US Army Corps
of Engineers
Jacksonville District

Central & Southern Florida Project, Canal-111 South Dade County, Florida S-332D Detention Area

Pre-Operations and Start-up Monitoring Data Review Report

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Pre-Operations and Start-up Monitoring Data Review

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1.0 INTRODUCTION AND HISTORY

The Canal 111 (C-111) project is located in southern Dade County, Florida, adjacent to the eastern boundary of Everglades National Park (ENP). C-111 was originally authorized by Congress as an addition to the Central and Southern Florida Project. The authorization for this addition to the system was given to the U.S. Army Corps of Engineers (USACE), Jacksonville District through the Flood Control Act of 1962. In 1968, Congress authorized additional modifications to C-111 to allow construction of the ENP-South Dade Conveyance System project. This project provides water to urban Dade County as well as to lower ENP. The ENP Protection and Expansion Act of 1989 authorized the Secretary of the Army to modify the project to improve water deliveries to ENP and take steps to restore natural hydrologic conditions in ENP. The Act stipulated that continued studies/plans for project works within the C-111 basin should include all measures (feasible and consistent with project purposes) that would protect and enhance the natural values associated with ENP. The C-111 project and its approved modifications are intended to provide both a flood control function and an ecological restoration function. The authorized project modifications include the construction of a parallel levee system west of the C-111 Canal for the purpose of creating a “hydrologic ridge” between the Canal and ENP. It is designed to redirect C-111 basin storm water into the parallel levee system to reduce groundwater seepage from ENP to the east and provide greater flexibility for managing stormwater. This reduction in net seepage to the east is anticipated to provide tremendous ecological benefits to ENP by keeping more water within ENP.

To date, implementation of these laws has led to the development of a General Evaluation Report (GRR) in 1994 and a Supplement to the GRR in 2002. The 1994 GRR C-111 features include:

- New Bridge at Taylor Slough
- Five new pump stations (S-332A, S-332B, S-332C, S-332D, S-332E)
- Parallel levees separating ENP and C-111
- Filling of L-31W Borrow Canal for 5.5 miles
- Concrete Channels between the pump stations and levee system
- C-111N Eastern Spreader Canal (9 miles in length)
- Plug Canals 109 and 110
- Degrade C-111 Spoil Mounds
- 20 culverts to ENP from the parallel levee system

Several of these features have been constructed over the last several years including the S-332D pump station, S-332C pump station, S-332B pump station; portions of the parallel levee system; degrading of the C-111 spoil mounds; and plugging of the C-109 and C-110 Canals. The S-332B and S-332C pump stations were constructed under emergency contracts to provide protection for the adjacent Cape Sable Seaside Sparrow habitat. None of the originally-proposed culverts have been installed due to water quality

concerns. These concerns were evaluated in more detail by the USACE and are detailed in the 2002 GRR Supplement.

The 2002 Supplement to the GRR proposes adding additional levee sections to the parallel levee system by extending the system north to the 8.5 Square Mile Area (SMA) and further south into the southern Frog Pond area. The increased detention area will provide improved water quality and ecological benefits to ENP. This Supplement to the GRR is awaiting approval at USACE Headquarters; its approval is expected soon. The South Florida Water Management District (SFWMD), the local sponsor of the project, has indicated its support for the 2002 GRR Supplement to the 1994 GRR plan.

The parallel system of levees eventually will extend from Richmond Drive in the north to the Frog Pond in the south. Currently, only portions of the system have been constructed. These detention areas include a 155-acre basin west of S-332B, a 230-acre basin north of S-332B, a 300-acre basin west of S-332C and an 800-acre basin west of S-332D. The S-332D basin is designed to overflow to a shallow conveyance channel (flow way) of several hundred additional acres leading toward the portion of the Frog Pond levee that has been degraded to allow for flow way water delivery to the headwaters of Taylor Slough in ENP. Figure 3 provides a general location of the different detention areas within the C-111 project area as well as the associated structures.

Water quality monitoring of these detention areas has been conducted in accordance with a Florida Department of Environmental Protection Emergency Authorization to operate the system pending interagency agreements on the appropriate long-term operations permit. To supplement those compliance based monitoring activities, the USACE conducted supplemental, non-compliance based surface water, groundwater, and ecological investigations during June and July 2002 to document pre-operations and start up conditions to assist in evaluation and verification of the project design. The results of those investigations, performed on behalf of the USACE by CH2M HILL, are detailed in the companion document: *"Draft Technical Memorandum No. 3. S-332D Detention Area Pre-Operations and Start-up Phase Monitoring Data Review"* (CH2M HILL, October 2002). This USACE document supplements the consultant's report with additional data generated by the Corps' other compliance monitoring efforts under the FDEP Emergency Authorization, plus amendments. While these specific documents are focused solely on the S-332D detention area, the data and results from this investigation are viewed as representative of the overall project performance within the C-111 basin.

For a comprehensive understanding of the surface water, groundwater, and ecological investigations conducted in June and July 2002, the above referenced technical memorandum should be reviewed. This USACE summary document is focused on presentation of a subset of the overall data generated, with particular emphasis placed on shallow groundwater conditions. Several monitoring wells have been installed in the S-332D detention area and these are shown on Figure 4.

This USACE summary report, combined with CH2M Hill's technical memorandum, presents an intensive and comprehensive compilation of monitoring data available for the

S-332D detention area. The goal is to present key data in a format that promotes dialogue between agency representatives, and solicit input relevant to the completed facilities and future site operations. Several conclusions and recommendations are presented that are based on USACE's review of these data. It should be emphasized that the data only cover a six-week period in June and July 2002. Comprehensive conclusions and recommendations should be deferred until additional monitoring records are available. The USACE is implementing a continued supplemental field investigation of the S-332D detention area pending final design and implementation of a long term, comprehensive monitoring program, currently under development in coordination with the SFWMD, the project's non-Federal sponsor. The USACE presented the scope of this supplemental field investigation and solicited input at an interagency at an interagency workshop held on July 24, 2002 regarding continuation of the supplemental field investigations. The USACE has since been revising the scope of the contract with CH2M Hill in response to the comments received and anticipates resuming the supplemental field investigations in December 2002.

As noted above, compliance-based monitoring efforts associated with the C-111 project's detention areas have been conducted for a much longer time period. Appendix A provides the longer term monitoring results for USACE's monitoring of total phosphorus in the C-111 basin from February 2001 through August 2002. This includes analyses of total phosphorus in the S-332D, S-332C and S-332B detention areas. Comparisons are developed between rainfall, discharge and total phosphorus concentrations in the S-332D detention area as well as evaluating total phosphorus in the S-332C and S-332B detention areas.

2.0 GROUNDWATER GRADIENTS

Prior to the completion of the new cells in the Frog Pond area this year, water was pumped directly from the S-332D pump station into the L-31W canal. The L31W canal conveyed most of the water south to the S-332 pump station. The S332 pump station was used to pump the water into Taylor Slough. Prior to the Interim Operating Plan, water stages in the L-31W canal were generally higher than stages in both the ENP and the Frog Pond. This operation resulted in groundwater gradients noted on Figure 2.

The S-332D pump station now discharges water into a distribution cell at the north end of the Frog Pond. Water then sheet flows overland crossing three weirs (one earthen and two concrete) on its way to discharge to Taylor Slough north of S-332. S-332 has been bypassed by removal of 1000 feet of levee on the west side of L-31W and 2000 feet on the eastern side of L-31W. Although a majority of the water flows across the degraded levee into Taylor Slough, a small fraction of water flows northward up the L-31W canal and southward down the L-31W canal. The use of the S332D detention area has modified the groundwater gradients in both the ENP and the Frog Pond. This is demonstrated by comparing Figures 1 and 2. Figure 2 is a typical flow pattern prior to construction of the S332D detention area and Figure 1 is a typical flow pattern utilizing the S332D detention area. Figure 1 shows that by applying water to the S332D detention area, the easterly gradient in the ENP has been reduced to almost no gradient at all. The lowering of the gradient in the ENP through the use of S-332D has helped to reduce seepage from ENP, consistent with the goal of the C-111 project.

With the water now being pumped to the S332D detention area in lieu of the L31W canal, the easterly gradient between the Frog Pond to the C-111 canal have increased and there is an increase of flow into the C-111 canal south of S-176. This is shown by comparing the Frog Pond gradients in Figures 1 and 2.

3.0 Evaluation of Monitoring Data

As stated earlier, this evaluation report is focused primarily on a subset of the overall data generated, with particular emphasis placed on potential indicator water quality constituents that might be useful for documenting surface water effects on groundwater quality in areas adjacent to the S-332D detention area. The potential indicator water quality constituents evaluated in this report include several ionic parameters and phosphorus. For a comprehensive understanding of the details of the surface water, groundwater, and ecological investigations conducted in June and July 2002, CH2M Hill's technical memorandum should be reviewed.

3.1 Ionic Constituents

Exhibits 1 through 5 provide a comparison of different ionic parameters during the initial operation of the S-332D detention area. Each exhibit shows several bars corresponding to a given monitoring well. These bars represent a weekly sampling period. There is missing information for some sampling periods during the six week monitoring effort, thus not all monitoring wells shown include six data points or six bars. Inflow concentrations were typically sampled three times per week and the inflow concentration shown in Exhibits 1 through 5 denote an average inflow concentration for a given week. This inflow concentration represents surface water quality conditions for these parameters within the S-332D detention area. Each well location is color coded corresponding to its relative location in the S-332D detention area. The first five wells noted on these exhibits correspond to the ENP wells and are identified with a blue color. The next four wells are the shallow wells located adjacent to the L-31W canal and are identified with a yellow color. Two of these wells are located west of the canal, on ENP lands, and the other two wells are located east of the canal. The last set of bars is the average inflow concentration, which represents surface water in the S-332D detention area and is identified with a magenta color.

Comparing these different sets of data clearly shows a contrast between the ENP wells, the L-31W wells and the inflow for several ionic parameters. These parameters include sodium, potassium, magnesium, chloride and total dissolved solids (TDS). The following sections discuss these differences.

3.1.1 Sodium

Exhibit 1 distinguishes the sodium concentration at: (1) the ENP wells (MW-28, 29, 30, 32, 33); (2) the wells adjacent to the L-31W canal (MW-23, 26, 31, 34); and (3) the inflow to the detention area. This exhibit demonstrates that the sodium concentration of surface water inflow was consistently around 25 mg/l throughout the monitoring period whereas the sodium concentration of the ENP wells was initially around one half the concentration of the surface water (between 10-15 mg/l). Therefore, there is a clear and distinct difference in sodium concentrations between surface water in the detention area and groundwater in the ENP wells.

This data reveals that both the ENP background well (MW-28) and the two ENP wells along Transect A (MW-29 and MW-30) have not been influenced by the operation of S-332D. The sodium concentration in these three wells is relatively constant through the monitoring period. However, the ENP monitoring well along Transect B that is nearest to the S-332D detention area (MW-33) does indicate evidence of an influence from the operation of S-332D as sodium concentrations in this well increased from 11 mg/l to 24 mg/l. The interior well along Transect B (MW-32) also showed a slight influence as sodium concentrations in this well increased from 10 mg/l to 18 mg/l.

The sodium concentrations in the four shallow wells adjacent to L-31W canal resemble the inflow sodium concentrations of 25 mg/l. Although not shown on this exhibit the sodium concentrations in the four shallow wells adjacent to L-31W canal are also similar to the sodium concentration sampled in the L-31W canal water. It is apparent that the L-31W canal waters may have had an effect on the four shallow wells adjacent to the L-31W canal.

3.1.2 Magnesium

Exhibit 2 provides a comparative analysis of the magnesium concentration at several shallow groundwater monitoring wells at S-332D. As with the other ionic parameters, this exhibit appears to show a difference in magnesium concentrations between the five ENP wells, the four wells adjacent to the L-31W canal, and the inflow. Most ENP wells note a magnesium concentration between 2 mg/l and 3 mg/l whereas the inflow magnesium concentration to the S-332D detention area is between 5 mg/l and 6 mg/l.

Of the five ENP wells, both the background wells (MW-28) and the two Transect A wells (MW-29 and MW-30) show no evidence of an influence from the surface water as the magnesium concentration in these wells did not increase throughout the monitoring period. The ENP monitoring well along Transect B that is nearest to the S-332D detention area (MW-33) does indicate a possible influence from the operation of S-332D as magnesium concentrations in the well increased from 2.4 mg/l to 3.9 mg/l. It appears that the interior well along Transect B (MW-32) also showed a slight influence as magnesium concentrations in this well increased from 2.2 mg/l to 2.9 mg/l.

3.1.3 Potassium

Exhibit 3 compares potassium concentrations in the ENP wells to potassium concentrations along L-31W to potassium concentrations at the inflow into the S-332D detention area. This exhibit reveals a clear distinction of potassium concentrations in the ENP wells to the wells adjacent to the L31W canal and to the surface water. All of the five ENP wells indicate a potassium concentration of 1 mg/l. This is the detection limit of potassium, therefore the potassium concentration in the five ENP wells may actually be lower than 1 mg/l. A lower detection limit may reveal a more significant difference in concentration levels than that shown in this exhibit. This exhibit also indicates that none of the five ENP monitoring wells have been influenced by the operation of S-332D. This is

the only parameter which shows no influence at any of the ENP wells. The other four ionic parameters all show some influence in Transect B. It may be that there has been some potassium ionic influence on the ENP wells, but this influence may be such a minor contribution that it is still not being detected. The USACE will continue to monitor the wells in ENP in addition to the wells adjacent to the L-31W canal for potassium ionic concentration to determine if this difference in potassium concentration continues over a longer term of operation.

3.1.4 Chlorides

Exhibit 4 represents chloride concentrations in three general areas at the S-332D detention area. Similar to sodium, potassium and magnesium, the chloride concentration in the ENP wells were all below both the inflow surface water chloride concentration and chloride concentration of the four shallow wells adjacent to L-31W. Many of the ENP wells noted chloride concentrations between 20 and 30 mg/l whereas surface water chloride concentration averaged between 40 and 50 mg/l. The chloride concentrations of the wells adjacent to L31W were typically between the ENP wells and the surface water (between 30 to 40 mg/l).

Of the five ENP wells, the background well (MW-28) and the two Transect A wells (MW-29 and MW-30) show no evidence of an influence from the surface water as the chloride concentration in these wells decreased during this monitoring period. The ENP monitoring well along Transect B that is nearest to the S-332D detention area (MW-33) does indicate some evidence of an influence from the operation of S-332D as chloride concentrations in the well increased from around 20 mg/l to near 40 mg/l. The interior well along Transect B (MW-32) also showed a slight influence as chloride concentrations in this well increased from approximately 20 mg/l to 30 mg/l.

3.1.5 Total Dissolved Solids

Exhibit 5 provides a comparison of TDS concentrations in three general areas at the S-332D detention area. Although not as significant of a contrast between ENP wells and surface water as with the other ionic parameters, Exhibit 5 does demonstrate a slight TDS concentration difference between the ENP wells and surface water. The TDS concentration for the five ENP wells is between 230 and 250 mg/l whereas the TDS concentration of the inflow surface water to the detention area was near 300 mg/l.

Of the five ENP wells, the background well (MW-28) and the two Transect A wells (MW-29 and MW-30) show no evidence of an influence from the surface water as the TDS concentration in these wells stayed approximately the same. The ENP monitoring well along Transect B that is nearest to the S-332D detention area (MW-33) does indicate evidence of an influence from the operation of S-332D as TDS concentrations in this well continuously increased from week to week beginning at the ENP groundwater concentration of 230 mg/l and ending at the surface water concentration near 300 mg/l. The interior well along Transect B (MW-32) noted a lesser influence as TDS concentrations in this well increased from approximately 230 mg/l to 260 mg/l.

3.2 Phosphorous Analysis

3.2.1 Phosphorus Concentrations in Surface Water at S-332D Detention Area

As noted in the attached report from CH2M Hill, phosphorus was sampled at the inflow to the S-332D detention area and at the outflow from the detention area at a frequency of three times per week. In addition, several phosphorus samples were collected in the middle of the detention area between Cell 1 and Cell 2. Comparing the inflow data to the outflow data shows that the outflow phosphorus concentrations were often greater than the inflow concentrations. This could be expected after the initial startup of the S-332D detention area as the result of dynamic conditions created by water initially flowing through the detention area which may have suspended any fines or other material left in the detention area after the area was scraped down during construction activities. The average phosphorus concentration at the inflow was 8.5 µg/l during the startup period in July 2002 whereas the average phosphorus concentration at the outflow was 11.7 µg/l for the same period of record.

Although the phosphorus concentration temporarily increased during the startup of the detention area, the monitoring of phosphorus further down gradient at S-332 during this same time interval shows no evidence of any increase in phosphorus concentrations between the inflow sampling point (S-332D) and S-332. Exhibit 6 compares average weekly phosphorus concentrations at four different locations. These locations are: S-332D, inflow to S-332D detention area, outflow from S-332D detention area, and S-332. Sampling location S-332D and the sampling location at the inflow to S-332D detention area should be analogous to each other as both these sampling points are upstream of the S-332D detention area and are located in close proximity. However, several thousand feet of the flow way separate the S-332D outflow sampling station from station S-332.

As noted in the Section 2.0 (Groundwater Gradient Section), both the surface water and groundwater flow gradient near the flow way discharge to ENP is in the southwest direction, towards the park. Therefore, it is likely that the S-332 sampling location is influenced by the water being discharged from the detention area. This demonstrates that even though there has been an increase in phosphorus concentrations through the detention area, the phosphorus concentrations being discharged from the flow way to Taylor Slough are, on the average, less than the phosphorus concentrations near S-332D. For more detailed results on the monitoring of phosphorus in the C-111 area, please see the attached Appendix A.

The USACE will continue to monitor phosphorus concentration in the high head cell discharge, the discharge from Cell 1 and the discharge from Cell 2. In addition, the S-332 sampling location has been relocated to the center of the flow way discharge to directly monitor outflow from the detention area.

3.2.2 Phosphorus Concentration in Groundwater

Exhibit 7 provides a comparison of phosphorus concentrations in groundwater between the shallow (screened at roughly 20 feet below land surface, bls) and deep (screened at roughly 40 feet bls) well clusters. Data collected during the startup of operations of the S-332D detention area indicates that at some locations, the phosphorus concentration in groundwater increased with depth through the Biscayne Aquifer. There are two well clusters where the deeper wells noted higher phosphorus concentrations than the corresponding shallow well. It both instances where phosphorus concentration were higher in the deep well than the shallow well, the well clusters were located adjacent to the L-31W canal. These well clusters include MW-23/24 and MW-26/27. Phosphorus concentrations in the deep wells typically were three to four times higher than the corresponding shallow well. Reasons for the difference in phosphorus concentrations could be because the relatively low phosphorus concentrations in the L-31W canal have affected both shallow wells (MW-23 and MW-26) whereas the deeper wells adjacent to the canal (MW-24 and MW-27) have not been directly affected by canal waters.

Monitoring well cluster MW-21/22 notes relatively high phosphorus concentrations in both the shallow and deep well. This well is located in the center of the Frog Pond area and higher phosphorus levels at this well cluster could be the result of past agricultural applications. There are no deep wells in the ENP to monitor the phosphorus concentrations in the deeper zone so it is indeterminate what the pre-operational background concentrations were and whether phosphorus concentrations in the deeper zone have changed as a result of operating the S-332D detention area.

4.0 Conclusions and Recommendations

Based on the analyses of the pre-operational and start-up monitoring in the S-332D detention area, as presented in CH2M Hill's report supplemented by data drawn from C-111 water quality permit monitoring requirements, the USACE has developed the following conclusions and recommendations with regards to the continued operation and monitoring of the S-332D detention area.

a. The USACE agrees with the conclusions and recommendations stated in the CH2M Hill report.

b. The low level sampling of pesticides demonstrates that scraping the Frog Pond during construction and the initial surge of water through the detention area did not release pesticides through the surface water or the groundwater. Since low level pesticide concentrations have not been detected during the startup period, the USACE does not recommend additional pesticide sampling during the interim monitoring period.

c. Even though phosphorus concentrations in the outflow from the detention area often exceeded inflow concentrations, the downgradient sampling station, S-332 (USACE autosampler) showed that average weekly phosphorus concentrations have been less than 10 µg/l during the same period of operation. This calculation was based on averaging three sample results per day. The USACE will continue to monitor phosphorus concentration in the high head cell discharge, the discharge from Cell 1 and the discharge from Cell 2. In addition, the USACE S-332 sampling location has been relocated as of August 2002 to the center of the flow way discharge to directly monitor outflow from the detention area. Monitoring information on the relocated S-332 sample station will be provided in a subsequent data report.

d. Some of the deeper wells noted phosphorus concentrations much higher than either the surface water or shallow groundwater concentration. The USACE recommends the continued monitoring of these deeper wells and consideration of the installation of similar deeper wells in the ENP to evaluate phosphorus concentrations in the groundwater.

e. Even though many metal parameters have not been detected in the S-332D detention area during startup, the USACE will continue to monitor groundwater wells for metals on a biweekly frequency as part of the interim monitoring program planned for implementation during the fourth quarter of 2002.

f. Several ionic parameters show that the operation of S-332D detention area has had some influence on the Transect B ENP wells. The ENP interior well (MW-32) was less affected than the ENP well nearer to the S-332D detention area. However, there has been no indication that the operation of S-332D has affected

the Transect A ENP wells. One possible reason for this may be because the Transect B wells are potentially influenced by increased stages in both Cell 1 and Cell 2 whereas the Transect A wells are only influenced by the impounded waters within Cell 1.

g. Although many of the ionic parameters being monitored in the S-332D detention area show that the detention area surface water has had some influence on the Transect B groundwater monitoring wells in the ENP, there is no indication that the phosphorus concentrations in the ENP wells have increased as a result of operating S-332D detention area. In fact, the operation of the S-332D detention area has reduced the phosphorus concentrations in Transect B ENP monitoring wells. The three ENP wells along Transect B (i.e, MW-34, MW-33, MW-32) all show phosphorus concentration at the end of the monitoring period much lower than the phosphorus concentration at the beginning of the monitoring period. The table below shows the steady reduction of phosphorus concentration in the three ENP wells along Transect B. It appears that remnant phosphorus concentrations in the ENP wells at Transect B are being displaced by water with a lower phosphorus concentration. Since no historical data exists for these wells, it is uncertain whether the initial high phosphorus concentration shown in the table below are a result of past agricultural operations in the Frog Pond or are transient in nature.

TABLE 1

TOTAL PHOSPHORUS CONCENTRATIONS IN TRANSECT B ENP WELLS

Date	MW- 34	MW-33	MW-32
6/18/02	30	-	-
6/27/02	25	14	37
7/12/02	19	7	30
7/17/02	15	9	24
7/24/02	10	8	22
8/01/02	7	8	16

all values in µg/l

5.0 Future Actions

The following USACE actions will be undertaken:

a. Install stage gages in the high head cell, Cell 1, Cell 2, and the flow way (planned under a current task order amendment).

b. Evaluate rating the weir between the high head cell and Cell 1 and between Cell 1 and the Flow way to quantify detention area inflow and outflow (planned effort with either USGS or SFWMD support).

c. Calculate a water budget for S-332D (following inflow and outflow measurement improvements).

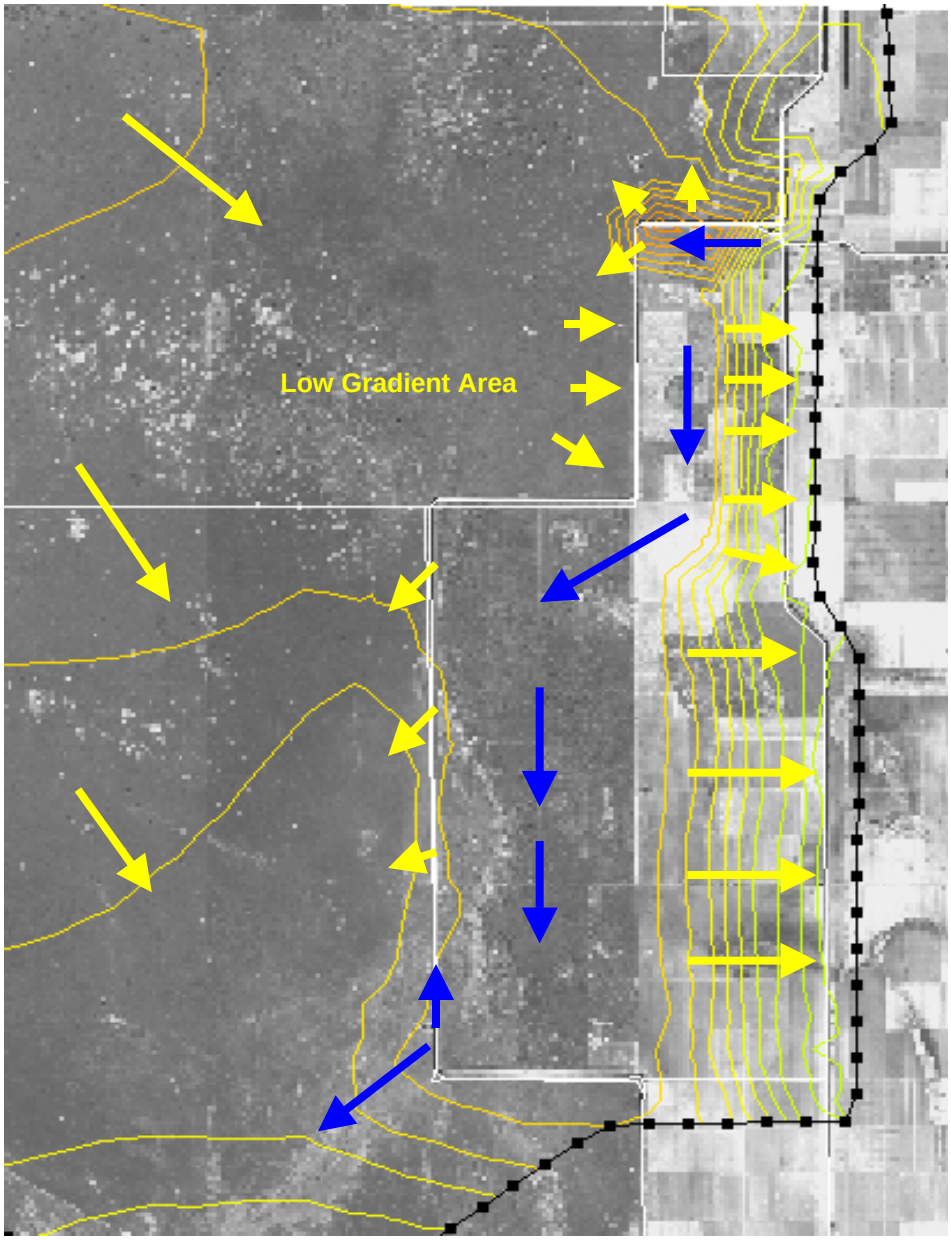
d. Evaluate the need for installing deeper wells in the ENP (discussions with other agencies planned).

e. Provide additional monitoring on a biweekly frequency to provide more information on the possible effects of operating S-332D.

f. Continue to design, construct, and operate the features of the C-111 project in accordance with Congressional authorities and in coordination with appropriate federal and state regulatory and resource management agencies.

