                  | 88.1 | 75.6 | 29.3                     | 33.3 | 30.4 | 1.14          | 0.98       |        |
| 07/15/04                                                      | 85  | 22.6                 | 30.2 | 26.7 | 66.0                  | 90.8 | 76.9 | 26.9                     | 33.0 | 29.6 | 0.00          | 0.08       |        |
| 07/16/04                                                      | 86  | 23.5                 | 31.5 | 28.3 | 60.1                  | 83.9 | 75.1 | 28.3                     | 31.2 | 29.5 | 0.02          | 0.07       |        |
| 07/17/04                                                      | 87  | 23.5                 | 30.3 | 27.2 | 55.9                  | 85.7 | 69.8 | 26.3                     | 29.5 | 27.8 | 1.70          | 0.41       |        |
| 07/18/04                                                      | 88  | 22.6                 | 27.8 | 25.6 | 73.7                  | 90.5 | 80.7 | 26.2                     | 28.3 | 27.7 | 0.14          | 0.69       |        |
| 07/19/04                                                      | 89  | 23.3                 | 28.6 | 26.6 | 63.1                  | 88.9 | 80.0 | 26.4                     | 30.2 | 28.3 | 0.00          | T          |        |
| 07/20/04                                                      | 90  | 25.5                 | 31.1 | 28.5 | 49.1                  | 79.9 | 66.0 | 28.3                     | 32.3 | 30.8 | 0.03          | 0.00       |        |
| 07/21/04                                                      | 91  | 23.5                 | 29.9 | 26.9 | 54.0                  | 82.7 | 67.4 | 28.5                     | 32.2 | 30.3 | 0.07          | 0.00       |        |
| 07/22/04                                                      | 92  | 23.5                 | 30.6 | 27.0 | 54.9                  | 89.0 | 72.5 | 28.5                     | 33.2 | 31.0 | 0.03          | 0.00       |        |
| 07/23/04                                                      | 93  | 24.3                 | 32.7 | 27.8 | 55.3                  | 81.5 | 68.3 | 29.3                     | 34.5 | 31.5 | 0.05          | 0.00       | 0.14   |
| 07/24/04                                                      | 94  | 25.6                 | 33.0 | 28.7 | 46.7                  | 81.4 | 69.4 | 30.0                     | 36.0 | 32.3 | 0.13          | 0.22       |        |
| 07/25/04                                                      | 95  | 26.0                 | 33.6 | 29.3 | 46.8                  | 84.3 | 70.1 | 31.0                     | 36.4 | 33.0 | 0.03          | 0.31       |        |
| 07/26/04                                                      | 96  | 26.7                 | 30.1 | 28.4 | 70.1                  | 84.0 | 77.0 | 30.9                     | 35.4 | 33.0 | 1.00          | 0.27       | 0.14   |
| 07/27/04                                                      | 97  | 23.4                 | 28.8 | 26.5 | 61.4                  | 89.0 | 79.6 | 28.8                     | 32.3 | 30.7 | 0.06          | 0.63       |        |
| 07/28/04                                                      | 98  | 24.3                 | 29.5 | 27.0 | 64.2                  | 89.1 | 77.4 | 29.1                     | 34.1 | 30.9 | 0.00          | 0.00       |        |
| 07/29/04                                                      | 99  | 23.8                 | 30.4 | 27.6 | 58.6                  | 84.6 | 74.5 | 30.5                     | 35.5 | 32.2 | 0.04          | T          |        |
| 07/30/04                                                      | 100 | 24.5                 | 30.3 | 27.7 | 65.4                  | 87.4 | 76.6 | 30.3                     | 34.2 | 31.6 | 0.52          | 0.33       |        |
| 07/31/04                                                      | 101 | 23.1                 | 30.3 | 27.7 | 65.7                  | 89.9 | 77.7 | 29.2                     | 32.8 | 30.6 | 0.00          | T          |        |
| Total                                                         |     |                      |      |      |                       |      |      |                          |      |      | 6.17          | 8.76       | 0.70   |
| Cumulative Rainfall and Irrigation                            |     |                      |      |      |                       |      |      |                          |      |      | 6.87          |            |        |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>              |     |                      |      |      |                       |      |      |                          |      |      | 8.28          |            |        |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL . |     |                      |      |      |                       |      |      |                          |      |      |               |            |        |



Table D.2. 2004 Daily Climate Data (continued)

| Date                                                           | DAA | Air Temperature (°C) |      |              | Relative Humidity (%) |       |              | Estuary Temperature (°C) |      |      | On-site Rain. | NOAA Rain. | Irrig. |
|----------------------------------------------------------------|-----|----------------------|------|--------------|-----------------------|-------|--------------|--------------------------|------|------|---------------|------------|--------|
|                                                                |     | Min                  | Max  | Avg          | Min                   | Max   | Avg          | Min                      | Max  | Avg  | (in.)         | (in.)      | (in.)  |
| 08/01/04                                                       | 102 | 25.2                 | 31.0 | 28.9         | 63.5                  | 85.3  | 71.5         | 28.4                     | 31.6 | 29.7 | 0.04          | 0.01       |        |
| 08/02/04                                                       | 103 | 25.9                 | 32.1 | 28.1         | 55.9                  | 86.6  | 75.5         | 29.1                     | 33.5 | 31.4 | 1.77          | T          |        |
| 08/03/04                                                       | 104 | 23.0                 | 30.5 | 27.0         | 73.4                  | 104.5 | 84.2         | 28.3                     | 32.3 | 30.4 | 0.00          | 0.00       |        |
| 08/04/04                                                       | 105 | 25.2                 | 31.0 | 28.5         | 56.5                  | 82.7  | 71.5         | 28.4                     | 33.1 | 30.6 | 0.04          | 0.00       |        |
| 08/05/04                                                       | 106 | 24.5                 | 31.4 | 28.4         | 55.7                  | 87.2  | 71.1         | 30.5                     | 35.0 | 32.1 | 0.06          | 0.00       |        |
| 08/06/04                                                       | 107 | 26.9                 | 32.6 | 29.6         | 45.8                  | 77.9  | 66.4         | 31.4                     | 35.7 | 33.0 | 0.05          | 0.00       |        |
| 08/07/04                                                       | 108 | 24.8                 | 33.7 | 28.3         | 44.3                  | 84.3  | 67.9         | 30.5                     | 33.9 | 32.1 | 0.04          | 0.00       | 0.14   |
| 08/08/04                                                       | 109 | 23.0                 | 30.8 | 26.7         | 44.0                  | 77.6  | 61.4         | 28.1                     | 32.5 | 30.6 | 0.01          | T          |        |
| 08/09/04                                                       | 110 | 24.2                 | 28.8 | 26.5         | 47.8                  | 80.8  | 66.6         | 27.7                     | 31.2 | 29.1 | 0.47          | 0.89       |        |
| 08/10/04                                                       | 111 | 23.8                 | 28.9 | 26.5         | 71.3                  | 90.0  | 82.0         | 27.4                     | 30.1 | 28.5 | 0.98          | 0.98       |        |
| 08/11/04                                                       | 112 | 23.0                 | 28.5 | 26.2         | 67.6                  | 91.0  | 82.6         | 26.9                     | 29.6 | 28.1 | 0.96          | 0.01       |        |
| 08/12/04                                                       | 113 | 22.8                 | 27.5 | 25.7         | 75.3                  | 115.0 | 93.1         | 26.9                     | 28.7 | 27.9 | 0.25          | 1.92       |        |
| 08/13/04                                                       | 114 | 22.5                 | 29.3 | 24.9         | 68.6                  | 99.1  | 83.9         | 26.5                     | 30.4 | 28.0 | 0.03          | 0.00       |        |
| 08/14/04                                                       | 115 | 19.5                 | 29.3 | 23.5         | 46.1                  | 89.7  | 69.3         | 26.6                     | 29.6 | 28.0 | 0.04          | 0.00       |        |
| 08/15/04                                                       | 116 | 17.2                 | 30.6 | 22.8         | 32.5                  | 76.1  | 58.3         | 22.9                     | 27.1 | 25.3 | 0.05          | 0.00       |        |
| 08/16/04                                                       | 117 | 19.2                 | 31.6 | 24.4         | 38.2                  | 75.1  | 60.1         | 23.6                     | 27.8 | 25.4 | 0.03          | 0.00       |        |
| 08/17/04                                                       | 118 | 20.7                 | 28.9 | 25.1         | 55.7                  | 76.8  | 67.4         | 25.0                     | 30.4 | 27.0 | 0.04          | 0.00       | 0.14   |
| 08/18/04                                                       | 119 | 21.6                 | 30.9 | 25.9         | 39.4                  | 76.0  | 60.6         | 26.2                     | 31.5 | 28.2 | 0.03          | 0.00       |        |
| 08/19/04                                                       | 120 | 21.5                 | 29.4 | 25.7         | 42.1                  | 81.1  | 64.6         | 27.1                     | 31.7 | 28.9 | 0.05          | T          |        |
| 08/20/04                                                       | 121 | 22.5                 | 29.0 | 26.5         | 62.6                  | 86.1  | 75.3         | 28.0                     | 33.3 | 30.3 | 0.03          | 1.18       | 0.14   |
| 08/21/04                                                       | 122 | 23.3                 | 29.2 | 27.6         | 70.4                  | 87.3  | 78.7         | 28.1                     | 32.7 | 30.3 | 0.82          | 0.24       |        |
| 08/22/04                                                       | 123 | 23.4                 | 29.8 | 26.1         | 64.1                  | 87.9  | 80.4         | 29.3                     | 33.7 | 30.8 | 0.00          | T          |        |
| 08/23/04                                                       | 124 | 22.8                 | 30.5 | 26.0         | 60.2                  | 89.3  | 77.7         | 30.0                     | 35.5 | 31.9 | 0.21          | 0.67       |        |
| 08/24/04                                                       | 125 | 21.9                 | 29.6 | 25.5         | 59.9                  | 89.0  | 79.6         | 30.1                     | 33.8 | 31.2 | 0.00          | T          |        |
| 08/25/04                                                       | 126 | 23.6                 | 29.9 | 27.1         | 61.6                  | 87.7  | 76.3         | 29.8                     | 34.5 | 31.6 | 0.02          | 0.02       |        |
| 08/26/04                                                       | 127 | 25.3                 | 30.6 | 27.5         | 60.2                  | 89.8  | 77.0         | 30.3                     | 34.5 | 31.7 | 0.14          | T          |        |
| 08/27/04                                                       | 128 | 24.0                 | 29.5 | 26.8         | 63.5                  | 88.6  | 79.8         | 29.9                     | 32.8 | 31.0 | 0.03          | 0.00       |        |
| 08/28/04                                                       | 129 | 24.3                 | 30.3 | 27.5         | 62.3                  | 89.8  | 77.6         | 29.9                     | 33.4 | 31.1 | 0.04          | 0.00       |        |
| 08/29/04                                                       | 130 | 24.7                 | 29.8 | 27.5         | 63.6                  | 90.0  | 78.0         | 29.6                     | 33.1 | 31.0 | 0.05          | T          |        |
| 08/30/04                                                       | 131 | 23.6                 | 29.7 | 26.6         | 65.8                  | 88.5  | 78.2         | 29.0                     | 32.2 | 30.4 | 0.17          | 0.22       |        |
| 08/31/04                                                       | 132 | 73 <sup>a</sup>      | 28.3 | <sup>b</sup> | <sup>b</sup>          | 88.2  | <sup>b</sup> | 28.5                     | 30.3 | 29.4 | 0.35          | 0.20       |        |
| Total                                                          |     |                      |      |              |                       |       |              |                          |      |      | 6.80          | 6.34       | 0.42   |
| Cumulative Rainfall and Irrigation                             |     |                      |      |              |                       |       |              |                          |      |      | 7.22          |            |        |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>               |     |                      |      |              |                       |       |              |                          |      |      | 6.89          |            |        |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL.   |     |                      |      |              |                       |       |              |                          |      |      |               |            |        |
| <sup>b</sup> Probe malfunctioned, reliable data not available. |     |                      |      |              |                       |       |              |                          |      |      |               |            |        |