Water Flow Patterns at S-332D

After Construction of New Cells
(With S-332C & S-332D Operating)



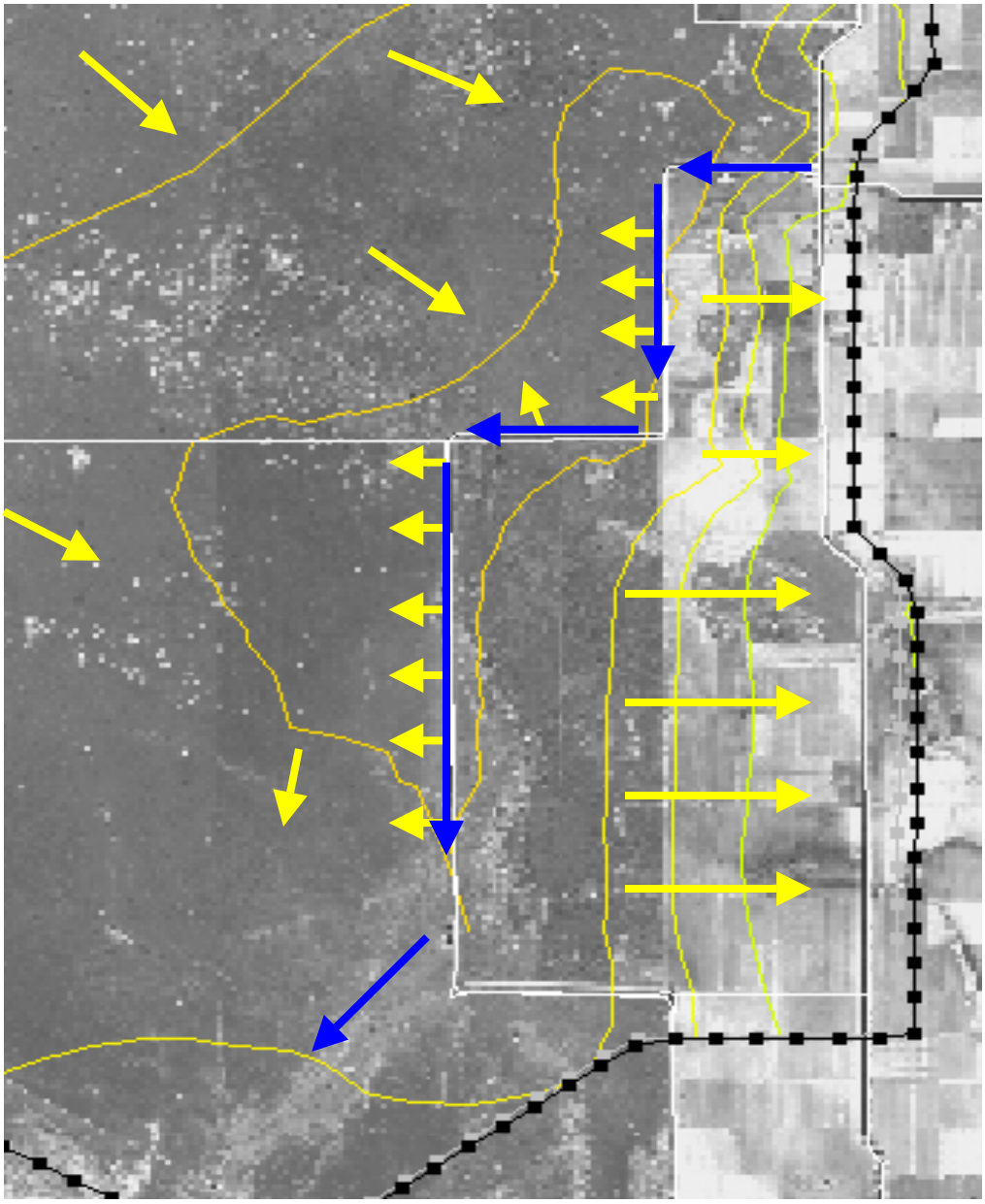
Ground Water

Surface Water

Figure 1. Wet Season – 2002

Water Flow Patterns at S-332D

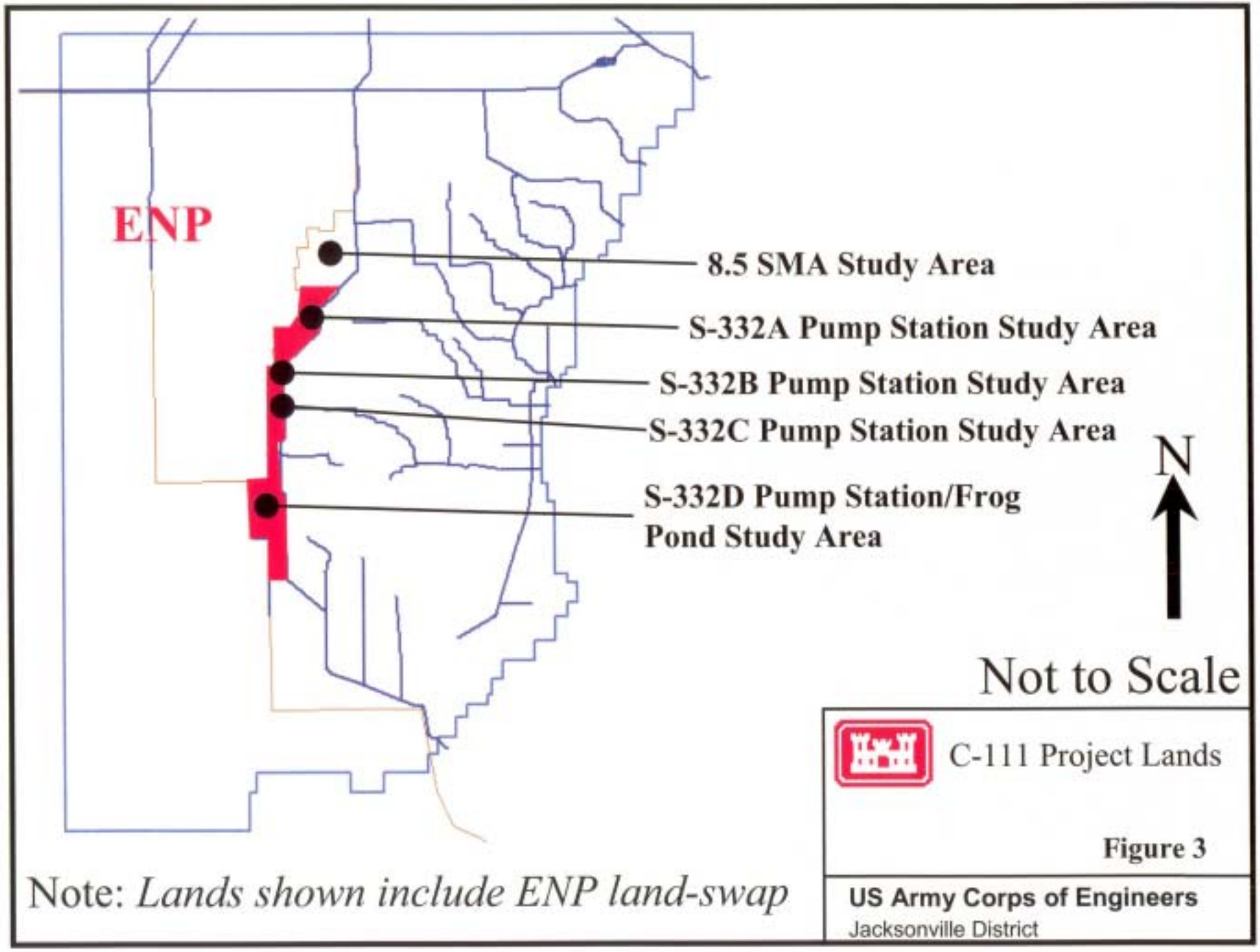
Before Construction of New Cells
(With S-332C & S-332D Operating)



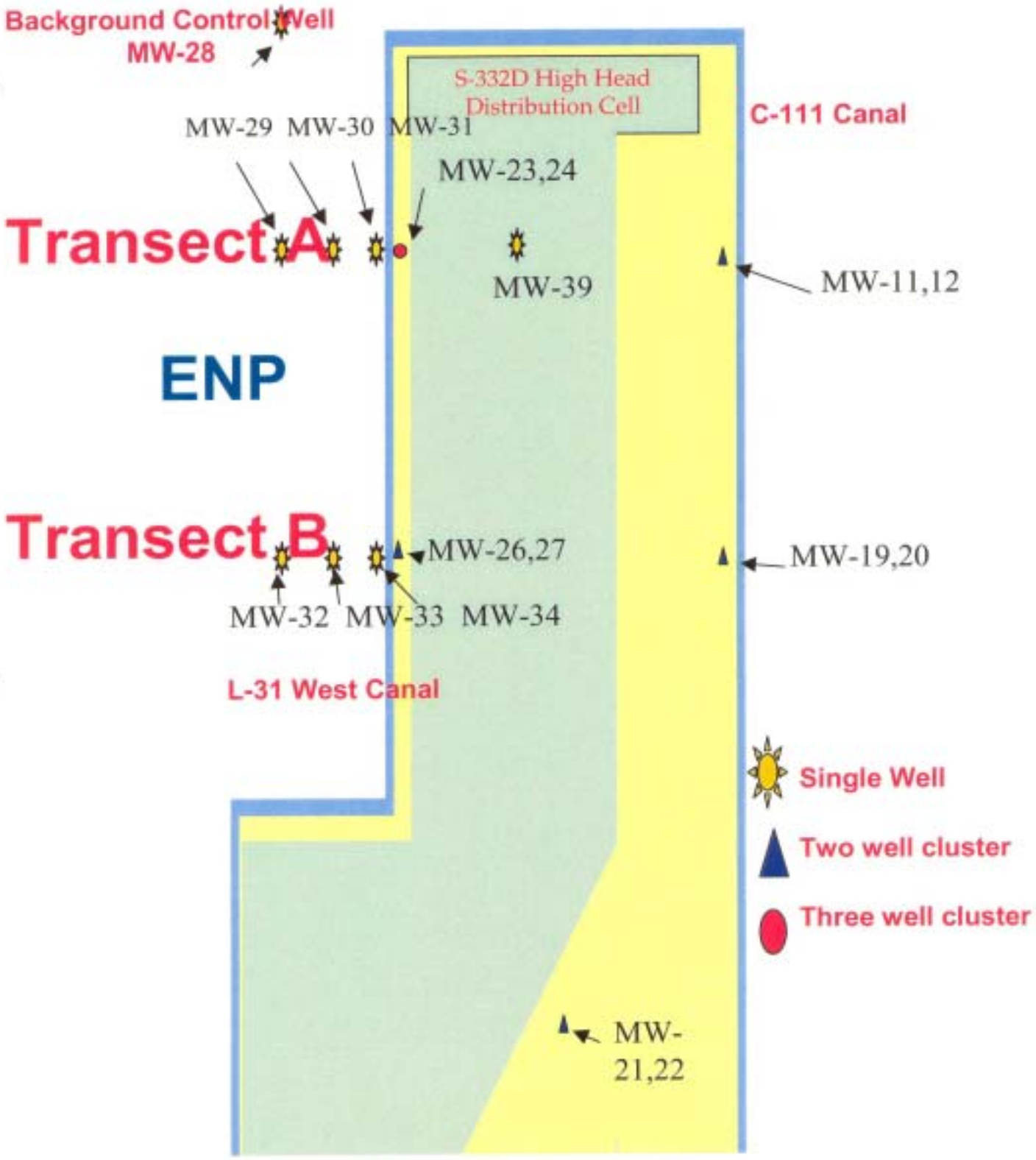
Ground Water

Surface Water

Figure 2. Wet Season - 2001



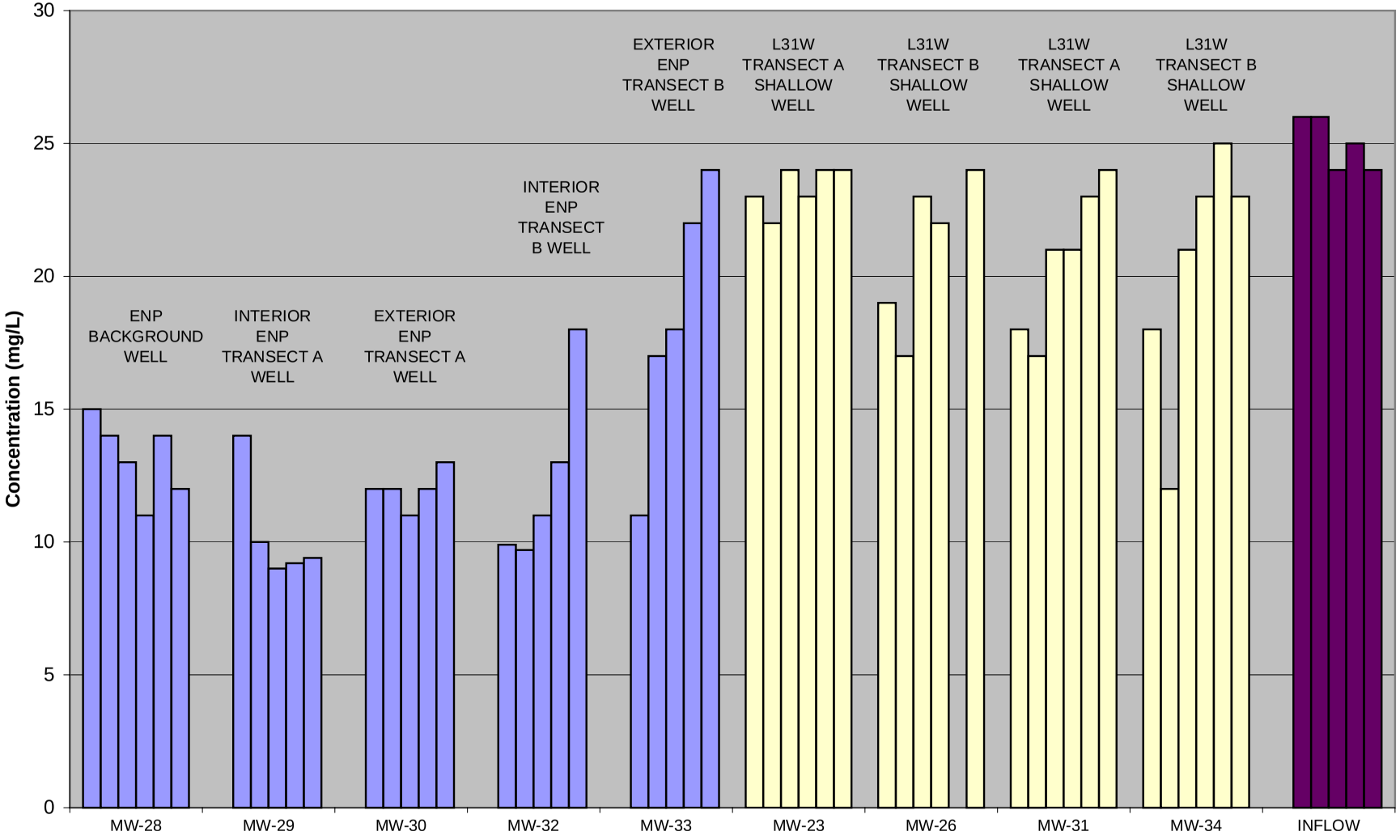
Note: *Lands shown include ENP land-swap*



Location of GW Wells at S-332D Basin

Figure 4

EXHIBIT 1 SODIUM CONCENTRATIONS



Magnesium

EXHIBIT 2 MAGNESIUM CONCENTRATIONS

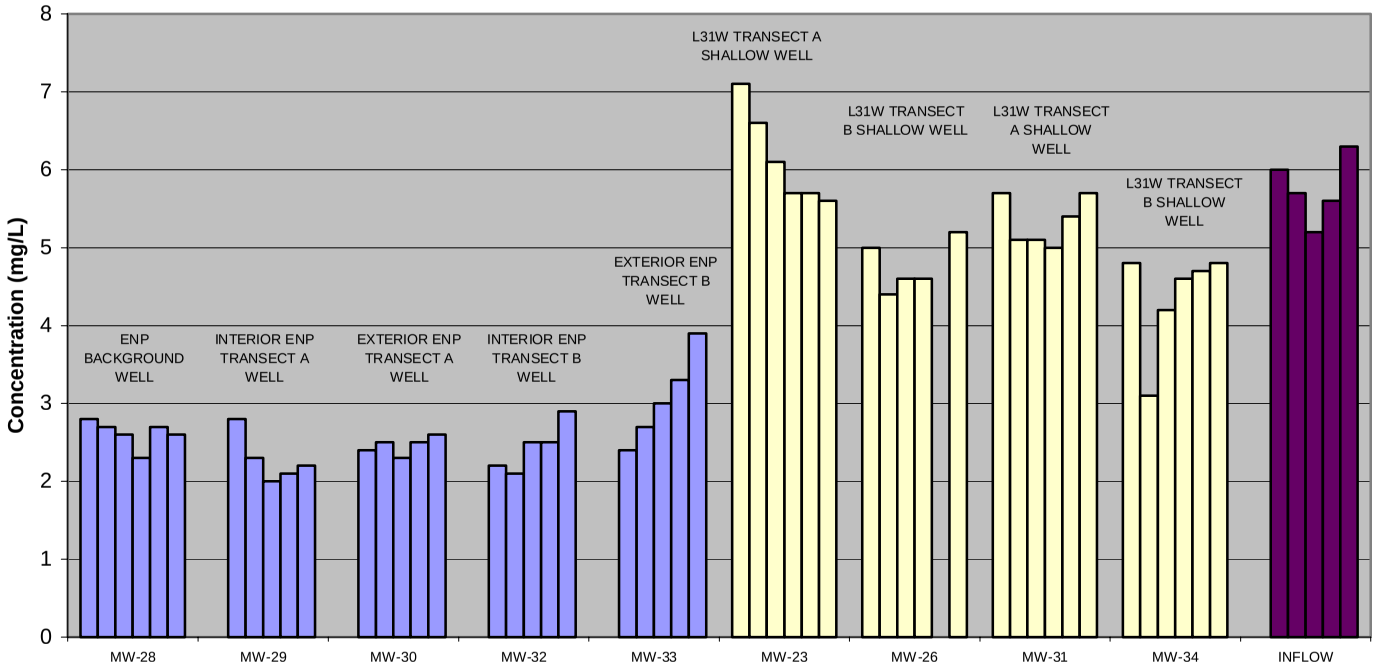
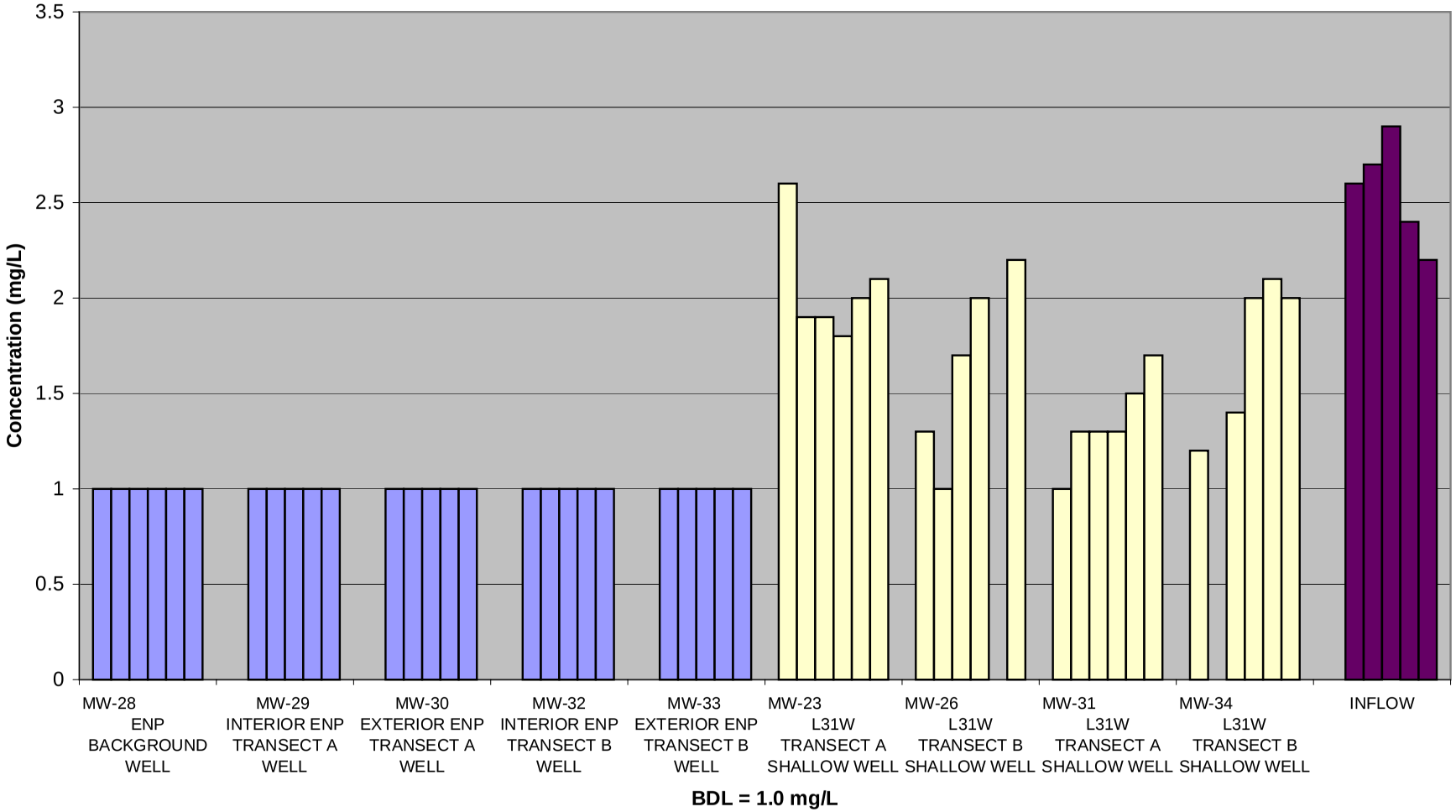