Table D.2. 2004 Daily Climate Data (continued)

| Date                                                                                     | DAA              | Air Temperature (°C) |      |              | Relative Humidity (%) |      |              | Estuary Temperature (°C) |      |      | On-site Rain.     | NOAA Rain. | Irrig. |
|------------------------------------------------------------------------------------------|------------------|----------------------|------|--------------|-----------------------|------|--------------|--------------------------|------|------|-------------------|------------|--------|
|                                                                                          |                  | Min                  | Max  | Avg          | Min                   | Max  | Avg          | Min                      | Max  | Avg  | (in.)             | (in.)      | (in.)  |
| 09/01/04                                                                                 | 133              | 70 <sup>a</sup>      | 26.8 | <sup>b</sup> | <sup>b</sup>          | 89.2 | <sup>b</sup> | 25.7                     | 29.1 | 28.1 | 0.06              | 0.71       |        |
| 09/02/04                                                                                 | 134              | 23.0                 | 29.1 | 25.8         | 66.2                  | 90.7 | 79.1         | 27.4                     | 34.0 | 29.9 | 0.01              | 0.00       |        |
| 09/03/04                                                                                 | 135              | 23.5                 | 30.4 | 27.0         | 63.9                  | 89.2 | 77.9         | 29.7                     | 34.0 | 31.7 | 0.09              | 0.00       |        |
| 09/04/04                                                                                 | 136              | 23.9                 | 29.8 | 26.8         | 56.5                  | 86.6 | 76.8         | 30.5                     | 33.9 | 32.4 | 0.05              | 0.00       |        |
| 09/05/04                                                                                 | 137              | 74 <sup>a</sup>      | 33.9 | <sup>b</sup> | <sup>b</sup>          | 80.9 | <sup>b</sup> | 30.4                     | 33.0 | 31.7 | 0.07              | 0.00       | 0.14   |
| 09/06/04                                                                                 | 138              | 23.7                 | 34.1 | 27.8         | 45.2                  | 81.1 | 67.2         | 28.4                     | 31.6 | 29.9 | 0.09              | T          |        |
| 09/07/04                                                                                 | 139              | 24.4                 | 29.2 | 26.3         | 60.2                  | 74.6 | 68.5         | 25.9                     | 29.1 | 27.0 | 0.00              | T          |        |
| 09/08/04                                                                                 | 140              | 24.3                 | 31.7 | 27.4         | 50.7                  | 79.8 | 64.2         | 24.6                     | 27.6 | 26.0 | 0.06              | 0.00       | 0.14   |
| 09/09/04                                                                                 | 141              | 22.8                 | 28.9 | 25.9         | 61.9                  | 80.9 | 72.7         | 25.9                     | 32.0 | 28.3 | 0.05              | 0.00       |        |
| 09/10/04                                                                                 | 142              | 23.4                 | 29.5 | 26.5         | 59.9                  | 87.9 | 74.2         | 27.4                     | 32.7 | 29.5 | 0.03              | 0.00       |        |
| 09/11/04                                                                                 | 143              | 23.3                 | 29.6 | 25.8         | 61.9                  | 87.1 | 77.1         | 28.4                     | 31.1 | 29.5 | 0.05              | 0.00       | 0.14   |
| 09/12/04                                                                                 | 144              | 22.4                 | 29.0 | 24.8         | 63.2                  | 90.0 | 81.0         | 27.6                     | 30.3 | 28.7 | 0.06              | 0.27       |        |
| 09/13/04                                                                                 | 145              | 22.4                 | 28.9 | 25.9         | 62.0                  | 89.5 | 76.9         | 27.4                     | 30.3 | 28.7 | 0.01              | 1.10       |        |
| 09/14/04                                                                                 | 146 <sup>c</sup> | 23.2                 | 29.1 | 25.4         | 61.4                  | 85.4 | 77.2         | 27.2                     | 29.3 | 28.0 | 0.00              | 0.00       |        |
| 09/15/04                                                                                 | 147 <sup>d</sup> | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | 3.19 <sup>e</sup> | 3.56       |        |
| 09/16/04                                                                                 | 148              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 1.86       |        |
| 09/17/04                                                                                 | 149              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | T          |        |
| 09/18/04                                                                                 | 150              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/19/04                                                                                 | 151              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/20/04                                                                                 | 152              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/21/04                                                                                 | 153              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/22/04                                                                                 | 154              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/23/04                                                                                 | 155              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/24/04                                                                                 | 156              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/25/04                                                                                 | 157              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/26/04                                                                                 | 158              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/27/04                                                                                 | 159              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/28/04                                                                                 | 160              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| 09/29/04                                                                                 | 161              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | T          |        |
| 09/30/04                                                                                 | 162              | --                   | --   | --           | --                    | --   | --           | --                       | --   | --   | NA                | 0.00       |        |
| Total                                                                                    |                  |                      |      |              |                       |      |              |                          |      |      | 3.82              | 7.50       | 0.42   |
| Cumulative Rainfall and Irrigation                                                       |                  |                      |      |              |                       |      |              |                          |      |      | 4.24              |            |        |
| Monthly Normal Rainfall (1973-2002) <sup>a</sup>                                         |                  |                      |      |              |                       |      |              |                          |      |      | 6.10              |            |        |
| <sup>a</sup> Obtained from Pensacola Airport, Pensacola, FL .                            |                  |                      |      |              |                       |      |              |                          |      |      |                   |            |        |
| <sup>b</sup> Probe malfunctioned, reliable data not available.                           |                  |                      |      |              |                       |      |              |                          |      |      |                   |            |        |
| <sup>c</sup> Data collected through 11:00 AM September 14, 2004.                         |                  |                      |      |              |                       |      |              |                          |      |      |                   |            |        |
| <sup>d</sup> A dash (--) indicates data not available due to damage from Hurricane Ivan. |                  |                      |      |              |                       |      |              |                          |      |      |                   |            |        |
| <sup>e</sup> Data collected through 11:08 PM September 15, 2004.                         |                  |                      |      |              |                       |      |              |                          |      |      |                   |            |        |



Table F.1. Critical Dates – 2003 Samples

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2003                     |                 |                |     |                  |                 |              |               |                   |
| 001                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 114               |
| 003                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 114               |
| 005                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 114               |
| 007                      | 1               | 20 May 03      | 0   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 113               |
| 009                      | 1               | 20 May 03      | 0   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 113               |
| 011                      | 1               | 20 May 03      | 0   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 113               |
| 013                      | 2               | 21 May 03      | 1   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 112               |
| 015                      | 2               | 21 May 03      | 1   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 112               |
| 017                      | 2               | 21 May 03      | 1   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 112               |
| 019                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 02           | 10 Sep 03     | 111               |
| 020                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 08           | 23 Jan 04     | 246               |
| 021                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 112               |
| 022                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 08           | 23 Jan 04     | 246               |
| 023                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 112               |
| 024                      | 3               | 22 May 03      | 2   | 28 Jul 03        | 13 Aug 03       | 08           | 23 Jan 04     | 246               |
| 025                      | 4               | 28 May 03      | 8   | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 106               |
| 027                      | 4               | 28 May 03      | 8   | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 106               |
| 029                      | 4               | 28 May 03      | 8   | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 106               |
| 031                      | 5               | 05 Jun 03      | 16  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 98                |
| 033                      | 5               | 05 Jun 03      | 16  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 98                |
| 035                      | 5               | 05 Jun 03      | 16  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 98                |
| 037                      | 6               | 08 Jun 03      | 19  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 95                |
| 039                      | 6               | 08 Jun 03      | 19  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 95                |
| 041                      | 6               | 08 Jun 03      | 19  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 95                |
| 043                      | 7               | 13 Jun 03      | 24  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 90                |
| 045                      | 7               | 13 Jun 03      | 24  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 90                |
| 047                      | 7               | 13 Jun 03      | 24  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 90                |
| 049                      | 8               | 19 Jun 03      | 30  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 84                |
| 051                      | 8               | 19 Jun 03      | 30  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 84                |
| 053                      | 8               | 19 Jun 03      | 30  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 84                |
| 055                      | 9               | 25 Jun 03      | 36  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 78                |
| 057                      | 9               | 25 Jun 03      | 36  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 78                |
| 059                      | 9               | 25 Jun 03      | 36  | 28 Jul 03        | 13 Aug 03       | 03           | 11 Sep 03     | 78                |
| 061                      | 10              | 30 Jun 03      | 41  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 74                |
| 063                      | 10              | 30 Jun 03      | 41  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 74                |
| 065                      | 10              | 30 Jun 03      | 41  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 74                |
| 067                      | 11              | 02 Jul 03      | 43  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 72                |
| 069                      | 11              | 02 Jul 03      | 43  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 72                |
| 071                      | 11              | 02 Jul 03      | 43  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 72                |
| 073                      | 12              | 06 Jul 03      | 47  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 68                |
| 075                      | 12              | 06 Jul 03      | 47  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 68                |
| 077                      | 12              | 06 Jul 03      | 47  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 68                |



Table F.1. Critical Dates – 2003 Samples (continued)

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 079                      | 13              | 11 Jul 03      | 52  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 63                |
| 081                      | 13              | 11 Jul 03      | 52  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 63                |
| 083                      | 13              | 11 Jul 03      | 52  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 63                |
| 085                      | 14              | 18 Jul 03      | 59  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 56                |
| 087                      | 14              | 18 Jul 03      | 59  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 56                |
| 089                      | 14              | 18 Jul 03      | 59  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 56                |
| 091                      | 15              | 21 Jul 03      | 62  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 53                |
| 093                      | 15              | 21 Jul 03      | 62  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 53                |
| 095                      | 15              | 21 Jul 03      | 62  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 53                |
| 097                      | 16              | 24 Jul 03      | 65  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 50                |
| 099                      | 16              | 24 Jul 03      | 65  | 28 Jul 03        | 13 Aug 03       | 04           | 12 Sep 03     | 50                |
| 101                      | 16              | 24 Jul 03      | 65  | 28 Jul 03        | 13 Aug 03       | 06           | 17 Sep 03     | 55                |
| 103                      | 17              | 31 Jul 03      | 72  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 48                |
| 105                      | 17              | 31 Jul 03      | 72  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 48                |
| 107                      | 17              | 31 Jul 03      | 72  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 48                |
| 109                      | 18              | 07 Aug 03      | 79  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 41                |
| 111                      | 18              | 07 Aug 03      | 79  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 41                |
| 113                      | 18              | 07 Aug 03      | 79  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 41                |
| 115                      | 19              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 33                |
| 117                      | 19              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 33                |
| 119                      | 19              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 33                |
| 121                      | 20              | 22 Aug 03      | 94  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 26                |
| 123                      | 20              | 22 Aug 03      | 94  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 26                |
| 125                      | 20              | 22 Aug 03      | 94  | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 26                |
| 127                      | 21              | 28 Aug 03      | 100 | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 20                |
| 129                      | 21              | 28 Aug 03      | 100 | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 20                |
| 131                      | 21              | 28 Aug 03      | 100 | 09 Sep 03        | 12 Sep 05       | 06           | 17 Sep 03     | 20                |
| 133                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 134                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 135                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 136                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 137                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 138                      | 22              | 12 Sep 03      | 115 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 123               |
| 139                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 140                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 141                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 142                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 143                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 144                      | 23              | 23 Sep 03      | 126 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 112               |
| 145                      | 24              | 09 Oct 03      | 142 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 96                |
| 146                      | 24              | 09 Oct 03      | 142 | 08 Dec 03        | 12 Jan 04       | 07           | 13 Jan 04     | 96                |



Table F.1. Critical Dates – 2003 Samples (continued)

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2003 Sediment            |                 |                |     |                  |                 |              |               |                   |
| 201                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 10           | 01 Apr 04     | 318               |
| 203                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 10           | 01 Apr 04     | 318               |
| 205                      | Pre-Trt         | 19 May 03      | -1  | 28 Jul 03        | 13 Aug 03       | 10           | 01 Apr 04     | 318               |
| 207                      | 90              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 10           | 01 Apr 04     | 230               |
| 209                      | 90              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 11           | 22 Jul 04     | 342               |
| 211                      | 90              | 15 Aug 03      | 87  | 09 Sep 03        | 12 Sep 05       | 11           | 22 Jul 04     | 342               |
| 213                      | 180             | 21 Nov 03      | 185 | 08 Dec 03        | 21 Nov 04       | 11           | 22 Jul 04     | 244               |
| 215                      | 180             | 21 Nov 03      | 185 | 08 Dec 03        | 21 Nov 04       | 11           | 22 Jul 04     | 244               |
| 217                      | 180             | 21 Nov 03      | 185 | 08 Dec 03        | 21 Nov 04       | 11           | 22 Jul 04     | 244               |