EXHIBIT 3 POTASSIUM CONCENTRATIONS



BDL = 1.0 mg/L

EXHIBIT 4 CHLORIDE CONCENTRATIONS

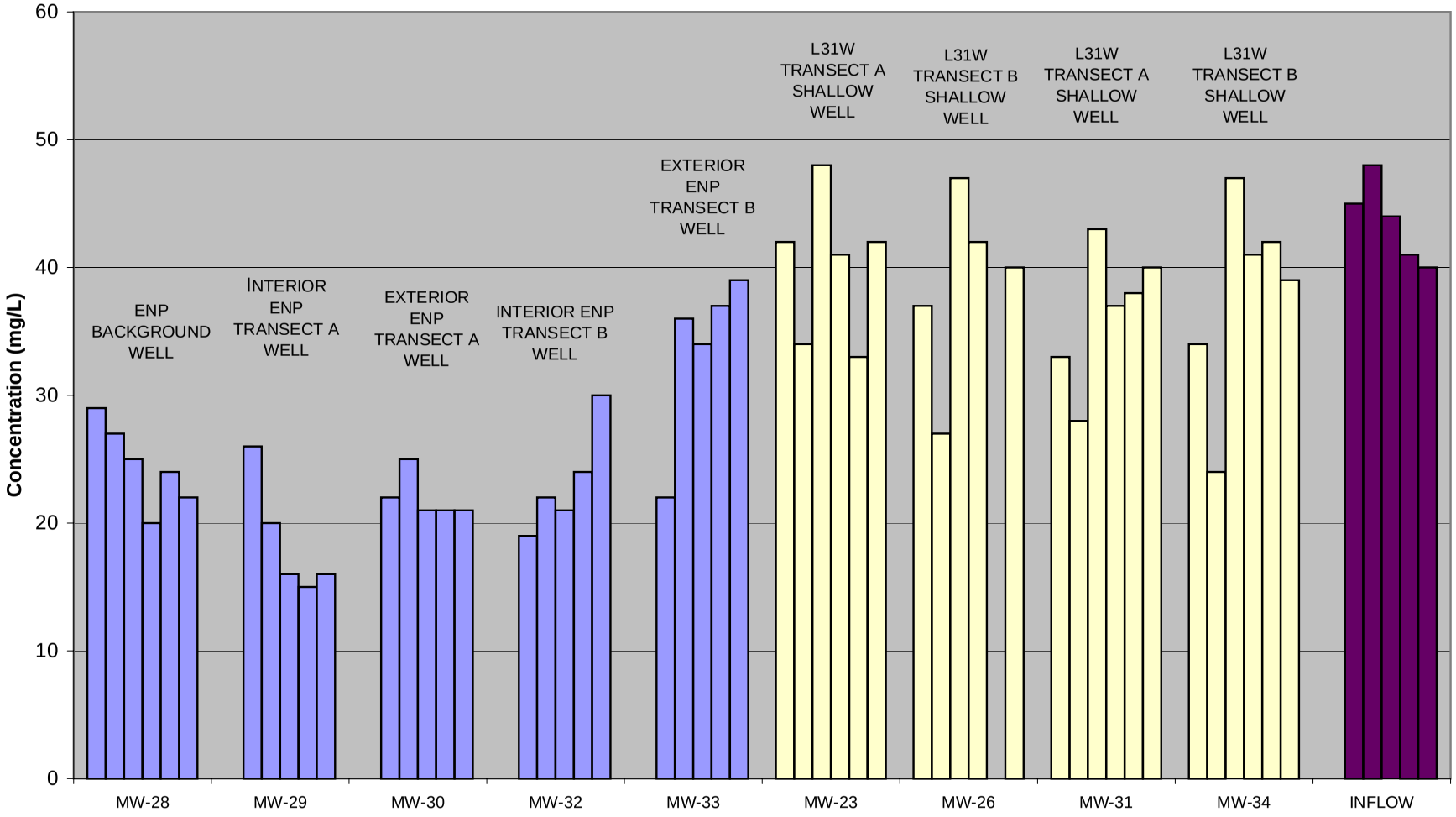


EXHIBIT 5 TDS CONCENTRATIONS

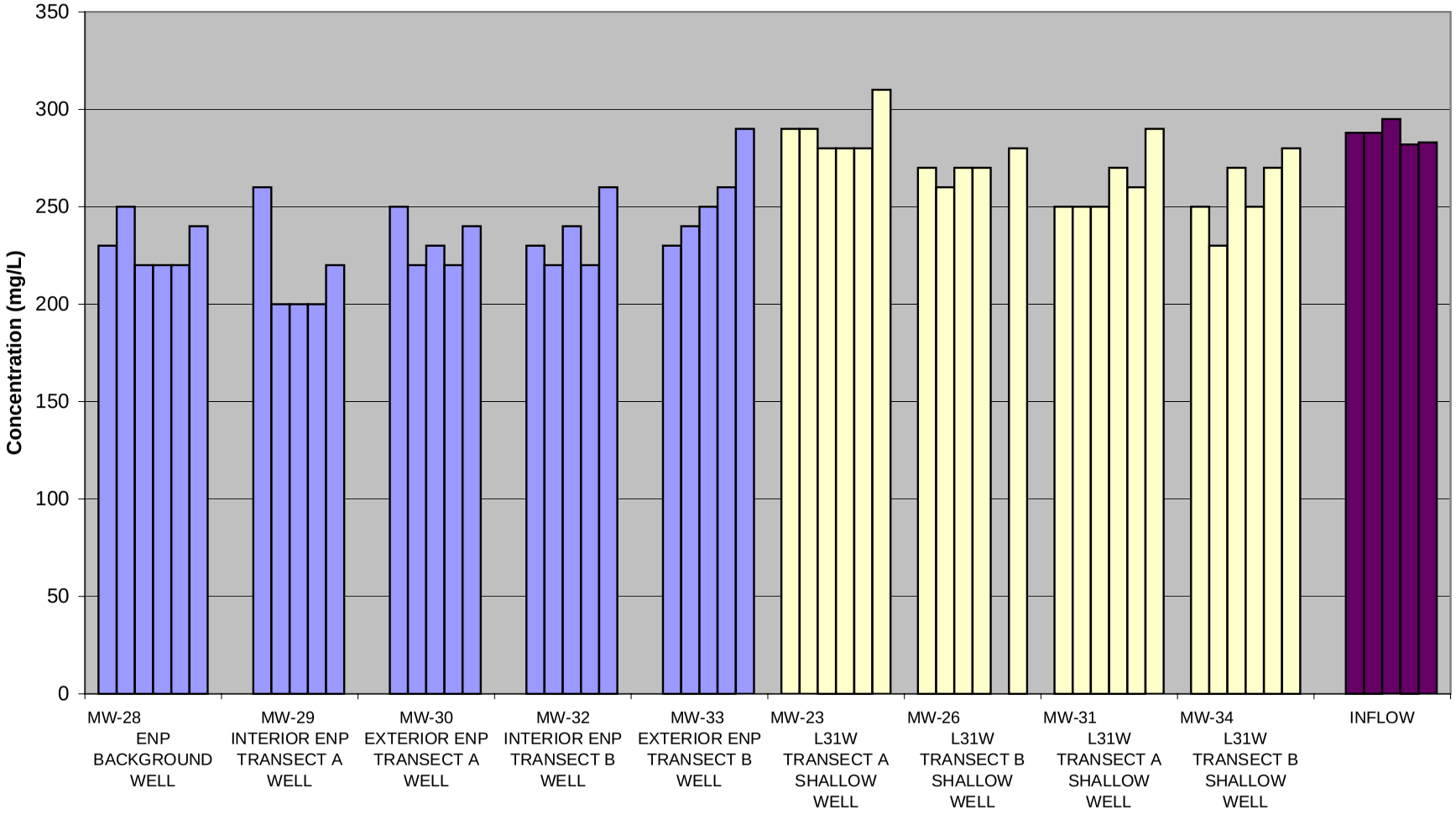


EXHIBIT 6 TOTAL PHOSPHOROUS CONCENTRATIONS

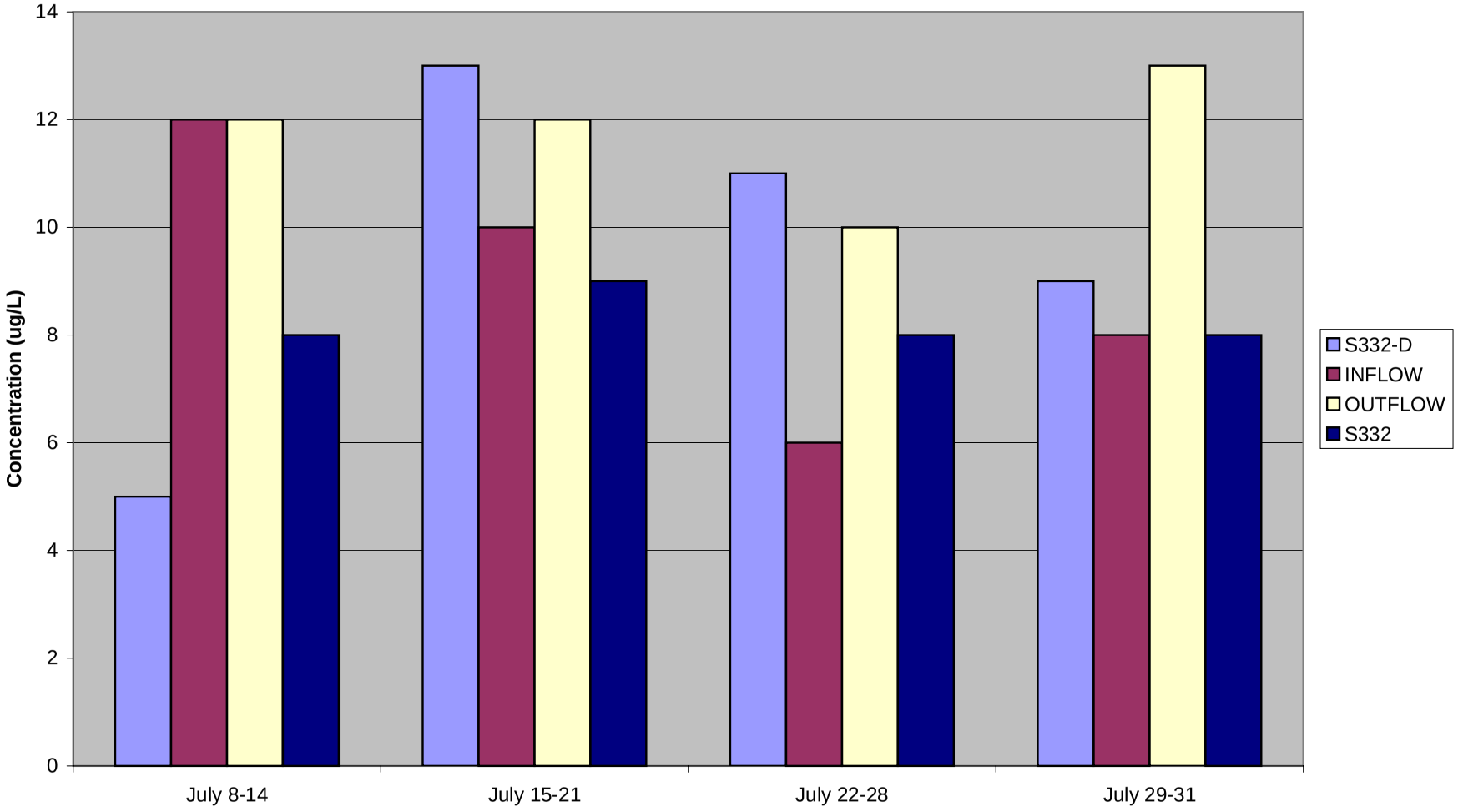
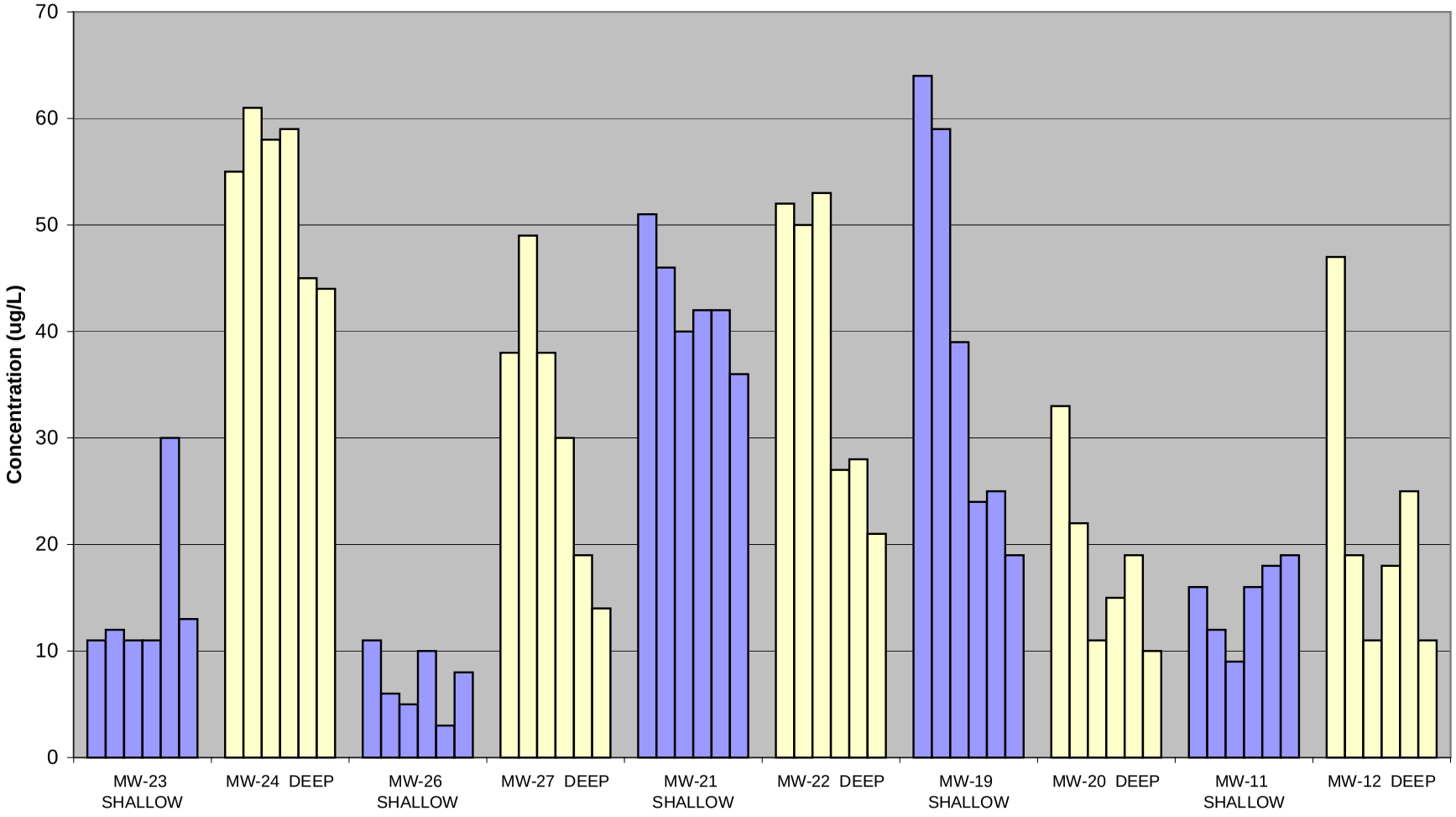


EXHIBIT 7 TOTAL PHOSPHOROUS CONCENTRATIONS



Appendix A

Review of Long-Term Monitoring of Total Phosphorus As Related to C-111 Emergency Operating Permit

1.0 Introduction

The Army Corps of Engineers has collected surface and groundwater quality data in the C-111 basin as part of the DEP Emergency Operating Order for S-332D, S-332C, and S-332B Pumps and detention cells. This monitoring began in Fall of 1999 and continues to this day. This appendix is a summary of total phosphorus data collected by the Army Corps of Engineers between February 14, 2001 and September 30, 2002. Total Phosphorus data collected by the USACE prior to February 14, 2001 was not included in this data summary because it was collected and analyzed using less accurate methods.

2.0 Analysis of S-332D / L31W TP Data

At the S-332D / L31W project features the USACE has collected long-term TP data at S-332D, S332DW, L31WTS, and S332. Figure A1 shows the sampling locations. Each of these sampling locations has an autosampler programmed to collect three discrete grab samples per day. This dataset is supplemented by the collection of one QC grab sample per week at each autosampler. Results of the QC sample are then compared to the autosampler results to determine if these results match. High autosampler results that do not agree with low QC grab sample results are considered suspect if the autosampler results are not comparable with up or downstream autosampler results.

A summary of this data is found in Table A1, as well as Figures A2, A3 and A4. Figure A2 shows the average daily TP concentration at these four monitoring sites. From this figure, it is evident that high TP concentrations were measured at S332D and S332 during late December 01 through early January of 02. A review of the QC grab samples taken at these two stations did not support the results from these two autosamplers. Neither were they supported by the autosampler results for this period at L31WTS or S332DW which lie between the S332D and S332 sites. For this reason, portions of the monthly record were omitted from the calculation of monthly TP averages. In Table A1, average monthly TP concentrations have not been calculated for S332D for January 02 or at S332 for December 01.

In Table A1, the monthly average and the flow-weighted monthly average TP concentrations for S332D are below 10 ppb for all of the months except for May02 and June02. The monthly average TP concentration at S332 is below 10 ppb for all months except Feb 01, May 02, and June 02. Figure A3 shows average discharge at S332D plotted against the average monthly TP

concentrations at S332D, S332DW, L31WTS, and S332. Figure A4 shows average rainfall at S332 plotted against the average monthly TP concentrations at S332D, S332DW, L31WTS, and S332. Although the period of record covers only 18 months, some preliminary observations can be made. From these figures it appears that during periods of high rainfall and discharge at S332D experience lower average TP concentrations than periods of low rainfall and low discharge at S332. These figures also show that during the low flow periods, average concentrations at S332 tend to exceed the average monthly TP concentrations at S332D. However, during the wet season, it appears that S332D average TP concentrations exceed S332 average concentrations. The highest monthly average TP concentrations occurred at the start of the rainy season (May02 – June02). This same spike also occurred at S332B and S331.

Table A2 shows that the average TP concentration at S332D and S332 appear to be inversely related to the magnitude of the discharge at S332D. For periods in which discharge at S332D is less than 100 cfs, the average TP concentration at S332D is 9 ppb, whereas the average TP concentration at S332D is 6 ppb for periods when S332D discharge exceeded 500 cfs. A similar trend can be seen for TP at S332.

There have been various sampling regimes used to collect TP data at S332D over its three-year operating period. The SFWMD collects biweekly grab samples at S-332D. The WMD also operates an autosampler that collects weekly composite samples (S332DAS). The USACE collects three samples per day via autosampler as well as one QC manual grab sample per week at S332D. The SFWMD currently uses their S332D manual grab sampling results to perform the Settlement Agreement calculations for Taylor Slough Flow-Weighted Average TP concentrations. Although each of these datasets is collected using a different frequency and sampling methodology, they should provide fairly consistent results since they are sampled at roughly the same time and analyzed using the same laboratory techniques.

Figure A5 shows a comparison between the SFWMD TP datasets (S332D and S332DAS) and the USACE S332D autosampler dataset for the period February 01 through August 02. It appears from Figure A5, that there are periods in which the results from both the SFWMD's and the USACEs autosampler are not representative of the other datasets. (The S332DAS Autosampler results for February 01, September 01, and October 01 do not appear to compare favorably with the SFWMD manual grab results or the USACEs autosampler results. The USACE Autosampler results at S332D do not match the other records for the late December 01 to early January 02 period as well as the May 02 period.) From the data shown in Figure A5, it is apparent that consistently high autosampler results that are not confirmed by discrete manual grab sampling, should probably be considered suspect and not included in an assessment of compliance with water quality standards.

The S332D detention cells and flow-way lie more than 1000 feet closer to C-111 canal than the L-31W canal. One would expect that pumping water into the

S332D detention/flow-way system rather than the L-31W canal would increase leakage to the C-111 canal south of S-176. Table A3 is a comparison of the net recharge contribution for the reach of C-111 between S-176 and S-18C during selected 2-month periods over the preceding four years. It shows that during the first two months of operating the S332D detention/flow-way system, the average net recharge to the reach of C-111 above S-18C was in excess of 900 cfs. Although this is a limited dataset, it shows that the average net recharge during July and August to the C-111 reach above S18C is much higher this year than during the last four years when water was sent down L-31W rather than the detention/flow-way. A result of this increased leakage to C-111 is that less of the TP load delivered at S332D arrives at the headwaters of Taylor Slough. This redirected load may be assimilated as it travels via groundwater to the C-111 canal or it may find its way to S-18C and points southeast.

3.0 Analysis of S332B TP Data

Figure A6 shows the TP concentration data collected by the USACE S332B autosampler. Figure A7 shows the monthly average TP concentration and the flow-weighted average TP concentration calculated using the USACE dataset and SFWMD flow data (DBHDRO as of Oct 22, 02). Average monthly TP concentrations at S332B for the period of record show that only during May02 did the average exceed 10 ppb. The average flow-weighted TP concentration for S332B only exceeded 8 ppb during November 01. The remaining flow-weighted average concentrations for the period of record are typically less than 6ppb. Given the relatively small flows and low flow-weighted TP concentrations at S332B, the TP load at this structure represents a relatively minor fraction of the total load delivered to Taylor Slough via S332D and S18C.

It is interesting to note that the high TP average for May02 is also present at the S-331 and the S-332D structures. From Figure A9, it can be seen that the flow at S173/S331 during May02 was not substantial which may indicate that the high TP loads for this period were internal to the L31N/C111 basin and not caused by water imported to the basin from north of S-331.

4.0 Analysis of S332C TP Data

Figure A8 shows TP concentrations taken by the S332C autosampler on a 3-times per day basis. Although this graph shows several measurements that exceed 20 ppb, the average for the measurement period is 7 ppb.

CONCLUSIONS

1. TP concentrations at S332D and S332 appear to be inversely related to rainfall and discharges at S332D.
2. TP concentrations at S332 have exceeded concentrations at S332D during dry periods prior to the operation of the S332D detention flow-way.
3. Compliance calculations for TP can be significantly influenced by the frequency of sampling as well as the method of collecting the sample.
4. Average concentrations TP delivered at S332B are typically around 6 ppb and total loads are small relative to S332D and S18C loads delivered to Taylor Slough.
5. High TP concentrations measured at S331, S332B, and S332D during May 02 appear to be generated within the basin since recorded flows at S173/331 are limited during this period.
6. TP concentrations at S332C have averaged around 7 ppb and are not excessive relative to Settlement Agreement standards or ENP background.

Table A1. Summary of S-332D, L-31W, S-332 Total Phosphorus data for Period of Record (February 01 through August 02, U) USACE Data

DATE	S332D Average Monthly TP Conc. (mg/l)	S332D Flw-Wghted Average TP Conc. (mg/l)	S332DW Average Monthly TP Conc. (mg/l)	L31WTS Average Monthly TP Conc. (mg/l)	S332 Average Monthly TP Conc. (mg/l)	S332 Average Monthly Rainfall (inches)	S332D/S174 Daily Avg. Flow by month (cfs)
FEB 01	0.007	-	0.007	0.006	0.011	0	22
MAR 01	0.008	0.010	0.005	0.005	0.008	2.69	2
APR01	-	-	-	-	-	4.31	1
MAY01	0.009	0.006	0.006	0.004	0.005	5.38	1
JUN01	0.007	0.006	0.005	0.007	0.006	5.08	12
JLY01	0.004	0.004	0.004	0.006	0.004	5.81	222
AUG01	0.005	0.005	0.004	0.006	0.006	10.08	276
SEP01	0.005	0.005	0.004	0.007	0.005	12.72	422
OCT01	0.006	0.007	0.004	0.004	0.004	6.84	524
NOV01	0.008	0.008	0.005	0.005	0.004	0.95	443
DEC01	0.008	0.007	0.005	0.006		0.76	315
JANO2	-	-	0.004	0.006	0.007	1.33	167
FEB02	0.005	0.005	0.006	0.007	0.009	2.47	55
MAR02	0.005	0.005	0.007	0.007	0.008	0.5	80
APR02	0.009	0.009	0.008	0.008	0.009	0.93	87
MAY02	0.015	0.016	0.012	0.011	0.011	7.41	72
JUN02	0.012	0.014	0.009	0.009	0.010	11.04	28
JUL02	0.008	0.009	0.006	0.006	0.008	7.39	425
AUG02	0.007	0.006	0.007	0.005	0.006	5.07	334
SEP02	0.009						

* Note: At S332, the results of TP samples collected by the autosampler during the period December 19, 01 through December 31st, were considered suspect because the manual grab QC samples do not track the results obtained by this autosampler for this period. An average TP at S332 for this month has not been estimated because of the lack of good data.

**Note: At S332D, the results of TP samples collected by the autosampler during the period from Dec 28, 01 through January 15th are not included in average calculations because the manual grab QC samples do not track the results obtained by the autosampler for this period. Using the S332DAS autosampler data collected by SFWMD, the average TP concentration for Jan02 at S332D is estimated to be around 0.010 mg/l.

Table A2. TP Averages at S-332D and S-332 for Different flow Conditions at S-332D (Analyzed for period Aug01 through Aug02) USACE datasets.

	Avg. TP Conc. for flows < 100 cfs	Avg. TP Conc. for flows > 300 cfs	Avg. TP Conc. for flows > 500 cfs
S-332D	0.009	0.008	0.006
S-332	0.008	0.006	0.005

Table A3 Average Net flows in S176 to S18C Reach of C-111 (CFS) for four periods.

	Jul99-Aug00	Jul00-Aug00	Jul01-Aug01	Jul02-Aug02
S-18C minus S176 Flows	311	332	636	961
S-332D Avg Flows	142	325	249	379

Table A4. Summary of TP Concentrations at S-332B for USACE period of record (Feb 15, 01 through September 02)

DATE	Average Monthly TP Conc. (mg/l)	Flow-Weighted Average Monthly TP Conc. (mg/l)
FEB01	0.007	-
MAR01	0.008	-
APR01	0.008	-
MAY01	0.007	-
JUNO1	0.006	-
JUL01	0.005	0.006
AUG01	0.005	0.005
SEP01	0.005	0.005
OCT01	0.006	0.006
NOV01	0.006	0.009
DEC01	0.006	0.006
JAN02	0.005	0.005
FEB02	0.005	0.005
MAR02	0.006	0.006
APR02	0.006	0.006
MAY02	0.012	0.006
JUN02	0.008	0.007
JUL02	0.005	0.005
AUG02	0.007	0.007
SEP02	0.006	

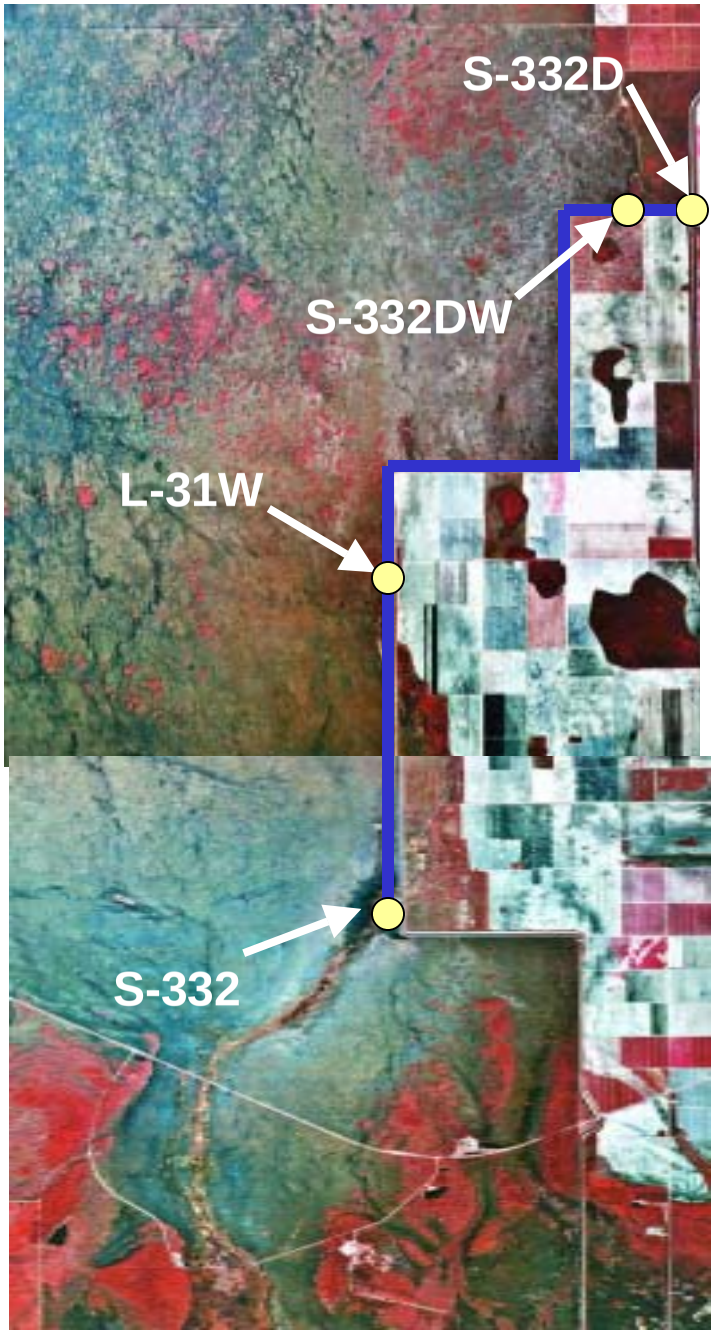


Figure A1

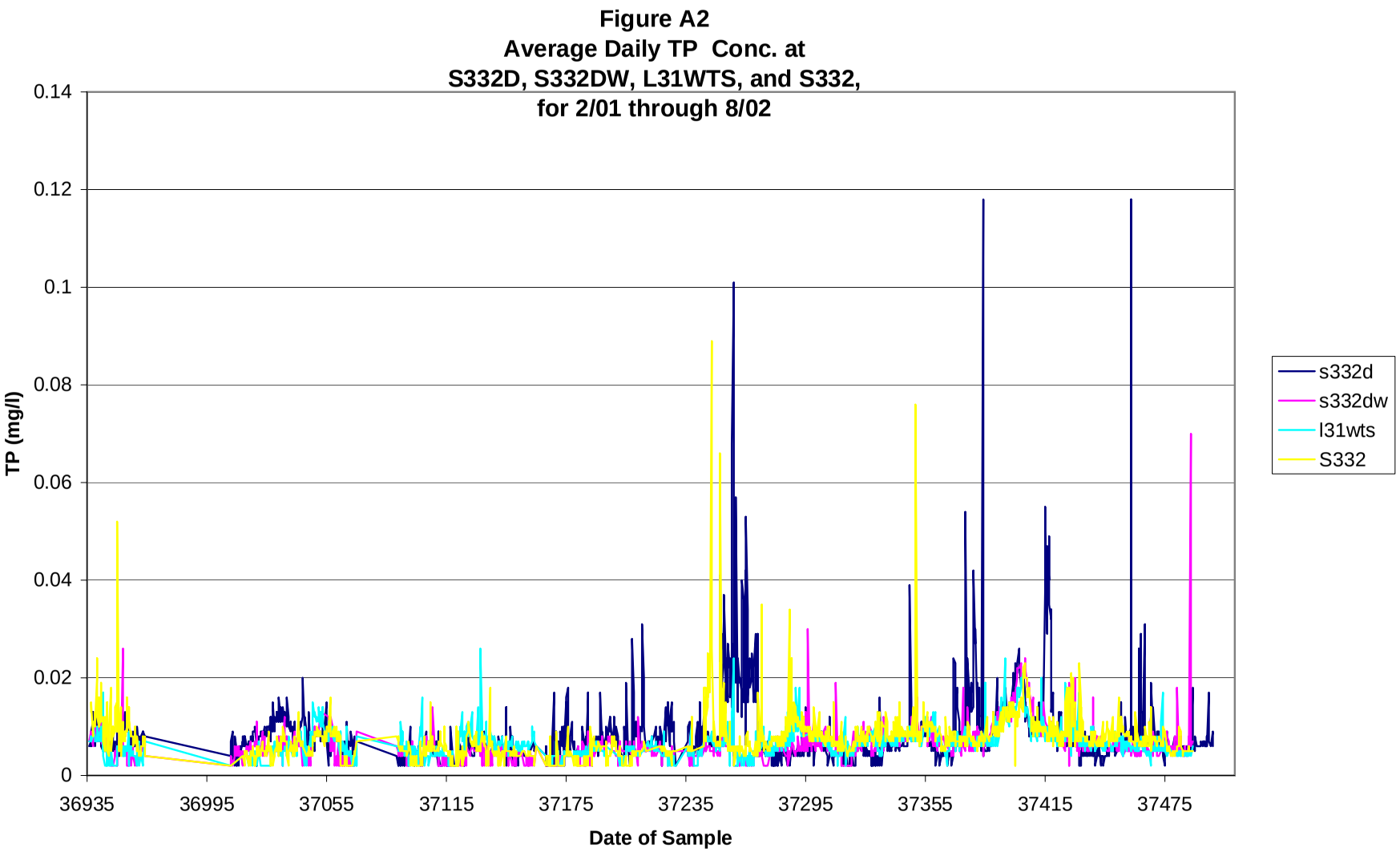


Figure A2
Average Daily TP Conc. at
S332D, S332DW, L31WTS, and S332,
for 2/01 through 8/02
TP (mg/l)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
36935
36995
37055
37115
37175
37235
37295
37355
37415
37475
Date of Sample
s332d
s332dw
l31wts
S332