Table F.2. Critical Dates – 2004 Samples

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2004                     |                 |                |     |                  |                 |              |               |                   |
| 1003                     | 1               | 29 Apr 04      | 8   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 187               |
| 2003                     | 1               | 29 Apr 04      | 8   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 187               |
| 1005                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 109               |
| 2005                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 112               |
| 3005                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 259               |
| 1007                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 186               |
| 2007                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 186               |
| 3007                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 259               |
| 1009                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 186               |
| 2009                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 186               |
| 1011                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 109               |
| 2011                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 112               |
| 1013                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 109               |
| 2013                     | 1               | 30 Apr 04      | 9   | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 112               |
| 1027                     | 2               | 02 May 04      | 11  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 184               |
| 2027                     | 2               | 02 May 04      | 11  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 184               |
| 1029                     | 2               | 02 May 04      | 11  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 107               |
| 2029                     | 2               | 02 May 04      | 11  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 110               |
| 1075                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 155               |
| 2075                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 155               |
| 3075                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 228               |
| 1077                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 78                |
| 2077                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 81                |
| 3077                     | 4               | 31 May 04      | 40  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 228               |
| 1083                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 154               |
| 2083                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 154               |
| 1085                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 77                |
| 2085                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 80                |
| 3085                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 227               |
| 3087                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 227               |
| 3089                     | 4               | 01 Jun 04      | 41  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 227               |
| 1111                     | 5               | 03 Jun 04      | 43  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 152               |
| 2111                     | 5               | 03 Jun 04      | 43  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 152               |
| 1113                     | 5               | 03 Jun 04      | 43  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 75                |
| 2113                     | 5               | 03 Jun 04      | 43  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 78                |
| 3115                     | 5               | 03 Jun 04      | 43  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 225               |
| 3117                     | 5               | 04 Jun 04      | 44  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 224               |
| 1147                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |
| 2147                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |
| 1149                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 64                |
| 2149                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 67                |
| 1151                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 64                |
| 2151                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 67                |
| 3151                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 214               |
| 1153                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |



Table F.2. Critical Dates – 2004 Samples (continued)

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2153                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |
| 3153                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 214               |
| 1155                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |
| 2155                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 141               |
| 3155                     | 7               | 14 Jun 04      | 54  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 214               |
| 1157                     | 7               | 15 Jun 04      | 55  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 140               |
| 2157                     | 7               | 15 Jun 04      | 55  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 140               |
| 3157                     | 7               | 15 Jun 04      | 55  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 213               |
| 1159                     | 7               | 15 Jun 04      | 55  | 30 Jun 04        | 07 Jul 04       | 12           | 17 Aug 04     | 63                |
| 2159                     | 7               | 15 Jun 04      | 55  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 66                |
| 1195                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 135               |
| 2195                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 14           | 02 Nov 04     | 135               |
| 1197                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 61                |
| 2197                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 61                |
| 3197                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 208               |
| 3199                     | 9               | 20 Jun 04      | 60  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 208               |
| 3201                     | 9               | 21 Jun 04      | 61  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 207               |
| 1221                     | 10              | 22 Jun 04      | 62  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 139               |
| 2221                     | 10              | 22 Jun 04      | 62  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 139               |
| 1223                     | 10              | 23 Jun 04      | 63  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 138               |
| 2223                     | 10              | 23 Jun 04      | 63  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 138               |
| 3223                     | 10              | 23 Jun 04      | 63  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 205               |
| 1235                     | 10              | 24 Jun 04      | 64  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 57                |
| 2235                     | 10              | 24 Jun 04      | 64  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 57                |
| 3235                     | 10              | 24 Jun 04      | 64  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 204               |
| 1237                     | 10              | 24 Jun 04      | 64  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 57                |
| 2237                     | 10              | 24 Jun 04      | 64  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 57                |
| 1243                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 136               |
| 2243                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 136               |
| 1245                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 13           | 20 Aug 04     | 56                |
| 1247                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 136               |
| 2247                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 15           | 08 Nov 04     | 136               |
| 3253                     | 11              | 25 Jun 04      | 65  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 203               |
| 3255                     | 11              | 26 Jun 04      | 66  | 30 Jun 04        | 07 Jul 04       | 18           | 14 Jan 05     | 202               |
| 1267                     | 12              | 29 Jun 04      | 69  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 132               |
| 2267                     | 12              | 29 Jun 04      | 69  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 132               |
| 1269                     | 12              | 29 Jun 04      | 69  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 132               |
| 2269                     | 12              | 29 Jun 04      | 69  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 132               |
| 1291                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 118               |
| 2291                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 118               |
| 3291                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 185               |
| 1293                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 118               |
| 2293                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 118               |
| 3293                     | 13              | 13 Jul 04      | 83  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 185               |
| 3295                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 184               |
| 1297                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |



Table F.2. Critical Dates – 2004 Samples (continued)