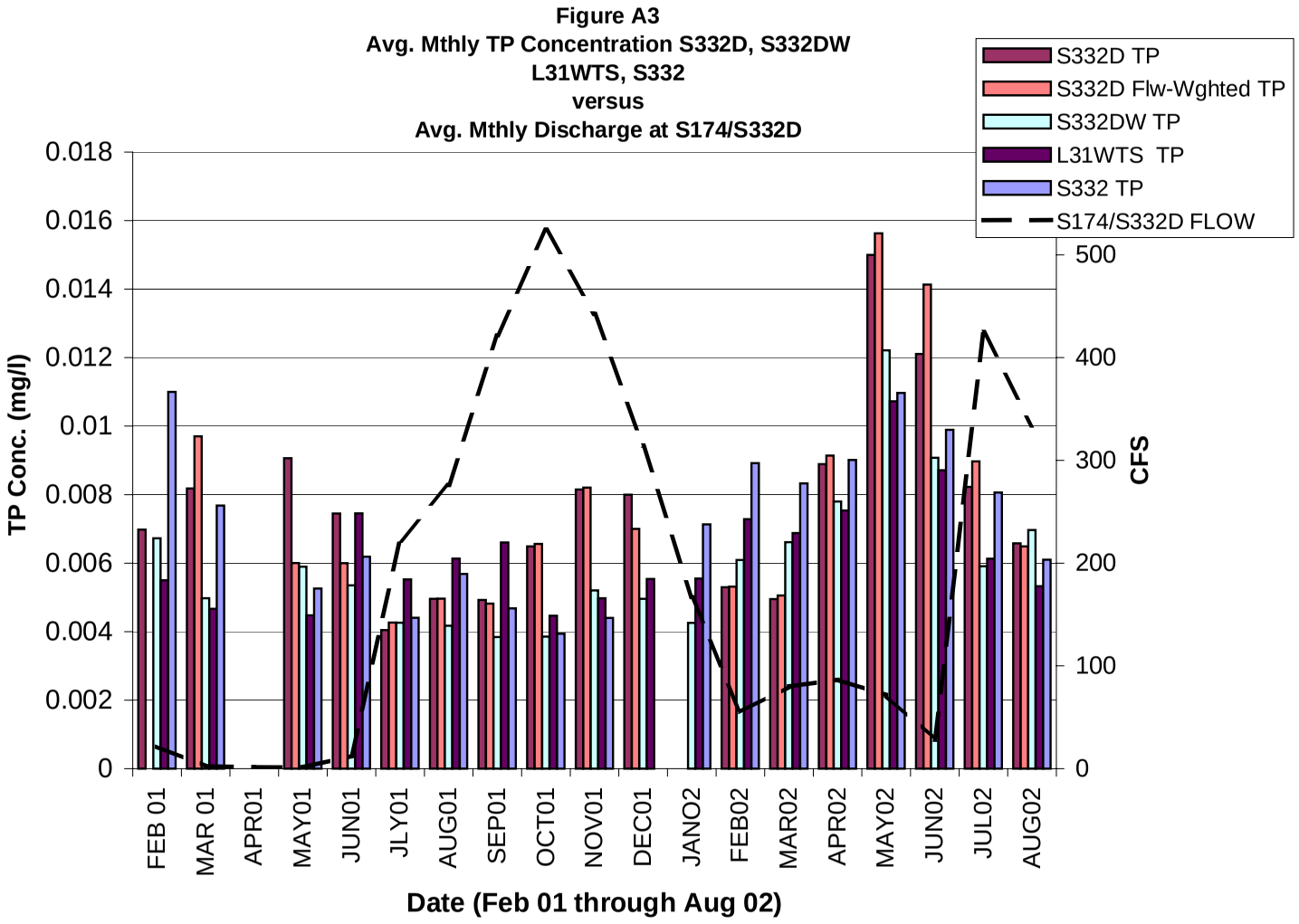


Figure A3
Avg. Mthly TP Concentration S332D, S332DW
L31WTS, S332
versus
Avg. Mthly Discharge at S174/S332D
S332D TP
S332D Flw-Wghted TP
S332DW TP
L31WTS TP
S332 TP
S174/S332D FLOW
TP Conc. (mg/l)
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
CFS
500
400
300
200
100
0
FEB 01
MAR 01
APR01
MAY01
JUN01
JLY01
AUG01
SEP01
OCT01
NOV01
DEC01
JANO2
FEB02
MAR02
APR02
MAY02
JUN02
JUL02
AUG02
Date (Feb 01 through Aug 02)

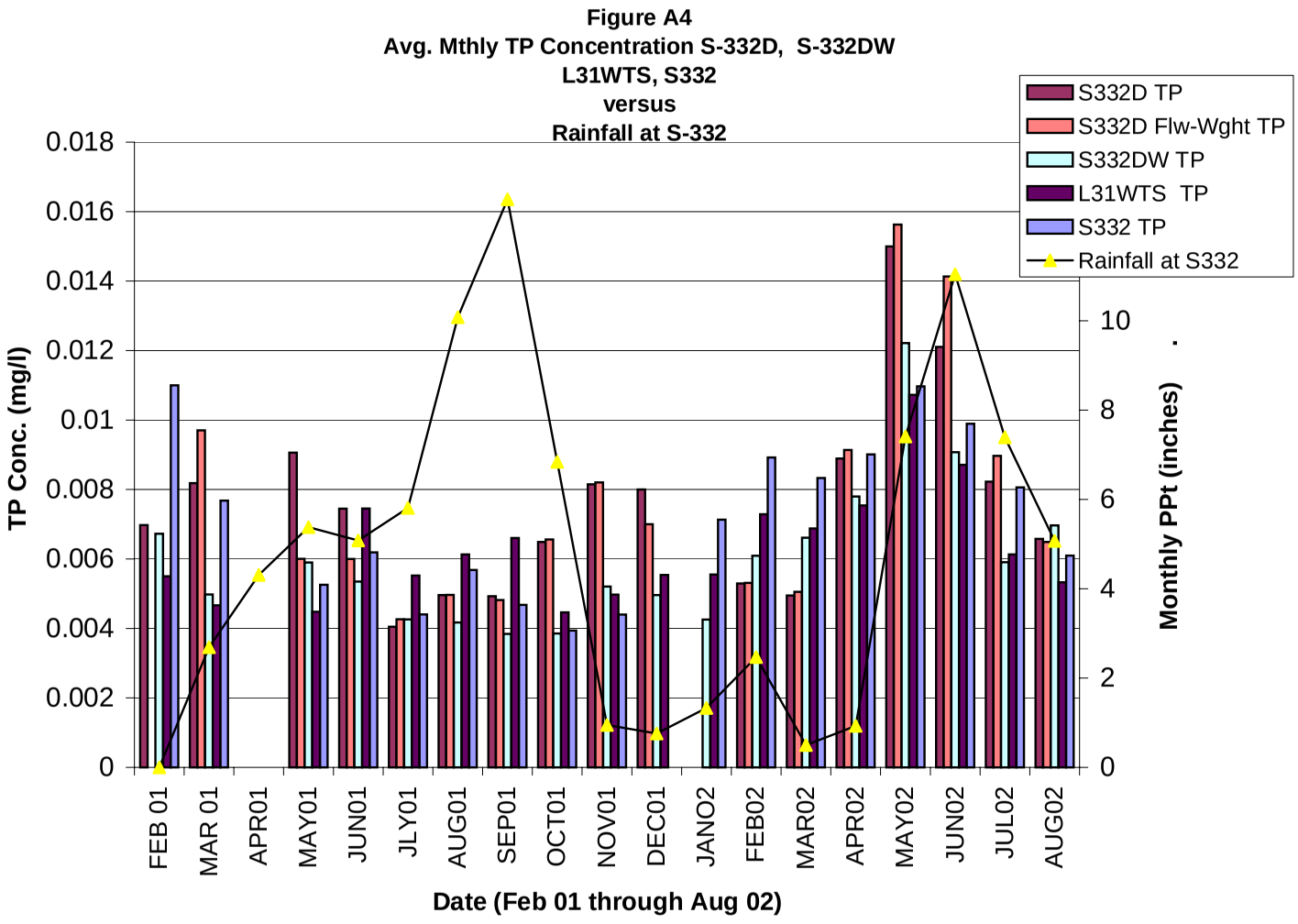
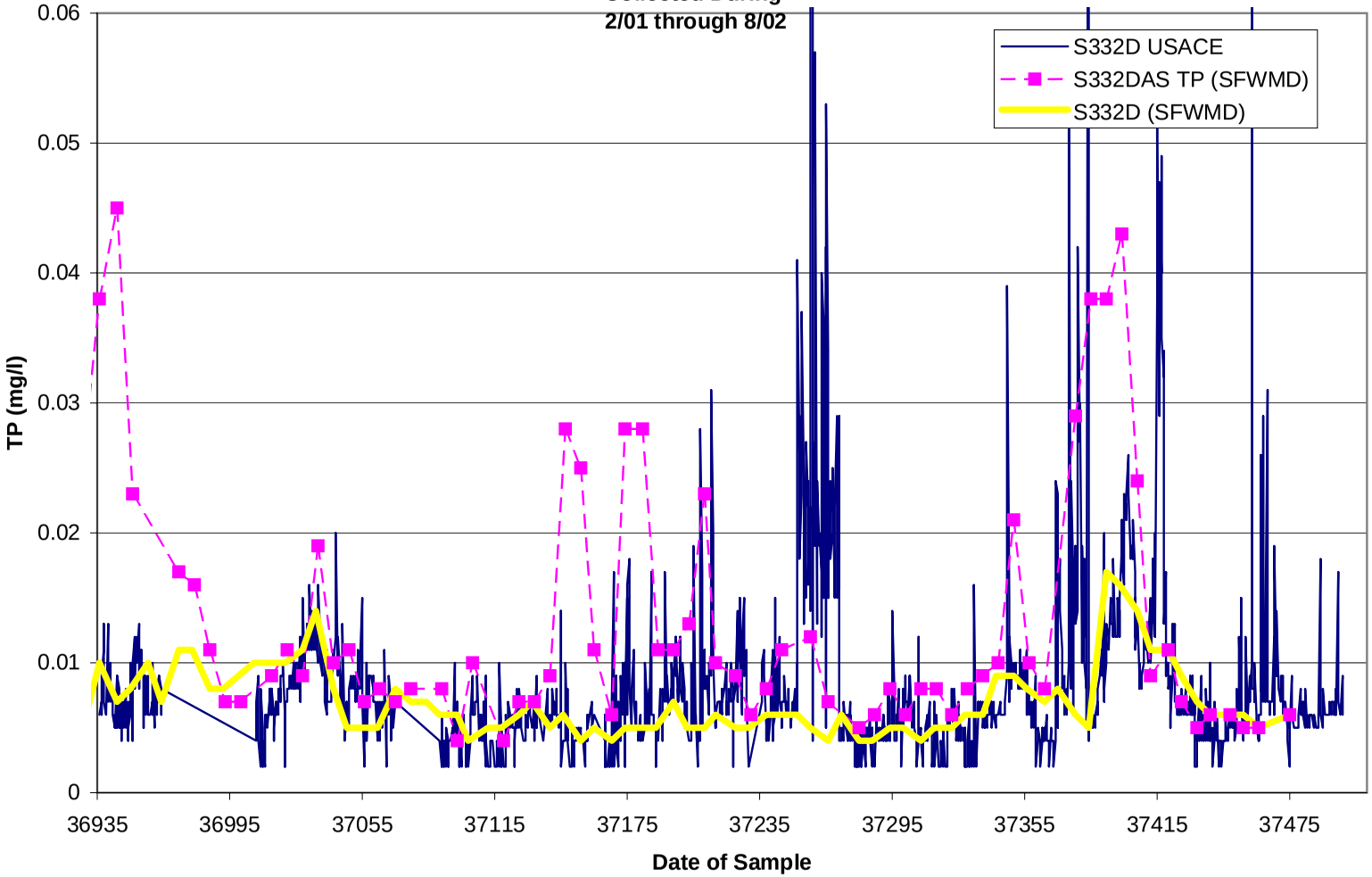


Figure A4
Avg. Mthly TP Concentration S-332D, S-332DW
L31WTS, S332
versus
Rainfall at S-332
S332D TP
S332D Flw-Wght TP
S332DW TP
L31WTS TP
S332 TP
Rainfall at S332
TP Conc. (mg/l)
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
Monthly PPt (inches)
10
8
6
4
2
0
FEB 01
MAR 01
APR01
MAY01
JUN01
JLY01
AUG01
SEP01
OCT01
NOV01
DEC01
JANO2
FEB02
MAR02
APR02
MAY02
JUN02
JUL02
AUG02
Date (Feb 01 through Aug 02)

Figure A5
Comparison of all S-332D TP Datasets
Collected During
2/01 through 8/02



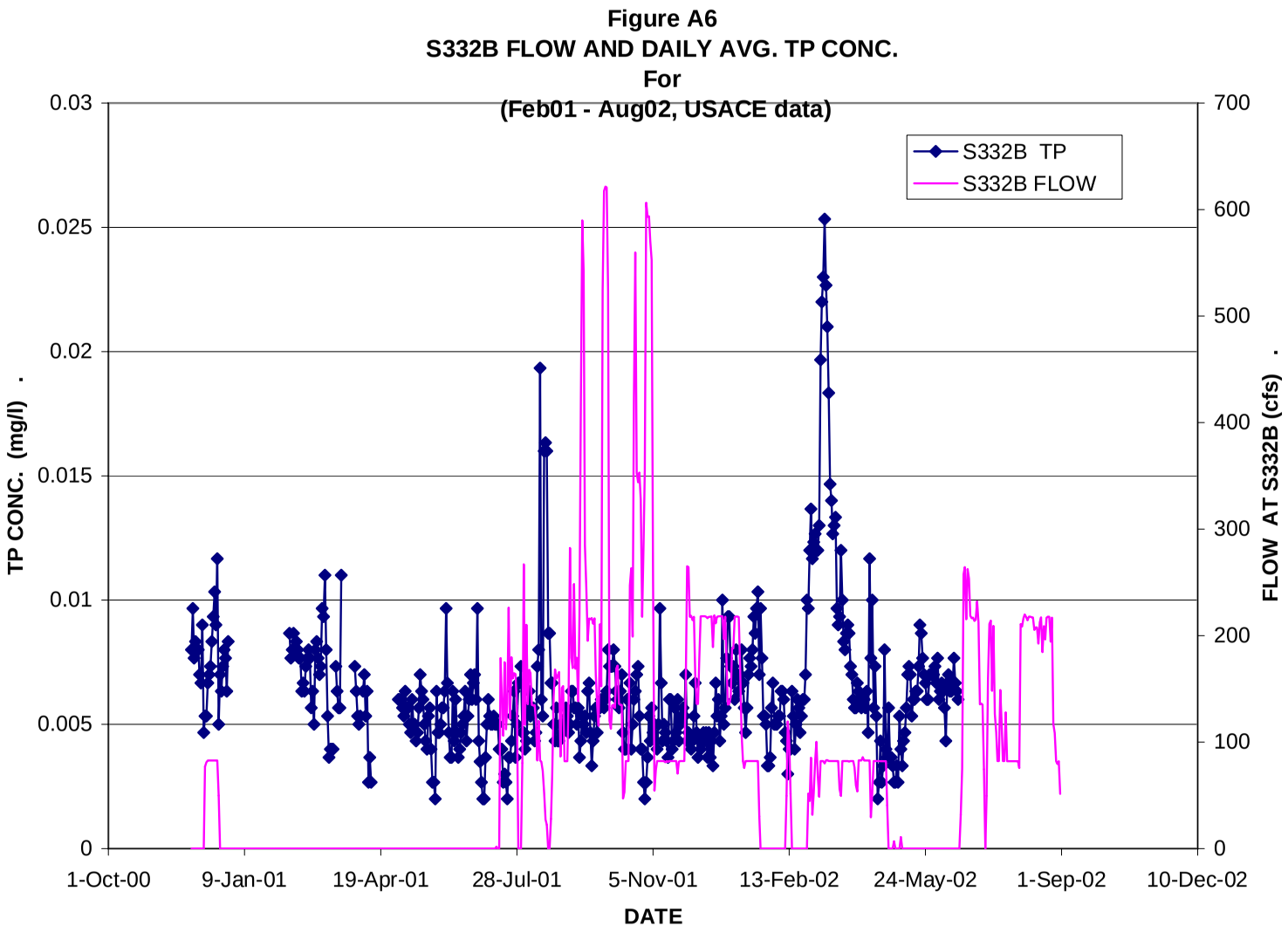


Figure A6
S332B FLOW AND DAILY AVG. TP CONC.
For
(Feb01 - Aug02, USACE data)
S332B TP
S332B FLOW
TP CONC. (mg/l)
FLOW AT S332B (cfs)
DATE
0.03
0.025
0.02
0.015
0.01
0.005
0
700
600
500
400
300
200
100
0
1-Oct-00
9-Jan-01
19-Apr-01
28-Jul-01
5-Nov-01
13-Feb-02
24-May-02
1-Sep-02
10-Dec-02

Figure A7
S332B
Average and Flow-Weighted Average
TP Conc. (USACE data)

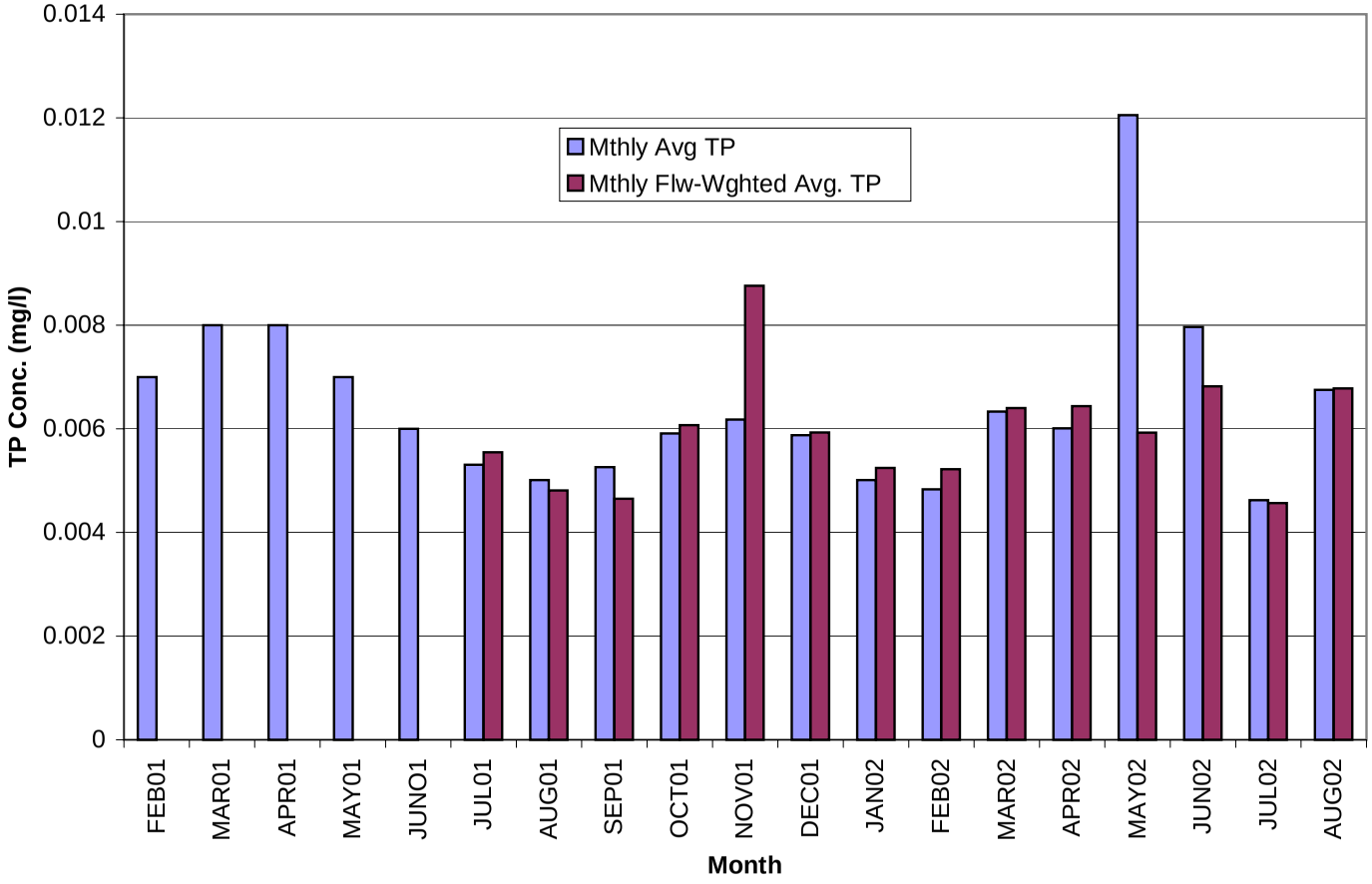


Figure A8
Measured Concentrations of TP
at
S-332C
(Three Samples taken per day at 0, 8, 16 hours)