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2297                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |
| 1299                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |
| 2299                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |
| 1301                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |
| 2301                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 117               |
| 3303                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 184               |
| 3305                     | 13              | 14 Jul 04      | 84  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 184               |
| 1315                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 114               |
| 2315                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 15           | 08 Nov 04     | 114               |
| 1317                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 128               |
| 2317                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 128               |
| 1319                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 128               |
| 2319                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 128               |
| 3319                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 181               |
| 3321                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 181               |
| 3323                     | 14              | 17 Jul 04      | 87  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 181               |
| 1327                     | 14              | 18 Jul 04      | 88  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 127               |
| 2327                     | 14              | 18 Jul 04      | 88  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 127               |
| 1339                     | 15              | 26 Jul 04      | 96  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 119               |
| 2339                     | 15              | 26 Jul 04      | 96  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 119               |
| 1341                     | 15              | 26 Jul 04      | 96  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 119               |
| 2341                     | 15              | 26 Jul 04      | 96  | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 119               |
| 3341                     | 15              | 26 Jul 04      | 96  | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 172               |
| 1363                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 2363                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 1365                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 2365                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 1367                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 2367                     | 16              | 30 Jul 04      | 100 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 115               |
| 1387                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 2387                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 1389                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 2389                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 1391                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 2391                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 1393                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 2393                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 16           | 22 Nov 04     | 112               |
| 3395                     | 17              | 02 Aug 04      | 103 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 165               |
| 1435                     | 19              | 09 Aug 04      | 110 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 119               |
| 2435                     | 19              | 09 Aug 04      | 110 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 119               |
| 1437                     | 19              | 09 Aug 04      | 110 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 119               |
| 2437                     | 19              | 09 Aug 04      | 110 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 119               |
| 3439                     | 19              | 09 Aug 04      | 110 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 158               |
| 1449                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |
| 2449                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |
| 1451                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |



Table F.2. Critical Dates – 2004 Samples (continued)

| Sample ID<br>03RAFIX020- | Sample<br>Event | Sample<br>Date | DAA | Shipping<br>Date | Receipt<br>Date | Anal.<br>Set | Anal.<br>Date | Storage<br>(Days) |
|--------------------------|-----------------|----------------|-----|------------------|-----------------|--------------|---------------|-------------------|
| 2451                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |
| 3451                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 157               |
| 1453                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |
| 2453                     | 19              | 10 Aug 04      | 111 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 118               |
| 1459                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 2459                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 1460                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 156               |
| 1461                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 2461                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 1463                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 2463                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 117               |
| 3465                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 156               |
| 3467                     | 20              | 11 Aug 04      | 112 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 156               |
| 1473                     | 20              | 12 Aug 04      | 113 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 116               |
| 2473                     | 20              | 12 Aug 04      | 113 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 116               |
| 1475                     | 20              | 12 Aug 04      | 113 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 116               |
| 2475                     | 20              | 12 Aug 04      | 113 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 116               |
| 1483                     | 21              | 21 Aug 04      | 122 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 107               |
| 2483                     | 21              | 21 Aug 04      | 122 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 107               |
| 1485                     | 21              | 21 Aug 04      | 122 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 107               |
| 2485                     | 21              | 21 Aug 04      | 122 | 07 Sep 04        | 27 Sep 04       | 17           | 06 Dec 04     | 107               |
| 3493                     | 21              | 22 Aug 04      | 123 | 07 Sep 04        | 27 Sep 04       | 18           | 14 Jan 05     | 145               |
| <b>2004 Sediment</b>     |                 |                |     |                  |                 |              |               |                   |
| 219                      | Pre-Trt         | 19 Apr 04      | -2  | 17 Dec 04        | 06 Jan 05       | 19           | 17 Jan 05     | 273               |
| 221                      | Pre-Trt         | 19 Apr 04      | -2  | 17 Dec 04        | 06 Jan 05       | 19           | 17 Jan 05     | 273               |
| 223                      | 90              | 28 Jul 04      | 98  | 07 Sep 04        | 27 Sep 04       | 19           | 17 Jan 05     | 173               |
| 225                      | 90              | 28 Jul 04      | 98  | 07 Sep 04        | 27 Sep 04       | 19           | 17 Jan 05     | 173               |



**Table I.1. Water Method Verification Results**

| Sample Identification     | Fortification Level (ng/mL) | Percent Recovery |                |                 |                |
|---------------------------|-----------------------------|------------------|----------------|-----------------|----------------|
|                           |                             | Fipronil         | MB46513        | MB45950         | MB46136        |
| 03RAFIX020-Bulk1-UTC-1    | 0.000                       | ND               | ND             | ND              | ND             |
| 03RAFIX020-Bulk1-UTC-2    | 0.000                       | ND               | ND             | ND              | ND             |
| 03RAFIX020-Bulk1-10ppt-1  | 0.010                       | 78.6             | 93.1           | 72.8            | 80.0           |
| 03RAFIX020-Bulk1-10ppt-2  | 0.010                       | 85.5             | 77.3           | 107.2           | 92.4           |
| 03RAFIX020-Bulk1-10ppt-3  | 0.010                       | 105.0            | 97.3           | 115.4           | 113.9          |
| 03RAFIX020-Bulk1-100ppt-1 | 0.100                       | 80.3             | 104.5          | 102.3           | 97.0           |
| 03RAFIX020-Bulk1-100ppt-2 | 0.100                       | 84.8             | 104.3          | 106.8           | 101.2          |
| 03RAFIX020-Bulk1-100ppt-3 | 0.100                       | 85.6             | 107.5          | 107.2           | 104.0          |
| Mean Recovery             |                             | 86 ± 10<br>n=6   | 97 ± 11<br>n=6 | 102 ± 15<br>n=6 | 98 ± 11<br>n=6 |



## 5.5 Sediment Analysis

### 5.5.1 Method of Analysis

During the course of this study, a method of analysis was developed for the sediment samples. The acceptable recoveries observed in the sample sets demonstrated the capability of the method to extract fipronil-related residues from sediment. The procedural recoveries in this study are provided in Table VII.

**Table VII: Mean Procedural Recoveries from Fortified Sediment**

| Sample ID Number               | Analytical Set Number | Fortification Level (ppb) | Percent Recovery |         |         |         |
|--------------------------------|-----------------------|---------------------------|------------------|---------|---------|---------|
|                                |                       |                           | Fipronil         | MB46513 | MB45950 | MB46136 |
| 03RAFIX020-Bulk-200 ppt-040104 | 10 <sup>1</sup>       | 0.20                      | 81.6             | 95.8    | 113.9   | 112.2   |
| 03RAFIX020-Bulk-200 ppt-072204 | 11 <sup>2</sup>       | 0.20                      | 80.5             | 70.1    | 93.8    | 95.4    |
| 03RAFIX020-100 ppt-011705      | 19 <sup>3</sup>       | 0.10                      | 85.5             | 96.3    | 109.1   | 103.8   |

<sup>1</sup> 2003 Set #10

<sup>2</sup> 2003 Set #11

<sup>3</sup> 2004 Set #19

### 5.5.2 Analytical Results of Sediment Samples

In 2003, nine sediment samples were collected and analyzed. In 2004, four sediment samples were collected and analyzed. Sediment samples from the estuary were analyzed to evaluate the possibility of fipronil related residues. For sediment the LOQ was 0.100 ng/mL (ppb), and the MDL was 0.030 ng/mL (ppb) for fipronil and its metabolites, MB46513, MB45950, and MB46136. In 2003, sediment samples were collected from each of the three sampling points prior to treatment, and at 87 and 185 days after application, and were analyzed for fipronil-related residues in the estuary sediment. In 2004, sediment samples were collected from each of the two runoff sampling points prior to treatment, and at 98 days after application, and were analyzed for fipronil-related residues in the estuary sediment. The results are summarized in Table VIII.