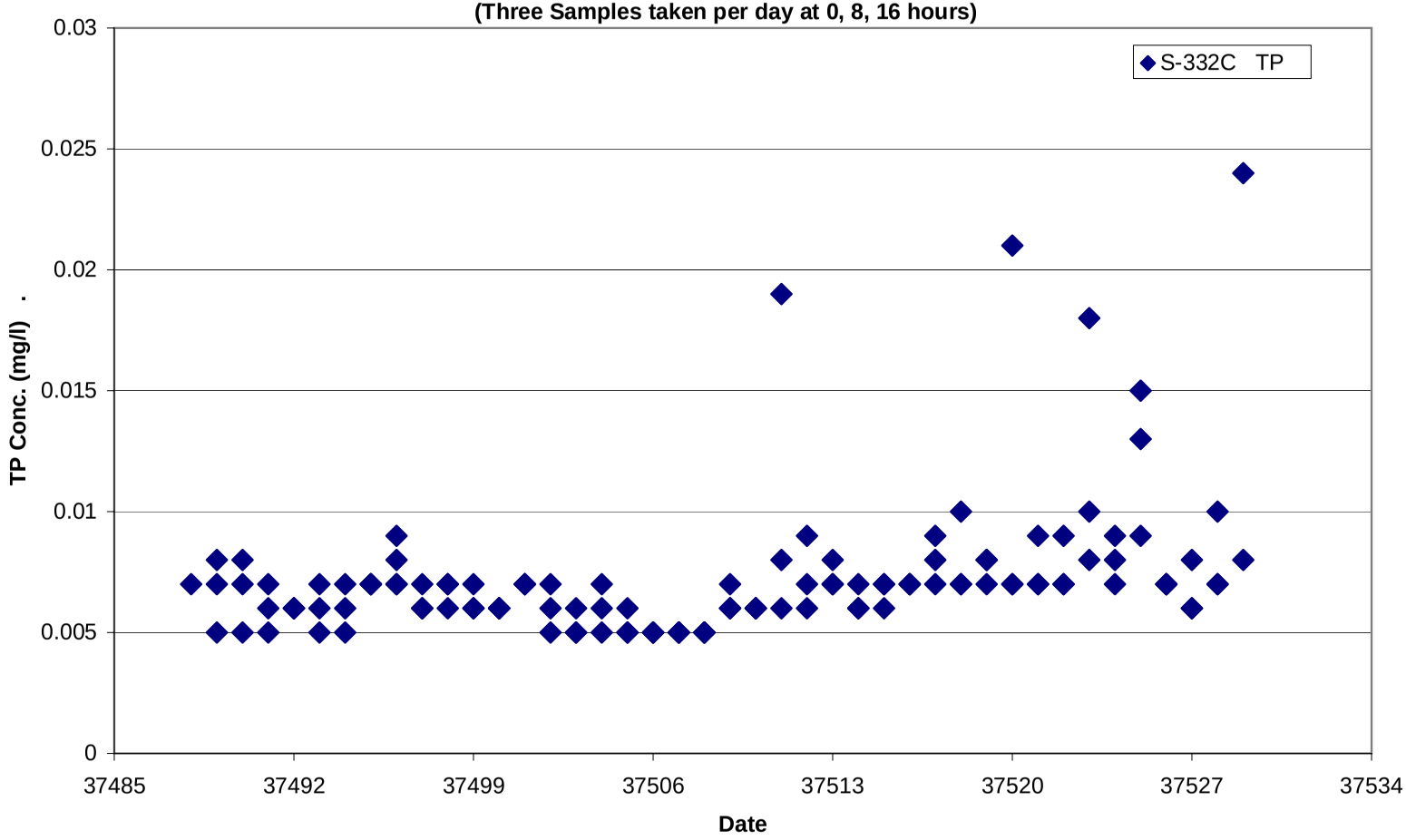
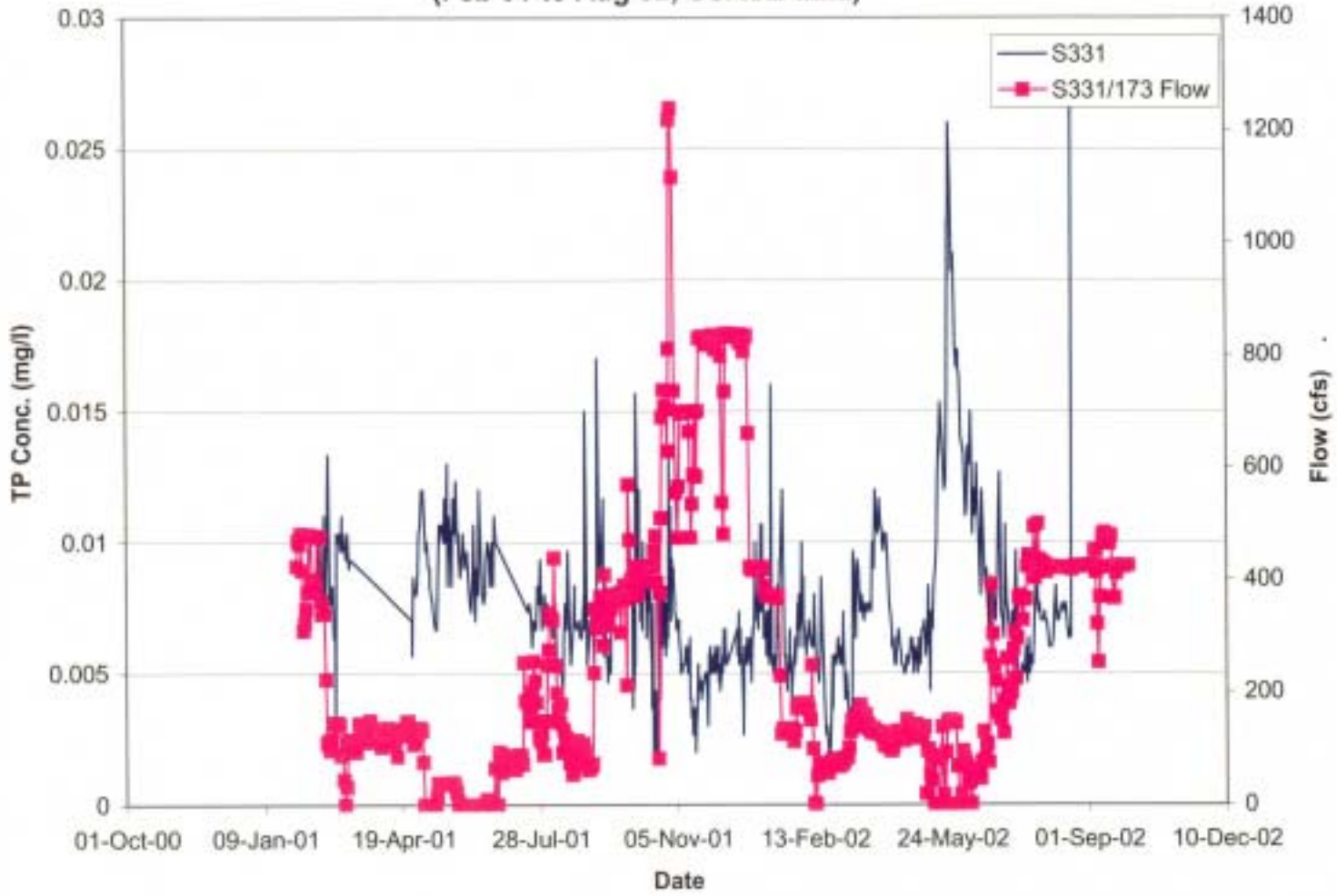


Figure A9
S331 Average Daily TP Conc.
(Feb 01 to Aug 02, USACE data)



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October 24, 2002

169910.D4.DT

Mr. Bill Neimes
U.S. Army Corps of Engineers - Jacksonville District
400 West Bay Street
Jacksonville, FL 32232-0019

Subject: Transmittal of the Draft Technical Memorandum Presenting the S-332D Detention Area Pre-operations and Start-up Phase Monitoring Data Review (Contract DACW17-01-D-009)

Dear Bill:

CH2M HILL is pleased to submit the enclosed draft technical memorandum for review by the U.S. Army Corps of Engineers (USACE). This technical memorandum is the draft of the third deliverable under Task 4.6 of Delivery Order No. 4. The document will ultimately consist of two volumes. Volume 1 includes the technical memorandum text and exhibits, plus Appendices A through E. Volume 2 is Appendix F, the certified laboratory reports. These lab reports will be actually bound into Volume 1 as a CD when the document is finalized. Additionally, we are planning on transmitting two hard copies of Volume 2 to the USACE at the time the document is finalized (one for your files and one for transmittal to South Florida Water Management District).

To expedite the USACE review, we are sending one copy of the draft (Volume 1) directly to Kim Taplin in West Palm Beach and are enclosing nineteen copies to you for distribution to folks in Jacksonville. By the time this hard copy arrives, the .pdf version of the draft deliverable will already be in your hands. We will distribute copies to the members of the project Scientific Advisory Group concurrently with the USACE's distribution of the drafts (either .pdf or hard copy) to other reviewers.

Under normal circumstances, we would look forward to receiving review comments within the next 2 weeks, and finalizing the deliverable as soon as possible. However, we understand that you will probably be distributing this draft document to the interagency group for a broader review, and that this review process may require a more extended period. Further, it is our understanding that the information presented in this draft may be presented during the November 7, 2002, meeting of the Everglades Restoration Technical Oversight Committee (TOC). With this in mind, a strong case could be made for acceleration of the review and document finalization process, or for a more extended period of review

with finalization of the technical memorandum after receiving review comments, including those of the TOC members. We anticipate further discussions regarding this issue.

Should any questions arise regarding the enclosures, please feel free to call me or Steve Gong. We look forward to working with you in addressing any questions or comments that arise during the review process.

Sincerely,

CH2M HILL

Joel G. Hall

Joel G. Hall, P.E.
Project Manager

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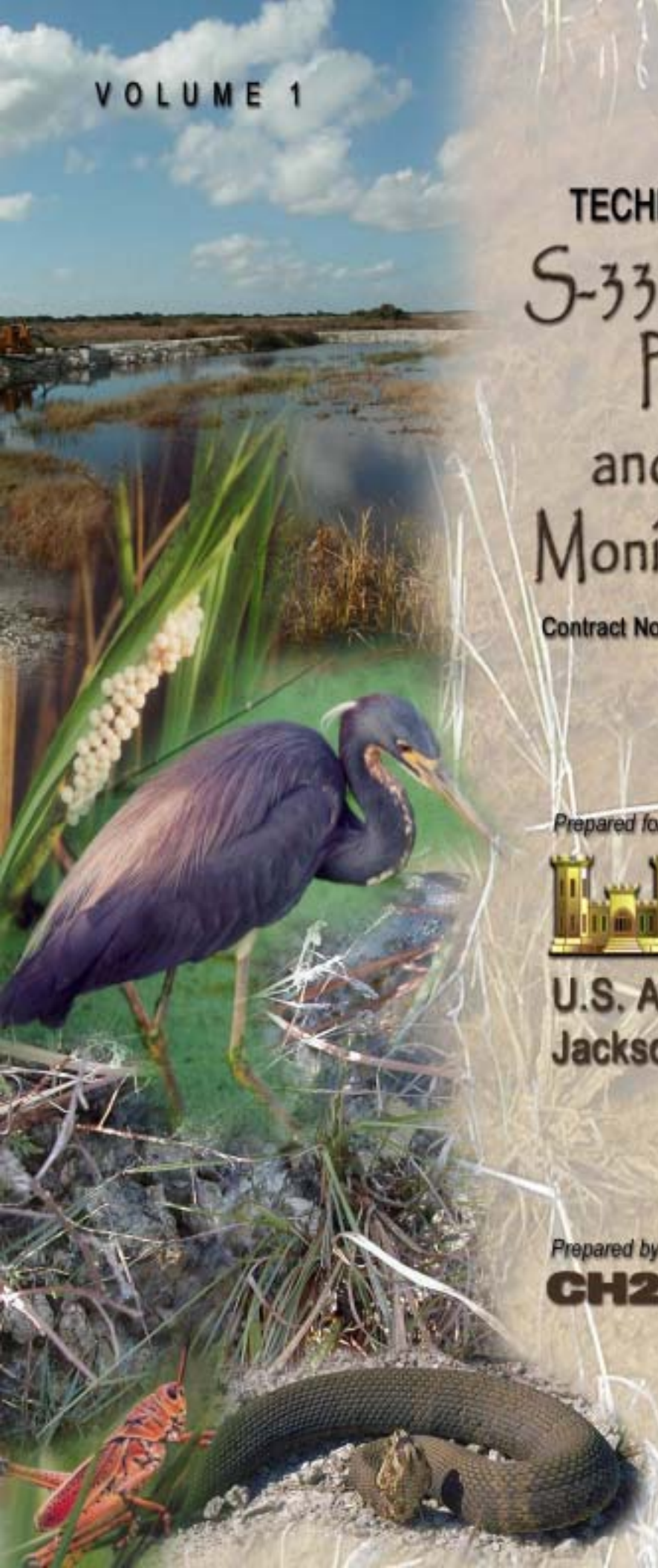
Enclosures
c: Kim Taplin/USACE
Steve Gong/CH2M HILL
Jim Bays/CH2M HILL

VOLUME 1



DRAFT

TECHNICAL MEMORANDUM NO. 3

S-332D Detention Area Pre-Operations and Start-up Phase Monitoring Data Review

Contract No. DACW17-01-D-0009, Delivery Order No. 004

Prepared for

U.S. Army Corps of Engineers
Jacksonville District

Prepared by

CH2MHILL

October 2002

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B Surface and Groundwater Data Sorts Supporting Potentially Relevant Comparisons
C Graphical Summaries of Instrumented Groundwater Monitoring Well Data
D Pre-Operations and Start-up Ecological Reconnaissance Surveys
E Groundwater Monitor Well Construction Details
F Certified Laboratory Reports (see Volume 2)

S-332D Detention Area Pre-operations and Start-up Phase Monitoring Data Review (Contract DACW17-01-D-0009, Delivery Order No. 4)

PREPARED FOR: U.S. Army Corps of Engineers - Jacksonville District
PREPARED BY: CH2M HILL
DATE: October 3, 2002

1.0 Introduction

1.1 Background

The Jacksonville District, U.S. Army Corps of Engineers (USACE) implemented elements of the C-111 and Modified Water Deliveries (Mod Waters) Projects during the first half of 2002. One specific element designed and constructed by the USACE during this period was the S-332D Detention Area, an 810-acre impoundment designed to receive excess surface waters diverted from the L-31N Canal by the S-332D Pump Station. This detention area consists of two cells, each approximately 400 acres in size, with the two cells configured to flow in series. Downstream of the overflow weir from Cell 2, an additional flow way of several hundred acres has been constructed to convey planned overflows to the southwest into Taylor Slough. The project design and operational permit of the S-332D Detention Area allows for operation of this detention area in a flow-through mode to the flow way.

At the time of development of the pre-operations and start-up monitoring plan, most of the concerns raised associated with system start-up were focused on the potential for high rates of impounded surface water infiltration and subsequent lateral subsurface transport of pollutants into Everglades National Park (ENP). In that the anticipated operations included a high head cell immediately upstream of Cell 1, and the highest impounded water levels also were to be associated with Cell 1, the monitoring focus for this particular contractual effort was placed on this initial detention area cell.

Monitoring stations, including new groundwater monitoring wells, were established during the first half of June 2002. Inflows to the S-332D Detention Area were initiated on or about June 22, 2002, approximately a week earlier than originally expected in response to very heavy rainfall that occurred in June. Samples collected the week of June 17 were representative of conditions immediately prior to the start of operation of the S-332D Detention Area and are identified as “Pre-Operations” data. Data collected after June 22, 2002, through the end of July 2002 are identified as “Start-up” data. These data designations are applied throughout this technical memorandum and the enclosed exhibits.

This technical memorandum is the third and final deliverable specified under Task 4.6 of this delivery order, and presents a brief review of the data specifically with respect to identifying possible indications of immediate effects of water impoundment in Cell 1 of this detention area on adjacent groundwater, surface water, and ecological systems.

1.2 Pre-operations and Start-up Monitoring Rationale and Objectives

During the course of discussions during the first quarter of 2002 between the USACE, the Scientific Advisory Group involved with a related project within the study area (the PSTA/SAV type STA pilot project), representatives of the associated Independent Technical Review group, and the consulting team, consensus was reached that the key concern that was to be addressed by the pre-operations and start-up monitoring was whether the impounded water in the detention area would be prone to rapid infiltration causing significant subsurface lateral movement into ENP. While a primary objective of the C-111 Project/Mod Waters detention area system along the eastern boundary of ENP was to create a groundwater mound that could help reduce ENP seepage losses to L-31N and C-111, the specific issue raised centered around the need to characterize the water quality within the basin and whether this potential subsurface conveyance would cause sufficient inadvertent pollutant delivery into the park to cause unacceptable water quality and biological effects.

The design of the pre-operations and start-up monitoring program reflects the above focus. Heavy emphasis was placed on understanding the nature and extent of groundwater movement through the shallow (approximately 0-20 feet below land surface (bls) and slightly deeper (approximately 20-40 feet bls) aquifer zones at or near the perimeter of Cell 1, the initial 410-acre cell of the detention area. Two well clusters (screens at approximately 20 and 40 feet bls) were installed on the east and west sides of Cell 1, and also just south of the eastern end of Cell 2 with the intent of documenting groundwater quality in these depth zones over a period bracketing the initial filling of the detention area. Additional 20-foot deep wells were installed in two transects oriented perpendicular to the Cell 1 western boundary levee and into ENP. Three shallow wells were installed along each of these transects to provide a means of monitoring for any gradient-based evidence of changes to groundwater that might be caused by detention area operations. A control well site located northwest of the detention area was installed to serve as a spatial control (reference station).

Surface waters were monitored for two reasons. Inflow and outflow records were to provide a surface water quality profile for physical parameters, nutrients, ions, metals, and organic pesticides as well as allow an initial assessment of the effects of surface water detention on the quality of waters detained prior to subsequent release to ENP at the south end of the detention area system. Water samples from L-31W were monitored to document existing water quality immediately preceding the initial filling of the impoundment, and any changes that might occur due to shallow, lateral seepage through or under the detention area levees (north and western boundaries of Cell 1). Lastly, the program included collection of surface waters from near the seven groundwater monitoring locations in ENP with the objective of investigating any potential immediate response to the hypothesized lateral groundwater movements from under the detention area.

Biological investigations were performed during this initial monitoring period to establish wetland community characteristics as a temporal control. These investigations were based on the presumption that some form of biological monitoring program would be conducted in the future to detect gradual changes in wetland characteristics that could potentially occur if groundwater and overlying surface water quality were measurably affected by the hypothesized groundwater inflows.

In the aggregate, the surface water, groundwater, and ecological monitoring efforts conducted on behalf of the USACE address the short-term conditions immediately before and after the initial operations of the S-332D Detention Area. Station coverage, parameters analyzed, and frequency of monitoring was tailored to this short-term assessment to achieve the specific monitoring objectives outlined above. Long-term monitoring program design is underway which is expected to vary substantially from this short-term assessment's scope as the monitoring objectives shift to documenting any potential long-term, adverse effects of system operations. It should be understood that the current data review was not designed to address long-term water quality compliance or potential water quality enhancement benefits of detention area system operations that may occur.

2.0 Overview of Monitoring Scope

2.1 Monitoring Stations

As described above, the focus of the June and July 2002 field investigations in and around the S-332D Detention Area was to document whether placing the system on line had a measurable impact on groundwater, surface water, or ecological resources associated with Cell 1 of the detention area. Accordingly, the sampling stations were positioned as follows:

- Groundwater: Five two-well clusters (approximately 20 and 40 feet deep below land surface) associated with the "periphery" of the detention area, plus seven shallow wells located in ENP immediately west of the detention area, Cell 1. Wells along Transect A are located in the northern half of Cell 1 oriented east to west. Wells along Transect B are located in the southern half of Cell 1 also oriented east to west. Four of the shallow wells plus two additional wells located within Cell 1 were instrumented to allow continuous records of water level and selected water quality parameters.
- Surface Water: Three stations within L-31W, plus surface waters from the locations of the seven well sites in ENP (if surface waters were present and sample-able). Additionally, following system start-up, inflow and outflow samples from the detention area were collected and analyzed.
- Ecological: Seven stations co-located with the seven well sites in ENP, plus a series of locations within the remnant wetlands remaining within the detention area itself.

The approximate locations of these stations are depicted in Exhibit 1A. Northing and Easting coordinates (GPS data) for all of the stations reflected in Exhibit 1A are summarized in Exhibit 1B.

Surface water sampling locations depicted on Exhibit 1A are identified in the format SW-00XX and monitoring wells are identified as MW-00XX. Exhibit 2 presents information regarding the depth and location of each well. Monitor wells MW-0011 and MW-0012 were installed earlier this year as part of a different hydrogeologic investigation; length of the screened interval differs from the wells installed in June per the request of the South Florida Water Management District (SFWMD) that the S-332D monitor wells be screened over a shorter interval. It should be noted that the top of each well casing is approximately 3 to 4 feet above land surface.

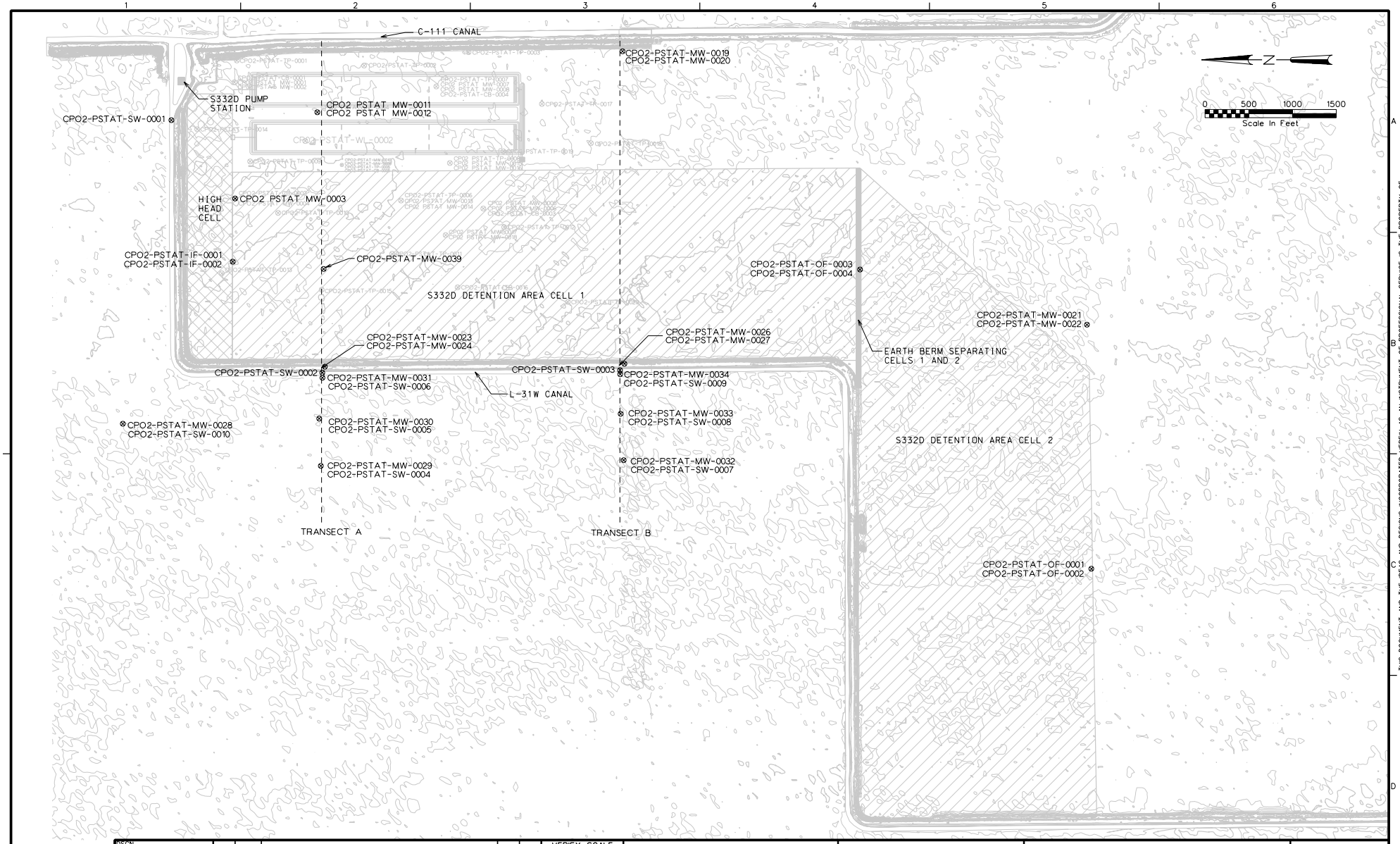

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Exhibit 1A
Groundwater and Surface Water Monitoring Locations
S332-D Detention Area

SHEET
DWG
DATE SEPTEMBER 24, 2002
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EXHIBIT 1B
List of Pre-operations and Start-up Monitoring Stations and Locations (Coordinates)

Station	Description	Northing (ft)	Easting (ft)
Inflow and Outflow Stations			
CP02 PSTAT IF-0001/0002	Head cell overflow to Cell 1 (AM and PM samples)	417506.96	797868.59
CP02 PSTAT OF-0001/0002	Overflows out of Cell 2 (AM and PM samples)	407689.64	794358.95
CP02 PSTAT OF-0003/0004	Overflows out of Cell 1 (AM and PM samples)	410334.05	797778.22
Surface Water Quality Monitoring Stations			
CP02 PSTAT SW-0001	In L-31W just downstream of S-332D; north of high head cell	418206.29	799484.95
CP02 PSTAT SW-0002	In L-31W at Well Transect A	416479.80	796599.98
CP02 PSTAT SW-0003	In L-31W at Well Transect B	413076.92	796629.03
CP02 PSTAT SW-0004	Near ENP Well MW-0029 on Transect A	416485.23	795500.31
CP02 PSTAT SW-0005	Near ENP Well MW-0030 on Transect A	416493.05	796055.61
CP02 PSTAT SW-0006	Near ENP Well MW-0031 on Transect A	416470.34	796534.03
CP02 PSTAT SW-0007	Near ENP Well MW-0032 on Transect B	413038.73	795538.73
CP02 PSTAT SW-0008	Near ENP Well MW-0033 on Transect B	413052.70	796121.55
CP02 PSTAT SW-0009	Near ENP Well MW-0034 on Transect B	413048.03	796555.96
CP02 PSTAT SW-0010	Near ENP Well MW-0028 (Reference station NW of high head cell)	418782.54	795998.84
Groundwater Monitoring Wells (see note)			
CP02 PSTAT MW-0003	20-foot Well at Northeast Corner of Cell 1 (instrumented)	417486.77	798588.97
CP02 PSTAT MW-0011	20-foot Well on Transect A East of Cell 1	416536.92	799575.13
CP02 PSTAT MW-0012	40-foot Well on Transect A East of Cell 1	416536.82	799580.76
CP02 PSTAT MW-0019	20-foot Well on Transect B East of Cell 1	413048.28	800271.73
CP02 PSTAT MW-0020	40-foot Well on Transect B East of Cell 1	413043.48	800271.99
CP02 PSTAT MW-0021	20-foot Well Southeast of Cell 2	407740.05	797148.61
CP02 PSTAT MW-0022	40-foot Well Southeast of Cell 2	407740.05	797154.61
CP02 PSTAT MW-0023	20-foot Well at Levee on Transect A	416450.17	796668.31
CP02 PSTAT MW-0024	40-foot Well at Levee on Transect A	416444.79	796663.29
CP02 PSTAT MW-0026	20-foot Well at Levee on Transect B	413026.00	796702.24
CP02 PSTAT MW-0027	40-foot Well at Levee on Transect B	413020.86	796702.08
CP02 PSTAT MW-0028	20-foot ENP Reference Well NW of high head cell (also instrumented)	418760.89	796016.00
CP02 PSTAT MW-0029	20-foot ENP Well Transect A - West (also instrumented)	416497.50	795534.89
CP02 PSTAT MW-0030	20-foot ENP Well Transect A - Middle (also instrumented)	416516.08	796075.17
CP02 PSTAT MW-0031	20-foot ENP Well Transect A - East (on L-31W) (also instrumented)	416478.52	796541.98
CP02 PSTAT MW-0032	20-foot ENP Well Transect B - West	413034.77	795599.92
CP02 PSTAT MW-0033	20-foot ENP Well Transect B - Middle	413069.93	796130.20
CP02 PSTAT MW-0034	20-foot ENP Well Transect B - East (on L-31W)	413080.42	796577.80
CP02 PSTAT MW-0039	Mid Depth Well on Transect A (installed for pump test - instrumented)	416459.92	797785.88
CP02 PSTAT MW-0040	Deeper Well on Transect A (installed for pump test - only sampled for Hg)	416454.79	797786.38

EXHIBIT 1B
List of Pre-operations and Start-up Monitoring Stations and Locations (Coordinates)

Station	Description	Northing (ft)	Easting (ft)
Wetland Ecological Monitoring Quadrat Sites			
Sites Within ENP			
CP02-PSTAT-SW-0004	ENP sawgrass marsh adjacent to SW 0004	416479.11	795513.42
CP02-PSTAT-SW-0005	ENP sawgrass marsh adjacent to SW 0005	416490.05	796074.37
CP02-PSTAT-SW-0006	ENP sawgrass marsh adjacent to SW 0006	416461.50	796540.06
CP02-PSTAT-SW-0007	ENP sawgrass marsh adjacent to SW 0007	413044.00	795578.73
CP02-PSTAT-SW-0008	ENP sawgrass marsh adjacent to SW 0008	413051.41	796123.12
CP02-PSTAT-SW-0009	ENP sawgrass marsh adjacent to SW 0009	413043.46	796558.39
CP02-PSTAT-SW-0010	ENP sawgrass marsh adjacent to SW 0010	418751.28	795997.48
Sites Within Cell 1			
DA1-I	Unscraped mixed emergent marsh	414155.59	798152.50
DA1-C	Unscraped mixed emergent marsh	416525.10	798692.60
DA1-D	Unscraped tropical hardwood hammock	416752.81	797726.24
DA1-1-IA	Scraped area	414155.59	798152.50
DA1-S-L	Scraped area	410735.69	797041.75
DA1-S-M	Scraped area	410784.81	797250.56
DA1-040	Unscraped mixed emergent marsh	411874.51	798128.86
Sites Within Cell 2			
DA2-A-Canopy	Unscraped tropical hardwood hammock	409832.90	795059.48
DA2-B-Marsh	Unscraped sparse graminoid marsh	410075.52	795163.19
DA2-B-E	Scraped area	409142.05	796865.39
DA2-B-W	Scraped area	409110.18	796370.56
DA2-C-S	Scraped area	407888.92	794118.52
Site Within Cell 3 (Flow Way Near Overflow From Cell 2)			
DA3-A-N	Scraped area	407437.76	794136.92

Notes:
All monitoring quadrats are 1 meter x 1 meter, with rebar stakes in opposing corners.
Referenced well depths are the nominal depth below land surface.
ENP = Everglades National Park
Coordinate system is “State Plane NAD 83, Florida East”.