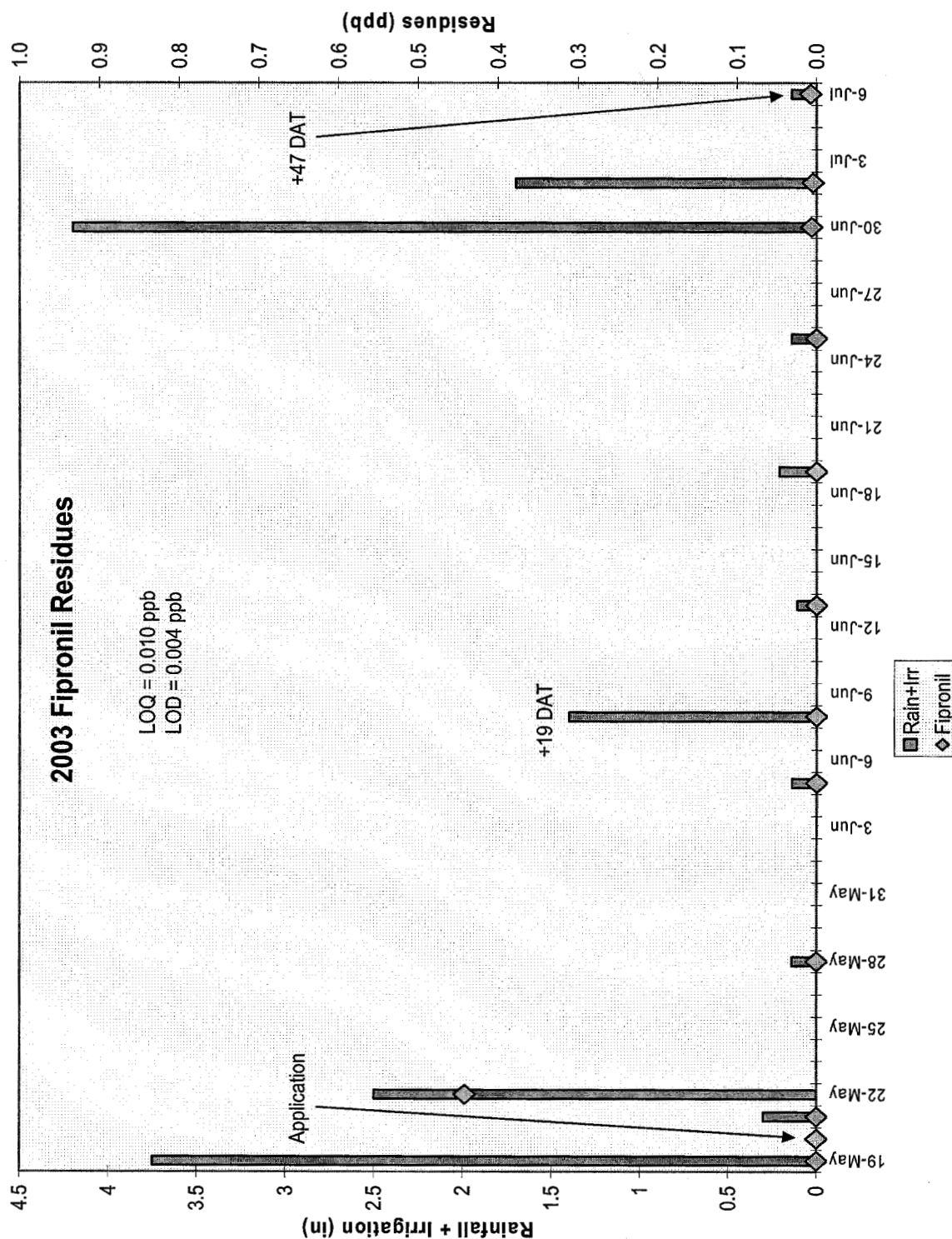
Table V: Residues in 2003 Estuary Water Samples

| Sample          |                   |           | DAT | Rainfall <sup>c</sup> | Fipronil (ppb) | MB46513 (ppb) | MB45950 (ppb) | MB46136 (ppb) |
|-----------------|-------------------|-----------|-----|-----------------------|----------------|---------------|---------------|---------------|
| ID <sup>a</sup> | Loc. <sup>b</sup> | Date      |     |                       |                |               |               |               |
| -019            | A                 | 22 May 03 | 2   | 2.5                   | 0.341          | N.D           | N.D           | 0.018         |
| -020            | A <sup>d</sup>    | 22 May 03 | 2   |                       | 0.342          | N.D           | N.D           | 0.017         |
| -021            | B                 | 22 May 03 | 2   |                       | 0.505          | N.D           | N.D           | 0.022         |
| -022            | B <sup>d</sup>    | 22 May 03 | 2   |                       | 0.460          | N.D           | N.D           | 0.022         |
| -023            | C                 | 22 May 03 | 2   |                       | 0.510          | N.D           | N.D           | 0.023         |
| -024            | C <sup>d</sup>    | 22 May 03 | 2   |                       | 0.494          | N.D           | N.D           | 0.026         |
| -061            | A                 | 30 Jun 03 | 41  | 4.2                   | <LOQ (0.010)   | N.D           | 0.013         | 0.018         |
| -063            | B                 | 30 Jun 03 | 41  |                       | N.D            | N.D           | N.D           | N.D           |
| -065            | C                 | 30 Jun 03 | 41  |                       | <LOQ (0.008)   | N.D           | <LOQ (0.006)  | 0.013         |
| -067            | A                 | 02 Jul 03 | 43  | 1.7                   | <LOQ (0.004)   | N.D           | N.D           | N.D           |
| -069            | B                 | 02 Jul 03 | 43  |                       | <LOQ (0.005)   | N.D           | <LOQ (0.004)  | <LOQ (0.007)  |
| -071            | C                 | 02 Jul 03 | 43  |                       | <LOQ (0.005)   | N.D           | N.D           | N.D           |
| -073            | A                 | 06 Jul 03 | 47  | 1.5                   | <LOQ (0.008)   | <LOQ (0.007)  | <LOQ (0.004)  | <LOQ (0.008)  |
| -075            | B                 | 06 Jul 03 | 47  |                       | <LOQ (0.009)   | N.D           | N.D           | <LOQ (0.009)  |
| -077            | C                 | 06 Jul 03 | 47  |                       | <LOQ (0.007)   | <LOQ (0.004)  | N.D           | N.D           |

<sup>a</sup> Sample ID prefix: 03RAFIX020-<sup>b</sup> Loc.: Sample Collection Location<sup>c</sup> Rainfall: Rainfall that occurred within ≈24 hours prior to sampling<sup>d</sup> Duplicate sample analysis



Figure 3: Fipronil Residues and Rainfall +Irrigation for 2003





### 2004 Water Samples

A total of 160 estuary water samples collected in 2004 were analyzed. Samples collected and analyzed were those at designated sampling periods in addition to those collected for several days following a significant rainfall event. This ensured that any fipronil-related residue arising from runoff would be detected.

None of the 2004 water samples analyzed contained detectable residues of parent fipronil or any metabolites except for a single sample collected 112 days after application from sampling point A. That sample had residues of parent fipronil at 0.037 ppb. The duplicate sample from that interval and sampling point was also analyzed and no detectable residues were present.

The analytical results for the 2003 and 2004 estuary and sediment samples analyzed are summarized in Appendix I.

### 5.4.4 Analytical Results of Field Recovery Water Samples

Field recovery water samples were prepared to establish the stability of fipronil related residues during storage at the test site, subsequent transfer to the analytical facility, and further storage prior to analysis. Field recovery samples were prepared on 21 November 2003 by fortifying duplicate 100 mL samples of pre-application (bulk) estuary water with a mixture of fipronil, MB46513, MB45950, and MB46136 to yield concentrations of 0.100 ng/mL and 1.00 ng/mL. The results are summarized in Table VI and demonstrate good accountability for the analyte after storage and transfer to the analytical facility. All quantitative data for the field recovery samples are included in Appendix I.

**Table VI: Recoveries from Field Fortified Water Samples**

| Sample               | Fortification Level (ng/mL) | Percent Recovery |         |         |         |
|----------------------|-----------------------------|------------------|---------|---------|---------|
|                      |                             | Fipronil         | MB46513 | MB45950 | MB46136 |
| 03RAFIX020-303 – 306 | 0.100                       | 77 ±10           | 90 ±12  | 90 ±8   | 103 ±6  |
| 03RAFIX020-307 – 310 | 1.00                        | 86 ±14           | 88 ±15  | 86 ±6   | 99 ±5   |

### 5.4.5 Storage Stability

The majority of the water samples were analyzed within approximately 70 to 180 days of collection each year. A few samples were analyzed late in the study with a storage interval extending beyond 180 days. Frozen storage stability studies in water have been conducted and demonstrate the stability of fipronil and its metabolites in water over storage periods up to 25 months<sup>4</sup>.

160  
105  
265



Table VIII: Analytical Results of Sediment Samples

| Sample ID<br>03RAFIX020- | Sample Location | Days after Appl | Sample Date | Anal Set # | Analytical Results (ppb) |         |              |              |
|--------------------------|-----------------|-----------------|-------------|------------|--------------------------|---------|--------------|--------------|
|                          |                 |                 |             |            | Fipronil                 | MB46513 | MB45950      | MB46136      |
| 2003                     |                 |                 |             |            |                          |         |              |              |
| 201                      | A               | -1              | 19 May 03   | 10         | N.D                      | N.D     | N.D          | N.D          |
| 203                      | B               | -1              | 19 May 03   | 10         | N.D                      | N.D     | N.D          | N.D          |
| 205                      | C               | -1              | 19 May 03   | 10         | N.D                      | N.D     | N.D          | N.D          |
| 207                      | A               | 87              | 15 Aug 03   | 10         | N.D                      | N.D     | N.D          | N.D          |
| 209                      | B               | 87              | 15 Aug 03   | 11         | N.D                      | N.D     | N.D          | N.D          |
| 211                      | C               | 87              | 15 Aug 03   | 11         | N.D                      | N.D     | <LOQ (0.035) | N.D          |
| 213                      | A               | 185             | 21 Nov 03   | 11         | N.D                      | N.D     | N.D          | N.D          |
| 215                      | B               | 185             | 21 Nov 03   | 11         | N.D                      | N.D     | N.D          | N.D          |
| 217                      | C               | 185             | 21 Nov 03   | 11         | N.D                      | N.D     | N.D          | N.D          |
| 2004                     |                 |                 |             |            |                          |         |              |              |
| 219                      | A               | -2              | 19 Apr 04   | 19         | N.D                      | N.D     | N.D          | N.D          |
| 221                      | B               | -2              | 19 Apr 04   | 19         | N.D                      | N.D     | N.D          | N.D          |
| 223                      | A               | 98              | 28 Jul 04   | 19         | N.D                      | N.D     | N.D          | N.D          |
| 225                      | B               | 98              | 28 Jul 04   | 19         | N.D                      | N.D     | <LOQ (0.059) | <LOQ (0.043) |

In 2003, the sediment samples did not contain parent fipronil residues in any of the samples. The only fipronil-related metabolite detected above the MDL but below the LOQ was MB45950 at 87 days. In 2004, the sediment samples did not contain parent fipronil residues in any of the samples. The only fipronil-related metabolite detected above the MDL but below the LOQ was MB45950 and MB46136 at 98 days. Sediment samples were not collected at 180 days in 2004 due to hurricane Ivan site destruction.