EXHIBIT 2
Well Construction and Location Summary

Well	Total Depth from Top of Casing (ft)	Length of Screened Interval (ft)	Location
MW-0011	21.75	5	Transect A, Eastern border of S-332D Detention Area
MW-0012	43.0	5	Transect A, Eastern border of S-332D Detention Area
MW-0019	23.29	2	Transect B, Eastern border of S-332D Detention Area
MW-0020	43.81	2	Transect B, Eastern border of S-332D Detention Area
MW-0021	22.03	2	Southeast of S-332D Detention Area
MW-0022	43.80	2	Southeast of S-332D Detention Area
MW-0023	24.20	2	Transect A, east of L-31W canal, west of S-332D Detention Area
MW-0024	44.50	2	Transect A, east of L-31W canal, west of S-332D Detention Area
MW-0026	24.2	2	Transect B, east of L-31W canal, west of S-332D Detention Area
MW-0027	44.2	2	Transect B, east of L-31W canal, west of S-332D Detention Area
MW-0028	20.8	2	ENP Background
MW-0029	19.2	2	ENP Transect A
MW-0030	16.25	2	ENP Transect A
MW-0031	22.34	2	ENP Transect A
MW-0032	17.40	2	ENP Transect B
MW-0033	22.40	2	ENP Transect B
MW-0034	21.73	2	ENP Transect B

Surface water sampling stations were established to coincide with the seven groundwater monitoring wells established in ENP. The pairings of surface water sampling locations and monitoring wells are shown in Exhibit 3.

EXHIBIT 3
Surface Water Sampling Locations and Corresponding Monitor Wells along the Western Side of Cell 1 of the S-332D Detention Area

Surface Water Sampling Location	Corresponding ENP Monitor Well
SW-0004	MW-0029
SW-0005	MW-0030
SW-0006	MW-0031
SW-0007	MW-0032
SW-0008	MW-0033
SW-0009	MW-0034
SW-0010	MW-0028

Surface water was not present at any location within ENP during the pre-operations period. During the start-up period, surface water was present at all sites at least once, with the exception of Stations SW-0004, SW-0005, and SW-0010.

Surface water samples were collected from the L-31W Canal at three locations: SW-0001 (located north of the S-332D Detention Area), SW-0002 (located in L-31W at Transect A) and SW-0003 (located in L-31W at Transect B). Following the start-up of inflows into the detention area, inflow and outflow grab samples were collected once during the morning and again in the afternoon. For the start-up period, the planned sampling approach was to collect three samples per week assuming flows occurred in and out of the detention area, and the original intent was to only monitor inflow and outflow from Cell 1. Due to field scheduling issues and varying conditions encountered (e.g., inflows but no outflows on some days), this rigid schedule was not met for all weeks. Further, flows through the entire 810-acre system occurred more rapidly than expected following start-up. Ultimately, detention area inflow and outflow sampling at the following locations was identified for the start-up period:

- High head cell overflows over the concrete weir to Cell 1
- Cell 1 overflows into Cell 2
- Discharges from Cell 2 via its overflow concrete weir to the flow way south toward the L-31W Canal

Construction of the S-332D Detention Area was completed during the week of June 17, 2002. The S-332D Pump Station began filling the high head cell on June 22, 2002, and water was flowing into Cell 1 on or before June 26, 2002. Outflow from Cell 2 to the flow way occurred on or before July 1, 2002.

2.2 Analytical Parameters

Water quality samples collected from the wells and surface water monitoring sites were analyzed for the following parameters:

Physical Parameters

- Conductivity
- Color
- Total Suspended Solids (TSS)

Nutrients

- Total Phosphorus
- Ortho-Phosphorus
- Ammonia
- TKN
- Nitrate / Nitrite
- Total Nitrogen

Ionic Properties

- Alkalinity
- Total Dissolved Solids (TDS)

- Sulfate
- Fluoride
- Chloride
- Calcium
- Magnesium
- Potassium
- Sodium

Metals

- Arsenic
- Cadmium
- Copper
- Iron
- Lead
- Manganese
- Zinc

Surface and groundwater samples collected from the S-332D Detention Area during the week of June 24 and July 29 were analyzed for an additional suite of parameters—pesticide compounds. Also during July, samples from four selected wells adjacent to or within the S-332D Detention Area, and three wells from near the S-332C Detention Area were collected for one iteration of analyses of total and methyl mercury using clean sampling and analytical techniques.

2.3 Instrumented Wells

Wells MW-0003, MW-0023, MW-0028, MW-0029, MW-0031, and MW-0039 are equipped with water level and water quality data recording instruments (YSI 600XLM Sondes). In addition to water level records, groundwater temperature, pH, and conductivity are recorded on a continuous basis. Because of the temporal relationship between the date of notice to proceed and the initial dates of monitoring, instrumentation availability required some interim actions. *In situ* Multi-Parameter Troll 9000 units equipped to measure water level, groundwater temperature, pH, and conductivity were installed in five of the six wells on a short-term, basis pending receipt of the purchased YSI units. Data gathering was initiated in early July 2002.

2.4 Ecological Studies

The delivery order scope of services included pre-operations and start-up ecological studies to characterize the macrophyte and periphyton community characteristics immediately before and after the start-up of detention area operations. The pre-operation site visit occurred during the weekend of June 22, 2002. A second visit during start-up occurred on July 26 and 27, 2002. These studies included reconnaissance level documentation of the conditions of the remnant wetlands and tree islands within the footprint of the S-332D Detention Area, as well as the conditions found at the seven ENP monitoring locations detailed above. The herbaceous and forest community composition was characterized in a total of 20 one-meter square quadrats by estimating percent cover by species and taking photographs of the ground cover. Periphyton samples of representative soil or shallow

water habitats at each monitoring station were collected from each quadrat and were analyzed for algal species composition and relative abundance. Field survey methods are further detailed in the materials presented in Appendix D.

3.0 Analytical Results and Associated Data

Comprehensive tabular summaries of surface water and groundwater analytical results are presented in Appendix A. Supplemental tables prepared by sorting these data records to address selected comparisons of relevance are presented in Appendix B. Graphical summaries of the time series data drawn from the instrumented wells are presented in Appendix C. Data summaries and comments regarding the ecological conditions documented for the pre-operations condition are enclosed as Appendix D. A table summarizing groundwater monitor well construction details is included as Appendix E.

A bound notebook of certified laboratory reports is being provided to the USACE and the SFWMD as Appendix F. A CD-based version of Appendix F is bound into this document to facilitate raw data review by other interested parties should that need arise.

4.0 Evaluation of Short-Term Detention Area Effects

On the basis of modeling analyses by the USACE, it is anticipated that impoundment of water within the S-332D and other C-111/Mod Waters detention areas will accomplish the objective of reducing ENP seepage losses to the South Dade Conveyance System. Preliminary modeling analyses of anticipated conditions at the S-332C Detention Area projected that "negative drawdown" (mounding) effects could be anticipated several thousands of feet into the park, although the expected increases in wetland water levels was relatively small (less than a few inches with maximal stages in the detention area). For the S-332D Detention Area, where maximal water stages will be substantially less than those possible at the S-332C Detention Area, the zone of potential stage influence on the immediately adjacent portions of ENP is expected to be narrower.

There are indications from the USACE's preliminary modeling conducted for the S-332B Detention Area that water percolating into the Biscayne Aquifer should have a relatively short residence time in the park due to "recycle effects" of system seepage back to the east. In fact, for the S-332B and S-332C Detention Areas, it was estimated that 65 to 70% of the infiltrated surface water will return to the canal system to the east at least until the full system is completed. Assuming these projections of continued net groundwater transport to the east are ultimately confirmed, concerns about inadvertent pollutant transport from the detention areas to the park may be focused primarily on the areas immediately adjacent to the detention areas, with the exception of course of direct surface water inflows that are expected to occur at the downstream end of the S-332D impoundment system.

4.1 Physical Parameters Logged at Selected Shallow Wells

Six of the shallow monitoring wells within the study area were instrumented to provide detailed time series records of groundwater elevation, temperature, pH, and conductivity. Two of these monitoring locations were positioned within Cell 1 (MW-0003 and MW-0039) while the other four were the three ENP monitoring wells on Transect A (MW-0029,

MW-0030, and MW-0031) and the reference ENP well (MW-0028). Appendix C contains graphical summaries of these data at all six wells along with corresponding information regarding daily rainfall, stage records for the L-31N, L-31W, and C-111 Canals, and water elevations in the high head cell.

These records document the following conditions:

- The high head cell was connected to the S-332D pump station and initially filled on or about June 22, 2002.
- During the study period addressed by this technical memorandum, S-332D pumping activity was intermittent and varied in flow rates (number of pumps running) through the second week of July. Following that time, however, operations were increased and estimated inflow rates exceeded 400 cfs for most of the remainder of the start-up period.
- Very heavy rainfall occurred in June and early July. Rainfall amounts caused a regional increase in surface water levels as evidenced by the gradual rise in L-31W stages. Water elevations in L-31W during the month of July ranged from 5.5 to 6.1 feet NGVD. Stages in the high head cell averaged just over 8 feet NGVD so the head differential between the high head cell and the L-31W leg along the northern side of the detention area was approximately 2 to 2.5 feet. However, water elevations within Cell 1 were substantively lower ranging from approximately 5.5 to 6.5 feet NGVD. These records imply that very little head differential existed between Cell 1 and the adjacent surface waters in ENP for this period of study. However, corresponding water elevations in C-111 (tailwater of S-176) ranged between 3.5 and 4.3 feet NGVD indicating a fairly steep head differential between the eastern levee of Cell 1 and the canal system to the east. Thus, it is intuitive that most of the Cell 1 seepage/infiltration likely moved to the east rather than into ENP.
- Groundwater elevations documented in the monitoring wells closely tracked stages in L-31W, and no localized differences attributable to detention area operations were evident. The reference well (MW-0028) exhibited the identical variations as observed for the other monitoring wells. The stage recorder for MW-0023 appears to have lost calibration early in August. More frequent downloading and calibration is recommended.
- Temperature, pH, and conductivity records for the reference well and the two ENP wells on Transect A indicate stable levels that did not vary measurably over this period of study. While pH and conductivity data at the other wells were also reasonably stable, temperature at the west levee site (MW-0023), and at the two wells within Cell 1 showed a clear increase during July. It appears that the impounded water, heated by solar radiation, affected the shallow aquifer because of the anticipated seepage effects. Therefore, it may be appropriate to closely monitor groundwater temperatures along the Transect A wells in the future to see if this parameter provides any indication of seepage effects on the adjacent areas within ENP.

Although continuation of this interim detailed water quality sampling is pending completion of the necessary contractual modifications, the well instrumentation data logging continues, and periodic downloads and re-calibration of these six continuous monitoring recorders has occurred since the end of the start-up monitoring activities as documented by the plots provided in Appendix C. Future data evaluations can retrieve some indications of continued changes in study area conditions that may occur prior to the resumption of the detailed interim monitoring and the transition to the long-term monitoring program.

4.2 Organic Pesticides and Metals

In spite of the above projections, and as detailed in previous sections of this technical memorandum, this investigation included analysis of both surface and groundwater quality around Cell 1 in order to search for any indications of short-term effects of placing the S-332D Detention Area into an operational mode. The detailed summaries of the analytical data presented in Appendix A show that organic pesticides were not detected above the FDEP laboratory's PQLs in the surface water or groundwater samples collected during this study period. Similarly, all surface and groundwater samples reflected concentrations of arsenic, cadmium, copper, lead, and zinc that were below the method detection limits. Iron values in surface waters ranged from < 0.05 to 1.2 mg/L, and the range of groundwater sample concentrations was only slightly higher (0.17 to 2 mg/L). Similarly, while detectable concentrations of manganese were intermittently found, the surface water and groundwater values reflected essentially identical ranges (all values ranged between the method detection limit and 0.031 mg/L). Thus, in terms of both the organic pesticides and the metals analyzed, there were no indications of any short term effects of the S-332D Detention Area on surrounding groundwater or surface water quality.

4.3 Selected Indicator Parameters

Various ionic parameters were analyzed in both surface and groundwater samples to identify conservative constituents that might be used to differentiate these water types. In concept, evidence of surface water infiltration effects on adjacent groundwater might be documented over time by tracking changes in the groundwater concentrations of these conservative constituents. Screening of the results detailed in Appendix A for the parameters documenting ionic properties suggested that a subset of those parameters reflected surface and groundwater differences in at least some of the results. These included:

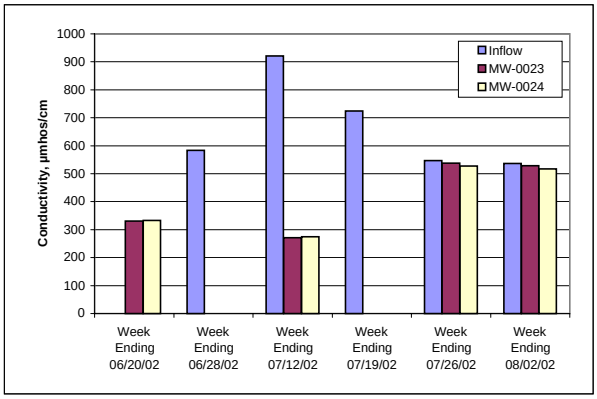
- Conductivity
- Chloride
- Magnesium
- Sodium
- Potassium
- Total dissolved solids, and
- pH

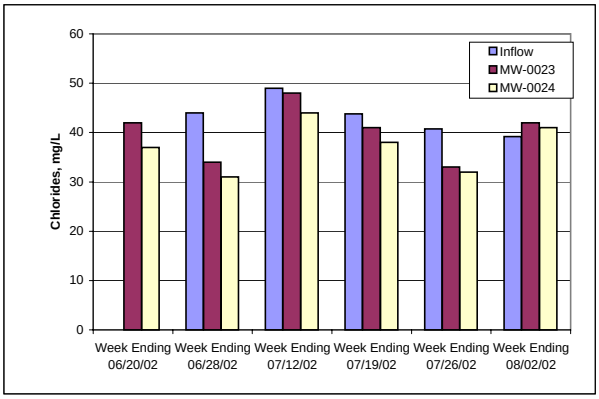
Additionally, total phosphorus concentration data were evaluated in light of the importance of this parameter in terms of Everglades Restoration concepts.

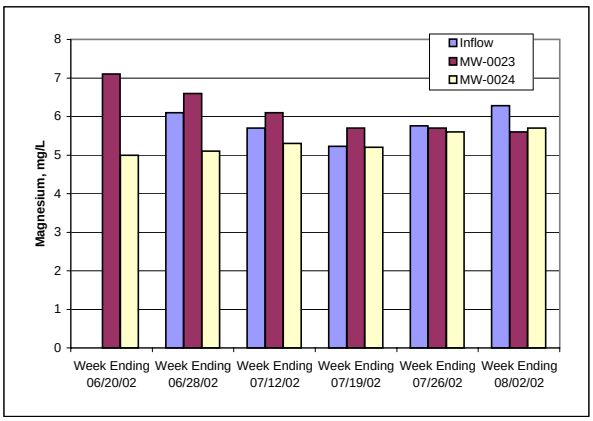
4.3.1 Inflows vs. Shallow and Deeper Wells

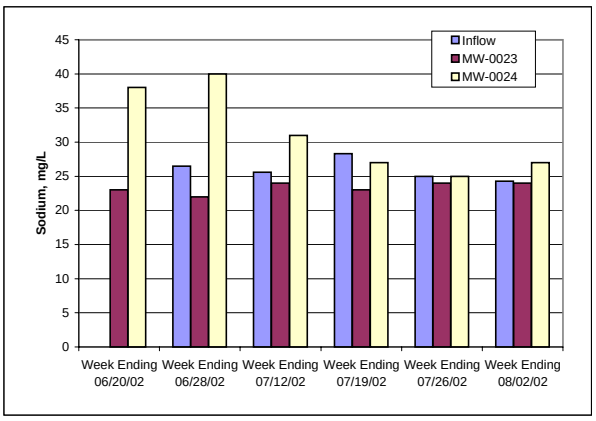
Exhibits 4 through 8 provide graphical comparisons of the conservative constituent surface water concentrations in the detention area inflow with those found in the shallow and deeper wells located at representative locations along the perimeter of the detention area. Specifically, the following comparisons are provided:

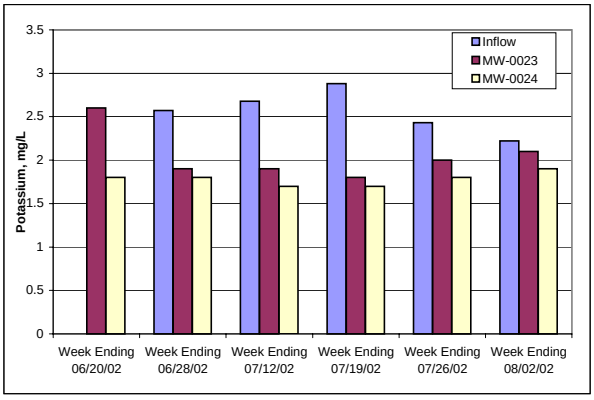
- Inflow vs. Shallow and Deeper Wells 23 and 24 (Cell 1 west levee at Transect A)
- Inflow vs. Shallow and Deeper Wells 26 and 27 (Cell 1 west levee at Transect B)
- Inflow vs. Shallow and Deeper Wells 11 and 12 (Cell 1 - east side, Transect A)
- Inflow vs. Shallow and Deeper Wells 19 and 20 (Cell 1 - east side, Transect B)
- Inflow vs. Shallow and Deeper Wells 21 and 22 (Southeastern margin of Cell 2)

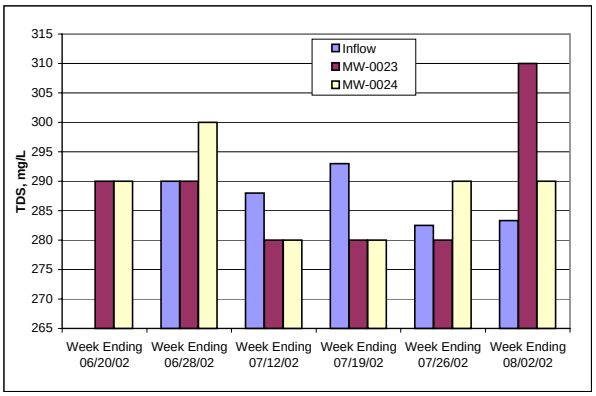


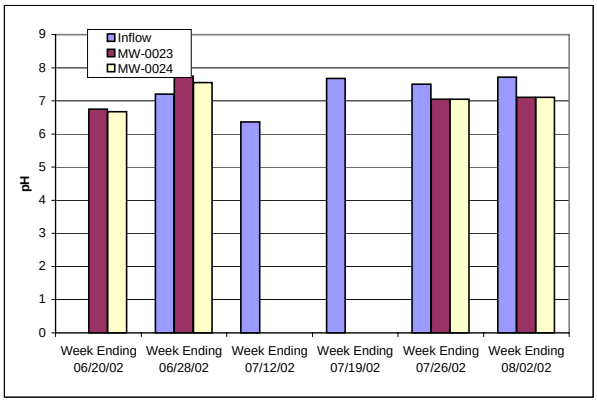












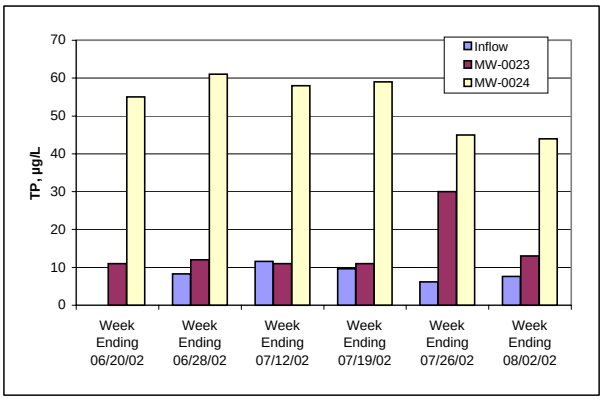
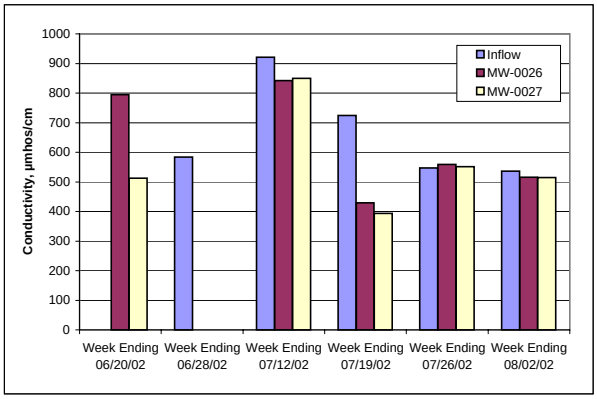
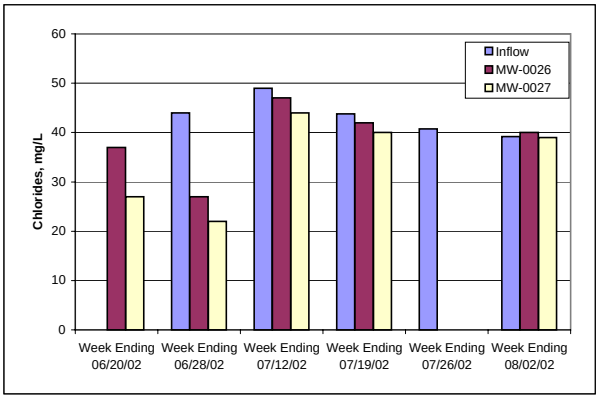
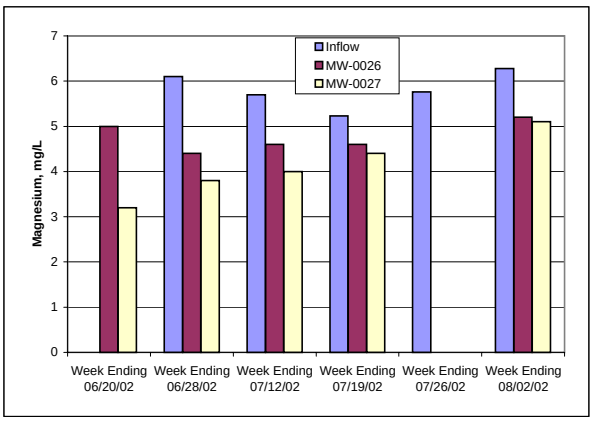


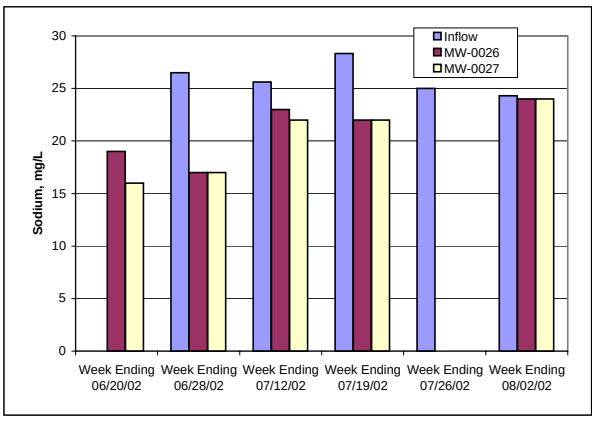
EXHIBIT 4

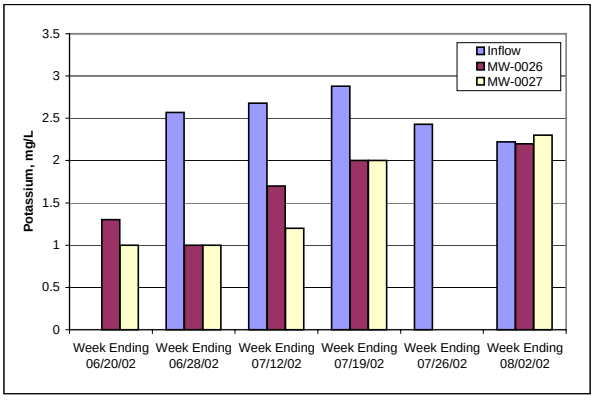
Comparison of Selected Inflow Water Quality Concentrations With Shallow and Deeper Groundwater Wells MW-23 and MW-0024

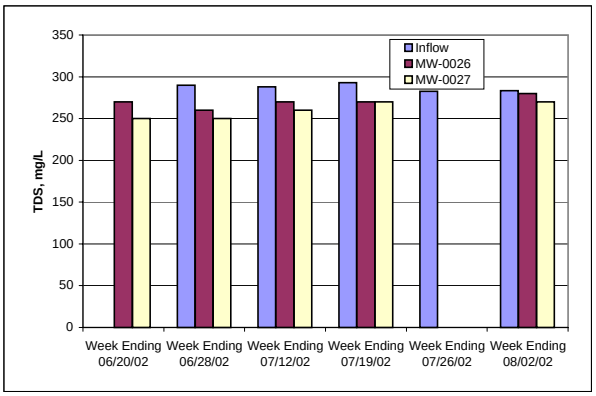


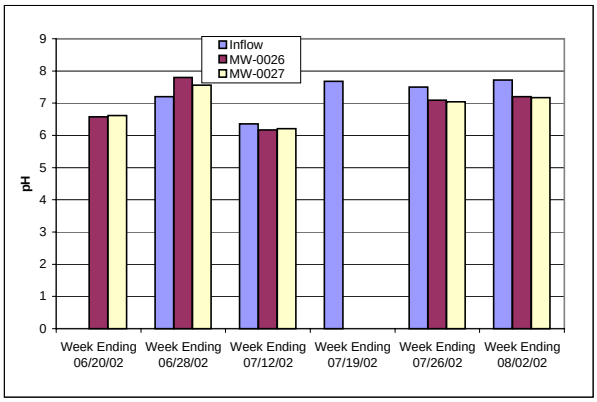












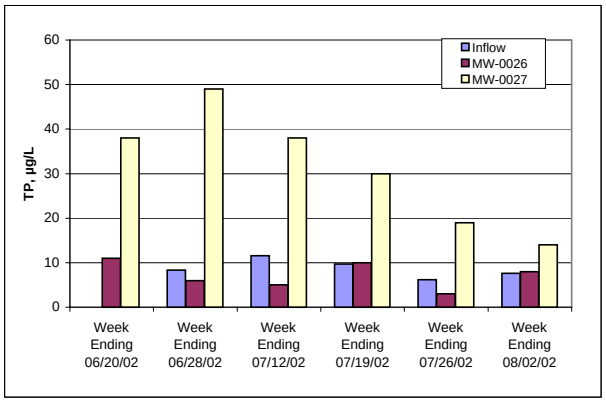
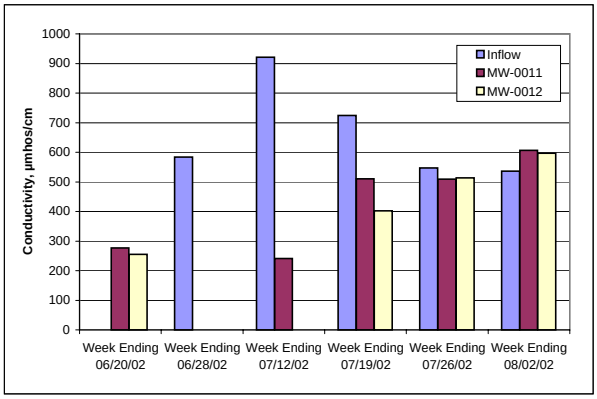
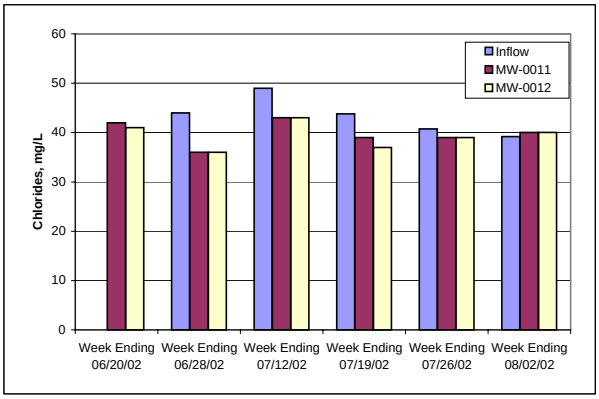
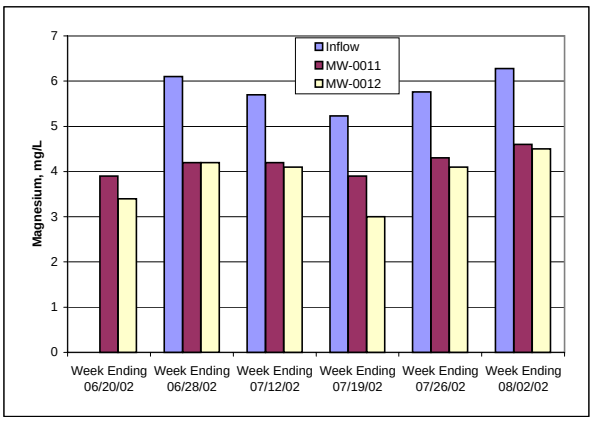


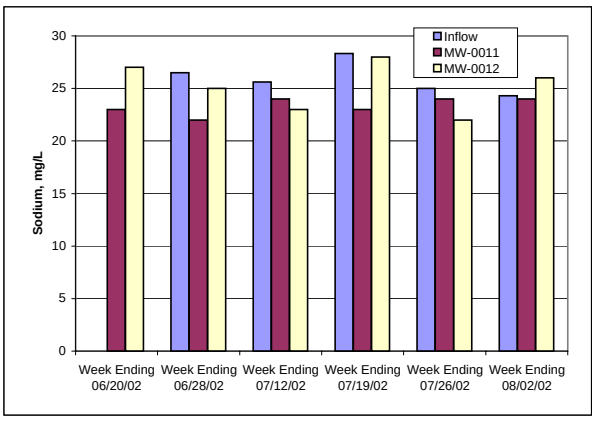
EXHIBIT 5

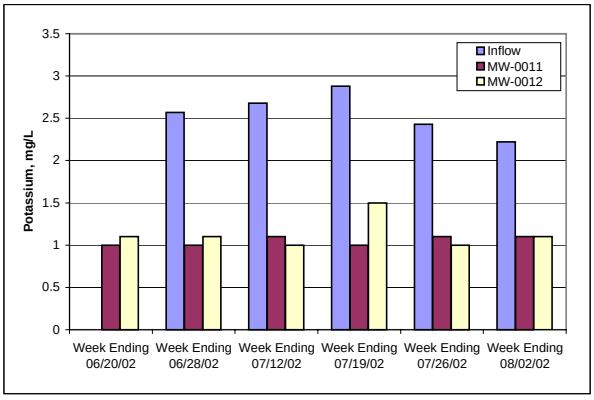
Comparison of Selected Inflow Water Quality Concentrations With Shallow and Deeper Groundwater Wells MW-26 and MW-0027

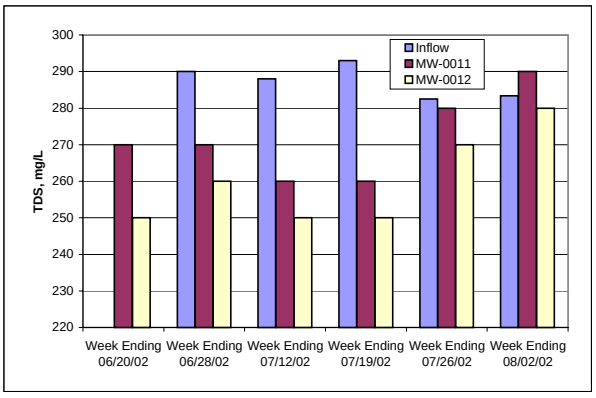


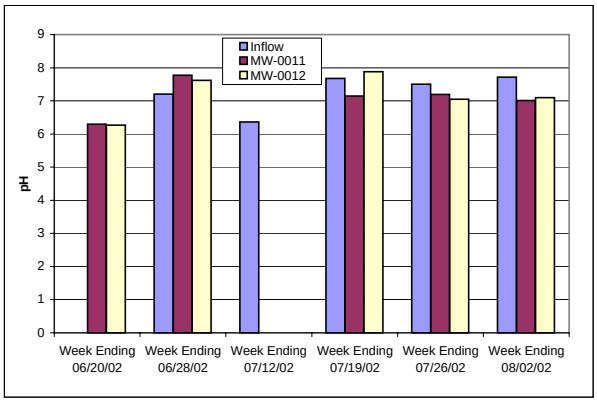












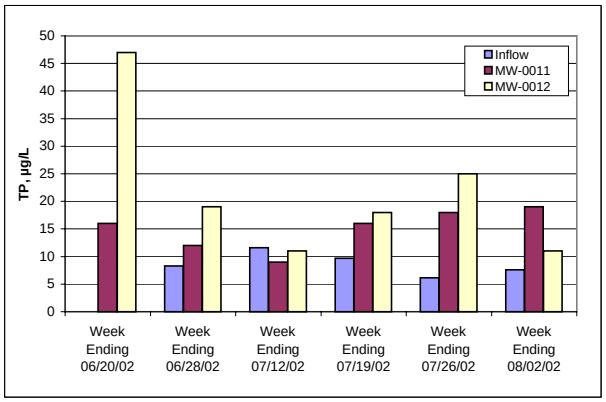
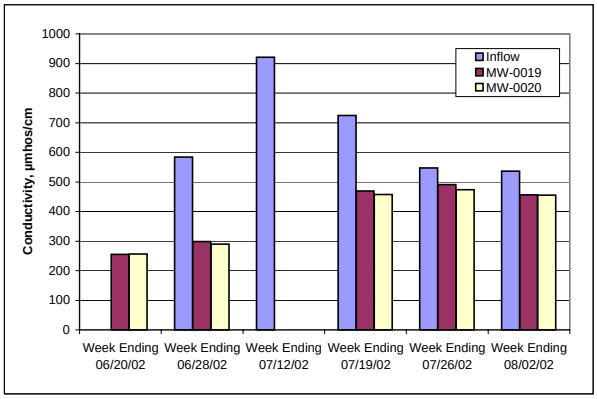
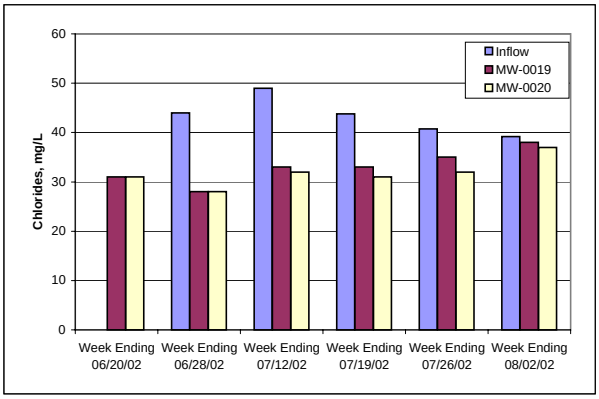
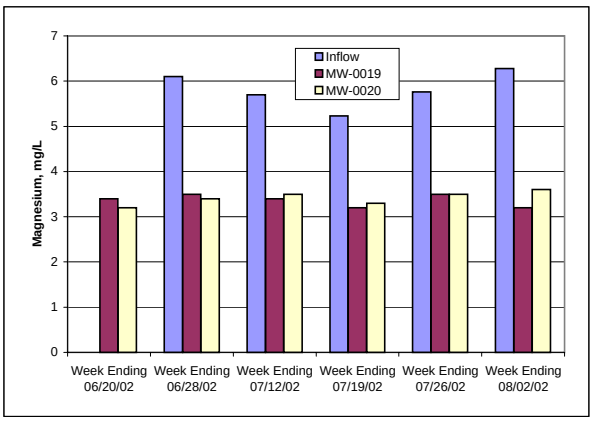


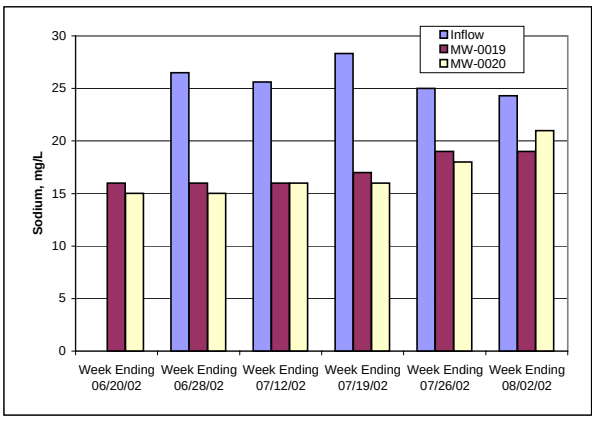
EXHIBIT 6

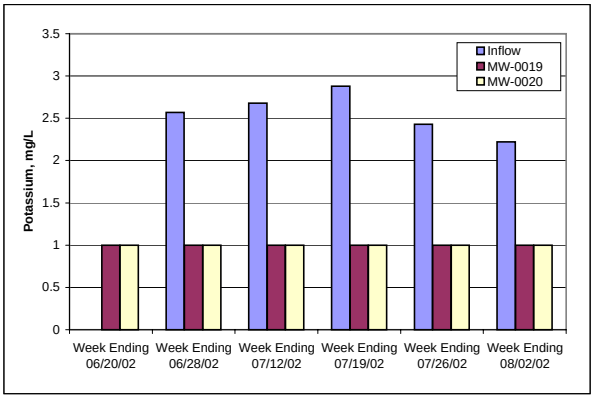
Comparison of Selected Inflow Water Quality Concentrations With Shallow and Deeper Groundwater Wells MW-11 and MW-0012

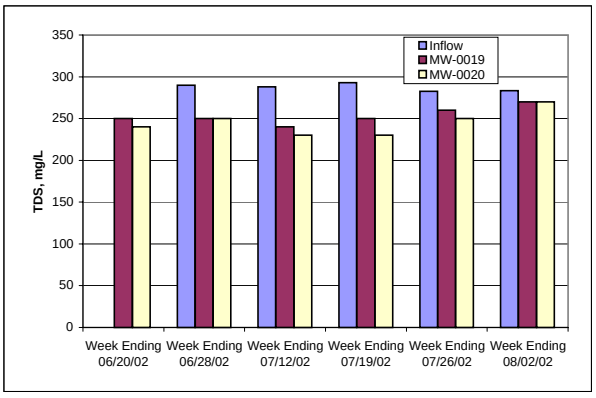


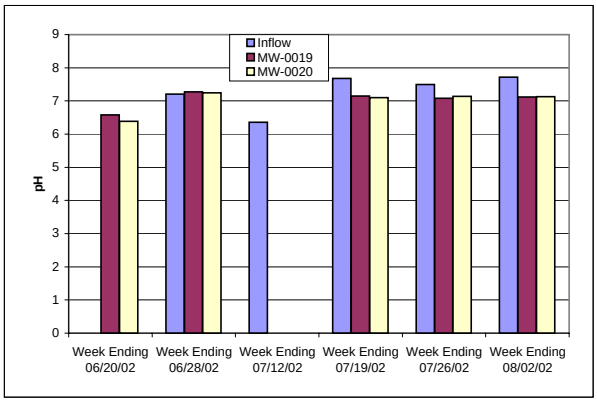












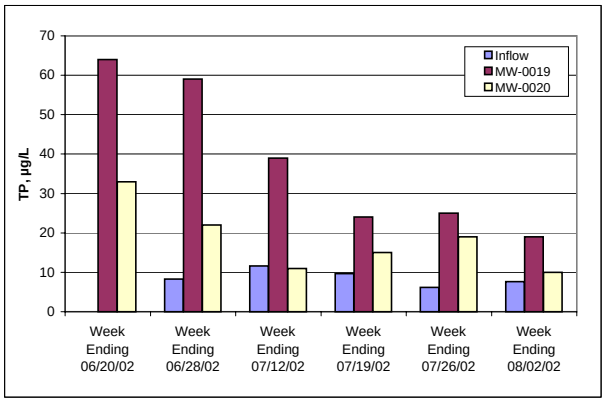
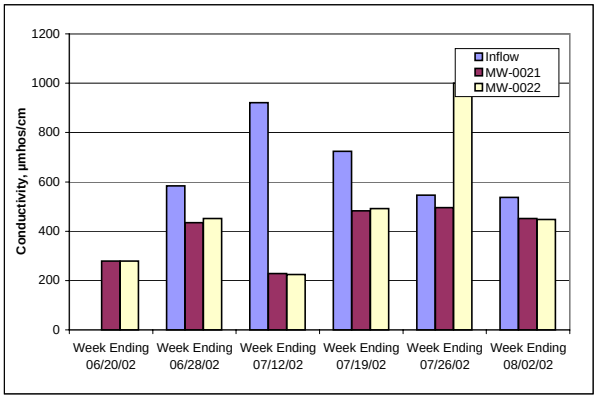
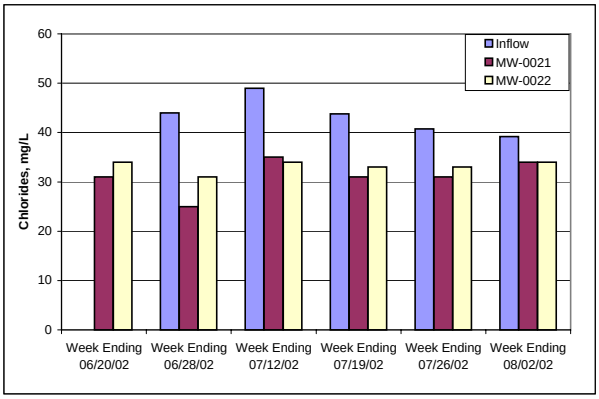
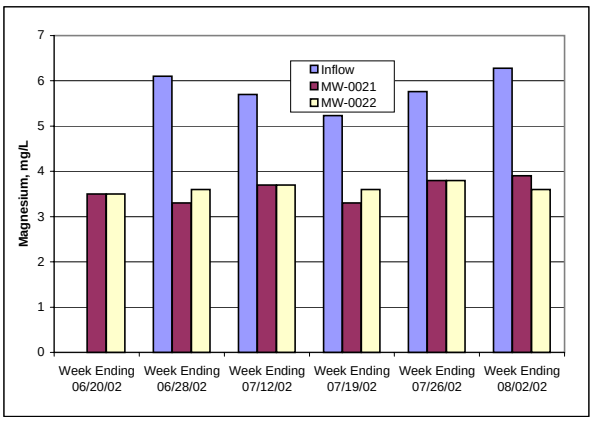


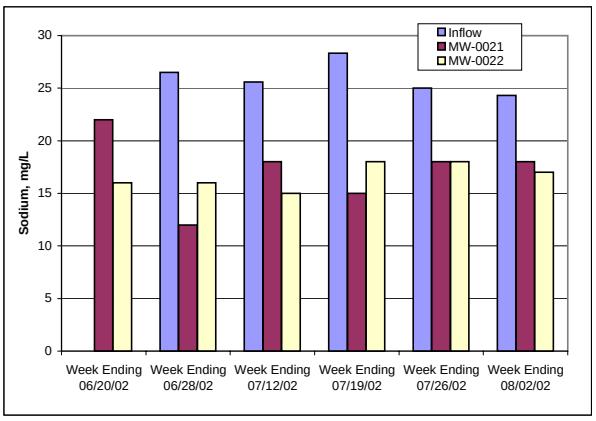
EXHIBIT 7

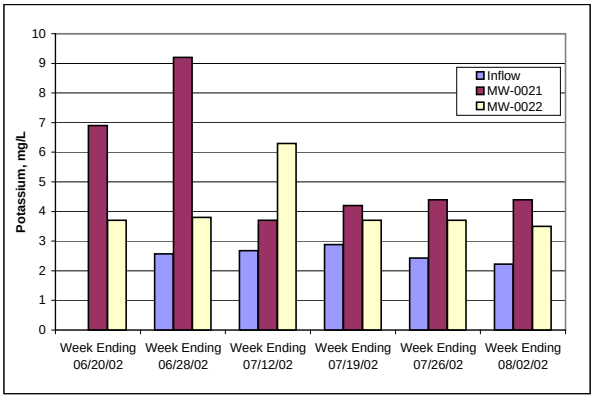
Comparison of Selected Inflow Water Quality Concentrations With Shallow and Deeper Groundwater Wells MW-19 and MW-0020

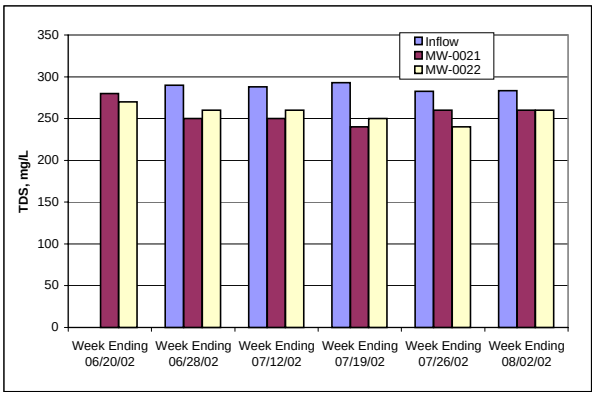


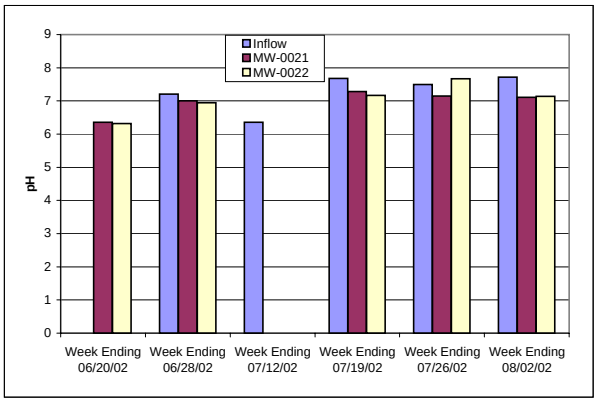












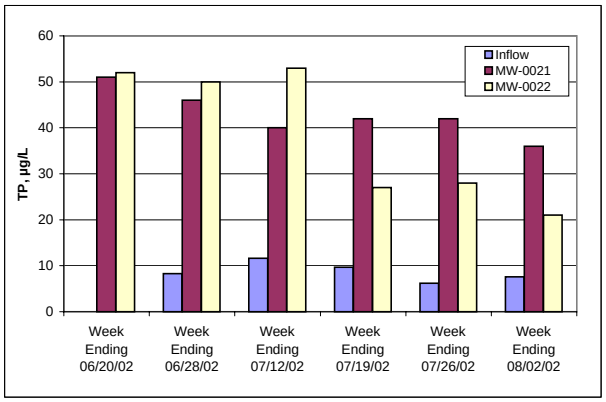


EXHIBIT 8

Comparison of Selected Inflow Water Quality Concentrations With Shallow and Deeper Groundwater Wells MW-21 and MW-0022

Exhibit 9 summarizes the key queries posed, and the associated indications of data relationships reflecting possible surface water influence on underlying groundwater quality.

EXHIBIT 9
Review of Selected Conservative Water Quality Parameter Relationships Between S-332D Detention Area Inflows and Paired Shallow and Deeper Wells

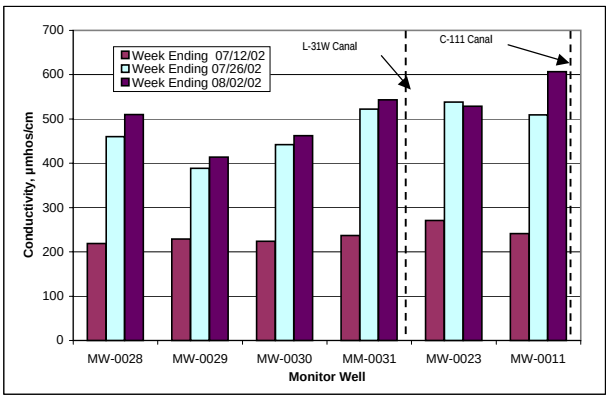
Query	Exhibit 4. Inflows vs. Wells 23 and 24	Exhibit 5. Inflows vs. Wells 26 and 27	Exhibit 6. Inflows vs. Wells 11 and 12	Exhibit 7. Inflows vs. Wells 19 and 20	Exhibit 8. Inflows vs. Wells 21 and 22
What parameters are substantively higher or lower in the inflows than the groundwater?	Sodium, Potassium	Chloride, Magnesium, Sodium, Potassium, TDS	Magnesium, Potassium, TDS	Chloride, Magnesium, Sodium, Potassium, TDS	Chloride, Magnesium, Sodium, Potassium, TDS
Is there any increasing or decreasing trend for any of these parameters in the inflow values during this study period?	No	No	No	No	No
Is there any indication of surface and groundwater quality convergence reflected for any of these parameters during this study period?	Sodium, Potassium	Chloride, Magnesium, Sodium, Potassium	TDS	Chloride, Sodium, TDS	Potassium

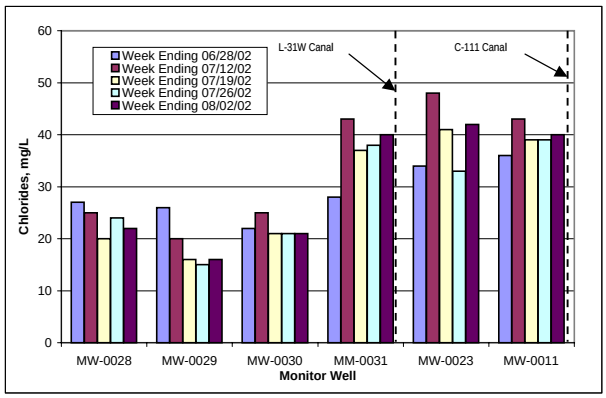
These same exhibits also compare the weekly average inflow total phosphorus concentrations with the corresponding weekly data values for the shallow and deeper wells. For this period of record, the detention area inflow concentrations were quite low, with all values lower than 11 parts per billion (ppb). In contrast, all of the deeper wells (approximately 40 feet below land surface) exhibited substantively higher total phosphorus concentrations, ranging from roughly 20 ppb up to just over 60 ppb. These elevated concentrations in the groundwater were comparable to the phosphorus concentrations documented in this general vicinity of the Frog Pond by field investigations conducted in February 2002 well in advance of detention area construction or operations (CH2M HILL, 2002). In that the inflow concentrations were all very low, it appears that the phosphorus concentrations detected in the groundwater samples reflect antecedent conditions; these concentrations are not attributable to detention area construction or operations. Exhibits 5, 7, and 8 provide indications that the shallow and/or deeper groundwater concentrations of total phosphorus decreased over time during this study period, possibly a reflection of the influence of the impoundment on the underlying aquifer water quality.

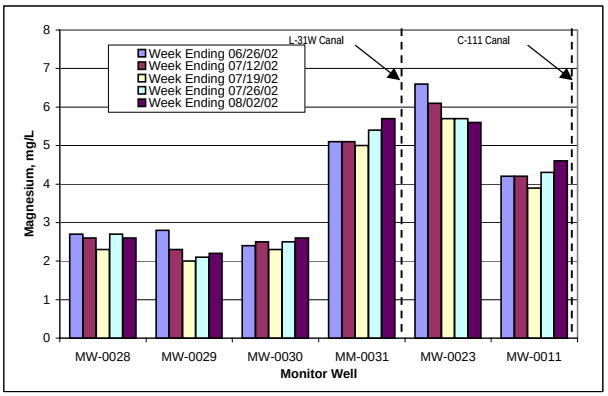
4.3.2 Shallow Wells along Transects A and B

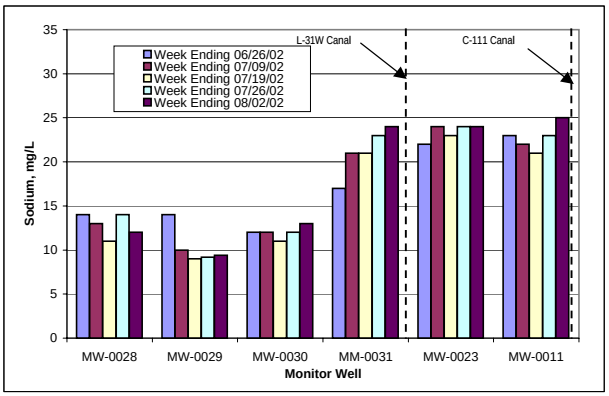
Exhibits 10 and 11 graphically compare the concentrations of the same eight "indicator parameters" in the shallow wells (nominally 20 feet deep below land surface) located along Transects A and B, respectively. The corresponding values for the ENP reference well (MW-0028) are also shown on both of these exhibits to facilitate evaluation of regional conditions within the wetland habitats along this ENP boundary.

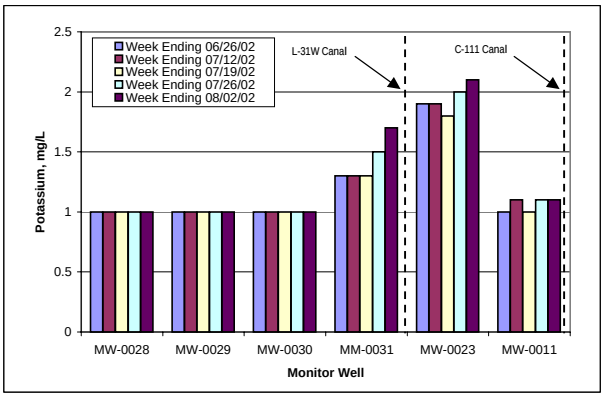
For Transect A (Exhibit 10), substantively higher concentrations of chloride, magnesium, sodium, potassium, and TDS occur in Wells MW-0023 and MW-0031 located on either side

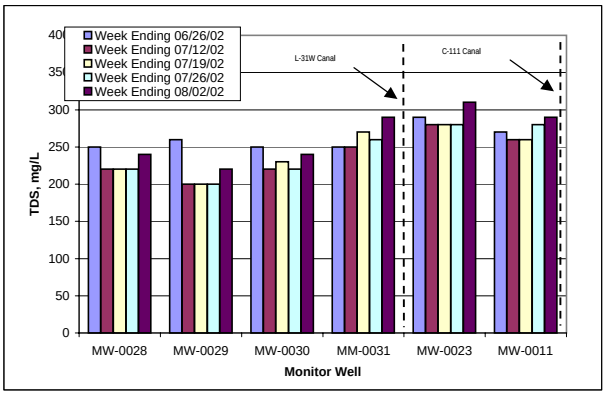


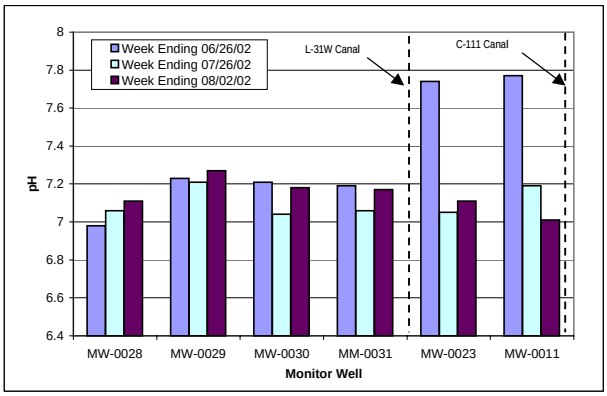












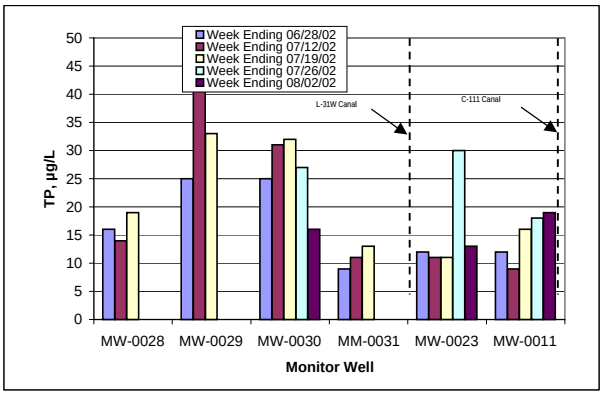
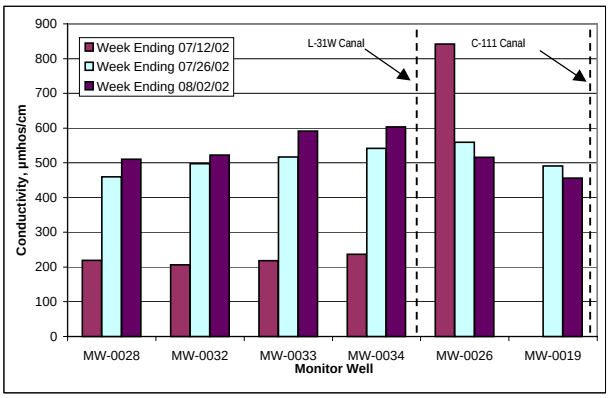
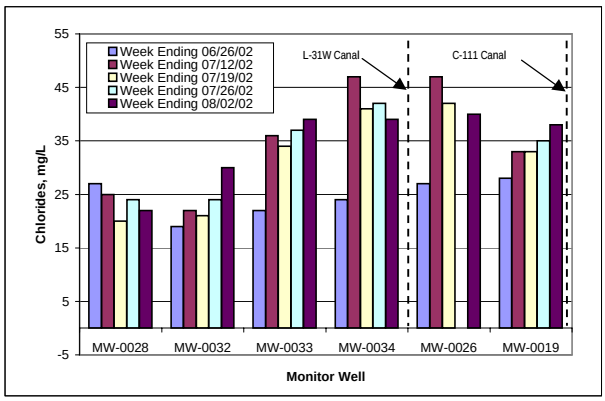
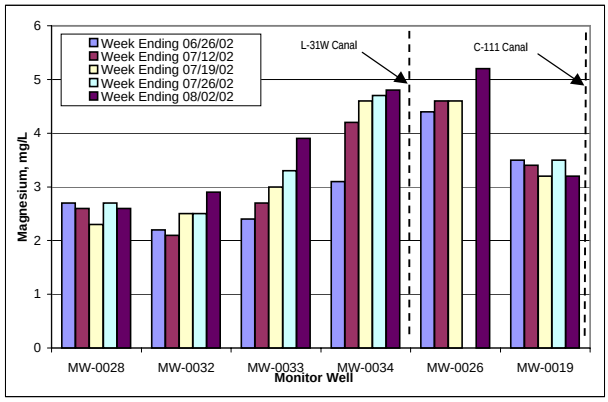


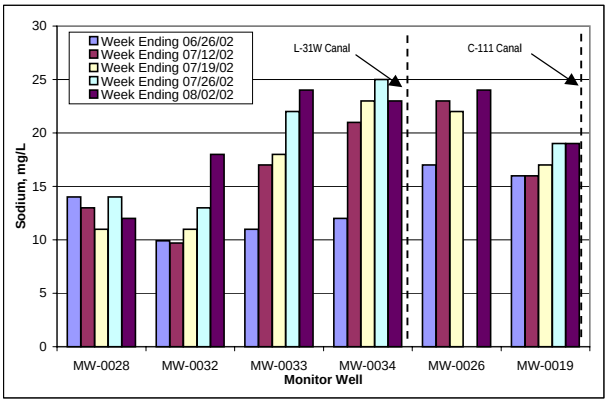
EXHIBIT 10

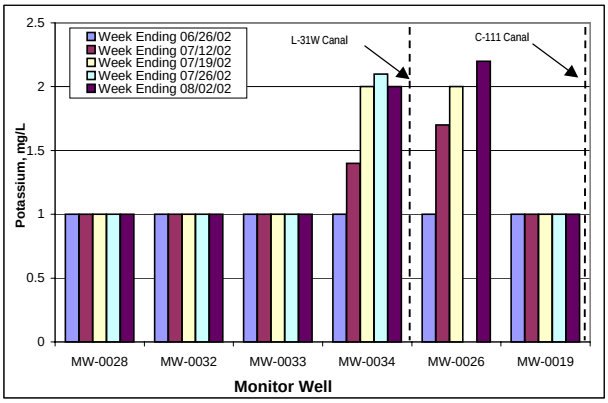
Comparison of Selected Water Quality Concentrations in Shallow Groundwater Wells, Transect A West of Cell 1

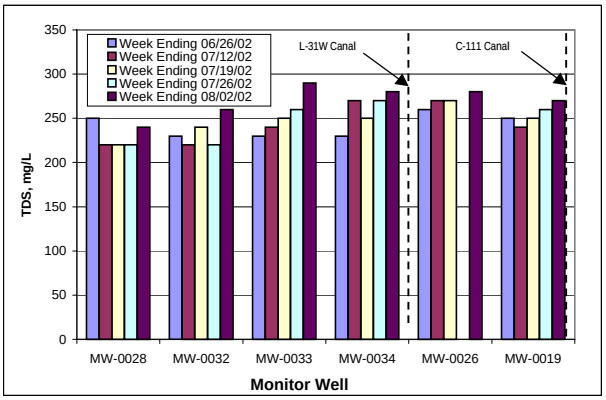


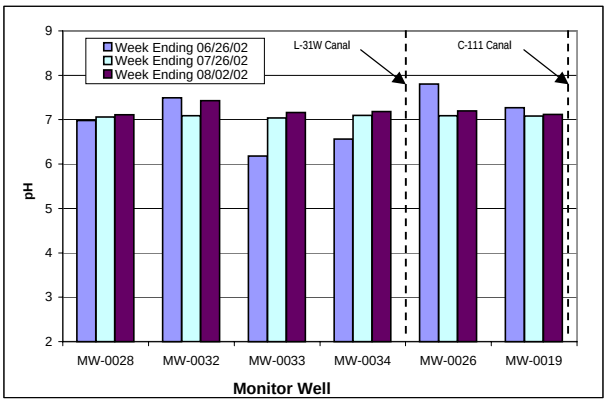












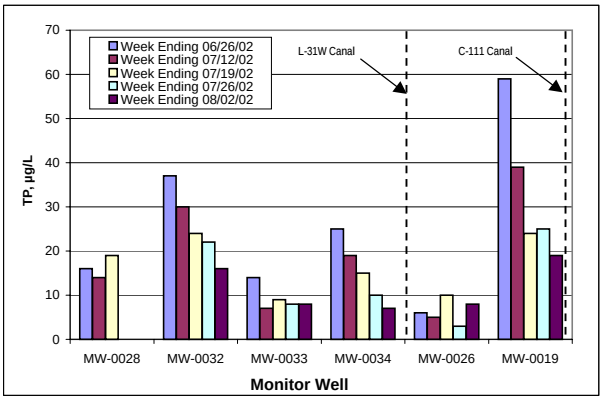


EXHIBIT 11

Comparison of Selected Water Quality Concentrations in Shallow Groundwater Wells, Transect B West of Cell 1

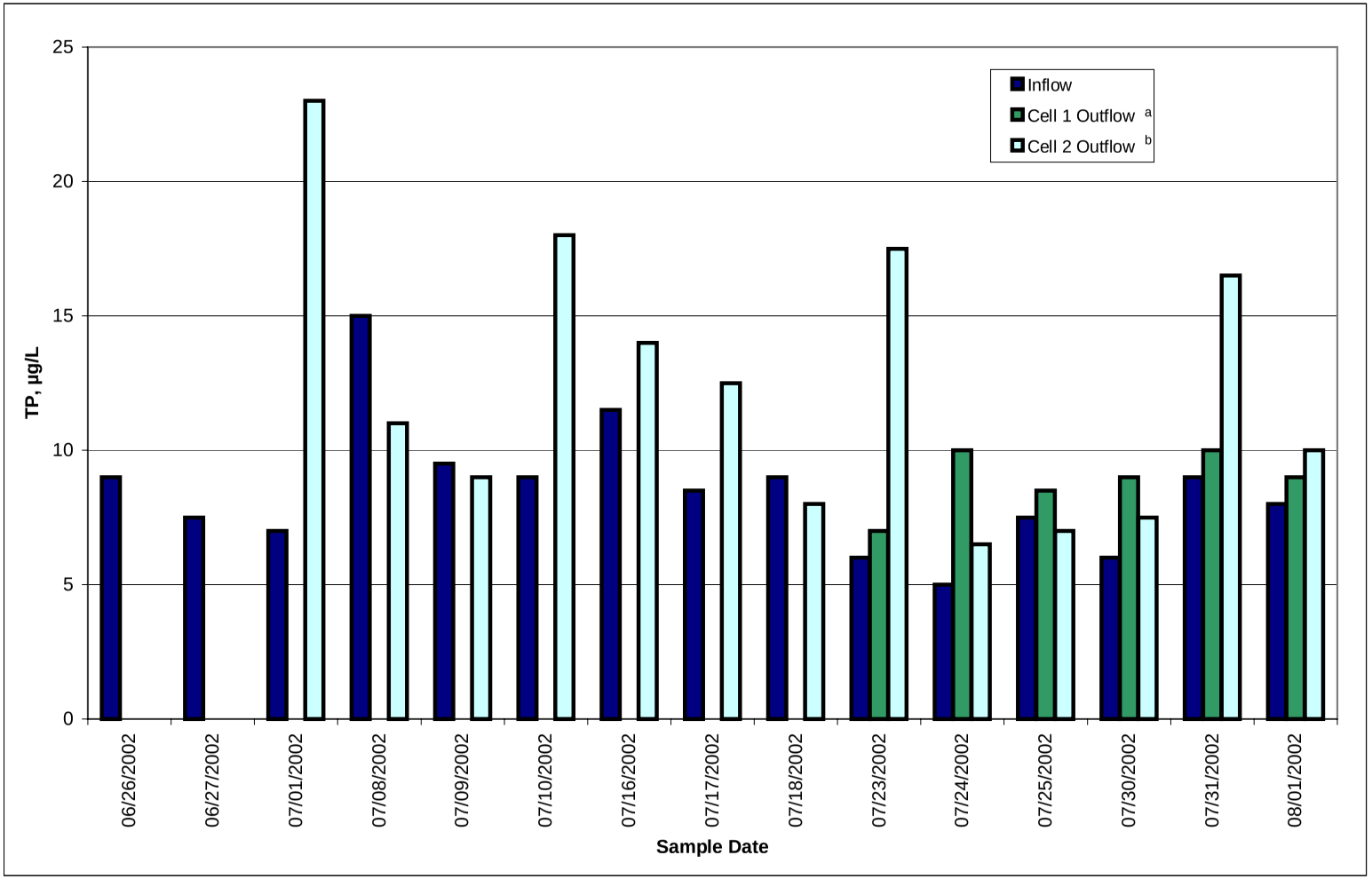
of the L-31W Canal. Comparable levels of these parameters were also seen in both the L-31W surface water samples and the detention area inflows making it impossible to be sure whether the higher concentrations in these two wells reflect detention area seepage influence or merely residual surface water quality established due to prior months of direct S-332D pumpage into the L-31W Canal prior to detention area construction. Seepage influence is suggested by the corresponding weekly values for these two wells, which suggest that concentrations of several of these parameters at MW-0031 increased during this period of record. It would appear that during this period of study, the data from the second well on this transect (MW-0030) do not indicate a short term effect. Future monitoring should reflect change if the detention area's influence ultimately extends past this monitoring location.

A very similar pattern is reflected by the Transect B data presented in Exhibit 11. Wells MW-0026 and MW-0034 are analogous to the west levee and eastern-most ENP wells on Transect A. These wells again showed the highest average values for most of these parameters during the study period. Well MW-0034 located on the west side of L-31W showed a fairly clear increase in concentrations of these parameters over time resulting in convergence in concentrations by the end of the month of start-up monitoring. This pattern is particularly evident for chloride, magnesium, sodium, and potassium, with a more subtle indication seen for TDS. Interestingly, this temporal change is also reflected for the other two ENP wells on Transect B (see the data for chloride, magnesium, and sodium for Wells MW-0033 and MW-0032). If these patterns continue, future monitoring records would be expected to show a continued rise in these parameters over time until the concentrations in these wells match up with those found at the shallow wells located along the west levee of Cell 1.

4.4 Indications of Detention Area Effects on Surface Water Quality

During this initial monitoring period, detention area inflows and outflows were monitored at least once and generally two days per week at the high head cell overflow into Cell 1, and at the Cell 2 overflow into the flow way. Additionally, for the last several weeks, supplemental samples were also collected at the earthen berm separating Cells 1 and 2 to provide information regarding conditions at this internal monitoring point. The inflow and outflow samples were analyzed for all of the same parameters as the other water quality monitoring stations. However, the key focus of this evaluation was placed solely on total phosphorus.

Exhibit 12 summarizes the inflow and outflow data for this study period. As implied by the weekly averaged values shown in the prior exhibits, the inflow concentrations typically ranged between 5 and 10 ppb of total phosphorus with only 2 of the 15 values ranging between 12 and 15 ppb. Of the 13 sampling dates where both inflows and outflows (at Cell 2) were monitored, the concentrations of outflows to the flow way area exceeded the inflows on 9 occasions indicating that phosphorus was being mobilized out of the detention area presumably due to the immediate efflux occurring following the flooding of the residual wetlands and newly scraped Frog Pond surface. As might be expected, phosphorus treatment was not occurring during this start up period of operations. During this period, substantive periphyton growth was observed and presumably SAV and other macrophyte growth was also occurring. Future monitoring activities will reflect whether water quality enhancement functions improve over time as the detention area's biological systems become established.



Data series represents average of daily morning and afternoon samples taken at Inflow and Outflow sampling locations.
[a]Samples taken at earthen berm at outflow of Cell 1.
[b]Samples taken at concrete spillway at outflow of Cell 2.

EXHIBIT 12
Total Phosphorus Concentrations in Inflows and Outflows, S-332D Detention Area Startup Period

4.5 Ecological Perspectives

A detailed discussion of the ecological reconnaissance surveys conducted in June and July 2002 is presented in Appendix D. The primary goal of these surveys was to document the existing ecological and vegetative community conditions prior to and during the initial inundation of the detention area habitats. The biological profile of conditions both within the detention area and at the seven ENP monitoring locations was viewed as important data to be collected during this period that could potentially serve as a form of temporal control against which future biological survey data may be compared in support of assessment of the long term effects of detention area operations. As mentioned previously, the long-term monitoring program design is underway and will consider the data collected from these stations in the interim, as well as other ongoing ecological monitoring efforts in determination of the appropriate ecological monitoring for the long-term monitoring program.

The wetlands of the eastern Everglades peripheral to the detention area consist sawgrass and native marsh grasses growing on natural limestone rock and marl soils. Although much of the detention area soils were scraped away by design, tree islands and much of their peripheral shallow and deep emergent marsh communities were preserved during construction. These wetlands and tree islands will maintain a diverse native flora and wildlife habitat within the detention area.

Although the macrophyte community and periphyton evaluations were primarily focused on setting a time based point of reference for future studies, it is instructive to note that the two surveys bracketed the period of initial detention area start up operations. Some subtle differences in the algal communities were documented by the periphyton taxonomic analyses performed. Specifically, the initial survey of stations within the detention area in June occurred essentially at the time of initial diversions of stormwater into Cell 1. Algal community composition was strongly dominated by a number of calcareous blue-green algae genera, including *Scytonema, Schizothrix, Phormidium,* and *Planktolyngbya.* Approximately a month following detention area inundation, these genera were still present but there also was a marked relative abundance of additional algal forms including the blue-greens, *Pseudanabaena* and *Jaaginema*, and the diatoms *Brachysira vitra* and *Cymbella microcephala*. While these taxa are common components of natural Everglades periphyton, their occurrence suggests that the month of relatively deep inundation created conditions favoring development of a community slightly different than that found at the ENP monitoring locations.

5.0 Conclusions and Recommendations

Conclusions based on the information presented above should be made in the context of the limited data set available to date with which detention area effects can be evaluated. Anticipated resumption of “interim” monitoring activities will occur during the fourth quarter of 2002, and during that interim period, interagency working group progress on developing a long-term environmental monitoring program is expected. Following agency consensus on the components, parameters, and frequency of long-term monitoring, it is anticipated that a rigorous set of monitoring records will be generated over time that will serve as the basis for further analyses and data interpretation.

In the interim, the following conclusions and recommendations are offered drawn from the data produced by the pre-operations and start-up monitoring periods:

1. Data generated from the instrumented wells, and review of physical conditions during this study period, indicated that the impounded surface waters apparently caused increased temperatures in the shallow aquifer directly under Cell 1.
2. Organic pesticides were not detected above the FDEP low-level PQLs in any of the surface or groundwater samples.
3. Arsenic, cadmium, copper, lead and zinc were not detected above method detection limits in any of the surface or groundwater samples. Iron and manganese were measured at low concentrations typical of local natural surface water and groundwater. There was no indication of unnatural presence of metals in surface or groundwater samples.
4. Phosphorus concentrations in the inflows were very low as might be expected during the heavy rainy conditions monitored in June and July 2002. Concentrations in the outflow from the detention area to the flow way area during this start-up period often exceeded the inflow concentrations. These concentrations will need to be monitored closely over the course of the year before drawing any conclusions regarding phosphorus removal capacity of the detention area.
5. Regarding potential indicator parameters (e.g., conservative constituents such as selected ions), there are some specific parameters that may reflect some localized influence of the detention area on underlying and immediately adjacent groundwater. These initial data are not conclusive, but interim and long-term monitoring data should provide valuable clarifying information. Parameters of potential utility include conductivity, chloride, magnesium, sodium, potassium, total dissolved solids, pH, and total phosphorus. Over time, other parameters of potential interest may be added to this preliminary list of candidate prioritized monitoring parameters.

This technical memorandum should not be considered a comprehensive analysis of these monitoring records. Additional historical data sets exist because of monitoring by various agencies within this study area and those data sets should be accessed and reviewed in terms of characterizing “baseline” conditions that preceded detention area construction and operations. These data should be evaluated in detail to get a better understanding of the surface water and groundwater relationships for key parameters. A full DBHYDRO data retrieval effort is recommended for all parameters monitored during this initial monitoring study period, and a much more comprehensive analysis should occur. That analysis is beyond the scope of this evaluation but is recommended for the future. These monitoring records should be compared with the ongoing Emergency Order environmental monitoring records generated by the USACE, with the S-332D Pump Station Pump Test records (August and September 1999) generated by the District, with the long-term ambient water quality data generated by the District, with any relevant water and ecological monitoring work or research being conducted by universities or National Park Service employees, and with the long-term ambient water quality monitoring records produced by the Miami-Dade County Department of Environmental Resources Management.

APPENDIX A

Surface and Groundwater Analytical Results

EXHIBIT A-1

Water Quality Data Summary for the S-332D Detention Area, June 17 - August 2, 2002

					Field Parameters				Analytical Parameters																							
		Monitoring Location	Monitoring Period	Date	Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[c] (µg/L)	Ortho-P[c] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
Surface Water	L 31 W Canal	SW-0001	Pre-operations	06/18/2002	DNP	6.40	6.8	362	6	5	0.059	1.7	0.050 U	1.7	210	47	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	72	0.020 U	0.69	0.0050 U	7.3	0.021	2.3	29	0.020 U
		(North of Basin)	Start-up 1	06/27/2002	DNP	5.84	11.1	736	3	2	0.13	0.69	0.097	0.69	200	40	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.78	0.0500 U	5.7	0.011	2.1	24	0.020 U
			Start-up 2	07/11/2002	DNP	NA	4.1	209	8	9	0.03 U	0.51	0.050 U	0.51	180	34	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.5	0.0500 U	3.9	0.010 U	1.3	17	0.020 U
			Start-up 3	07/17/2002	DNP	7.61	1.5	1162	11	2 U	0.030 U	0.44	0.050 U	0.44	160	19	180	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	58	0.020 U	0.34	0.0500 U	2.6	0.010 U	1.0 U	10	0.020 U
			Start-up 4	07/24/2002	DNP	7.47	5.6	529	10	2 U	0.030 U	0.62	0.050 U	0.62	200	38	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.53	0.0500 U	4.6	0.016	1.7	22	0.020 U
			Start-up 5	07/30/2002	DNP	7.67	9.5	520	5	5	0.030 U	0.62	0.050 U	0.62	200	40	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.79	0.0500 U	5.1	0.011	1.8	23	0.020 U
		SW-0002	Pre-operations	06/17/2002	DNP	7.05	10.8	284	11	2 U	0.078	1.0	0.050 U	1.0	200	50	300	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	76	0.020 U	1.2	0.0500 U	6.5	0.024	2.0	26	0.020 U
		(Transect A)	Start-up 1	06/26/2002	DNP	7.63	NA	757	8	2 U	0.19	0.59	0.050 U	0.59	190	35	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.85	0.0050 U	5.1	0.023	1.7	20	0.020 U
			Start-up 2	07/11/2002	DNP	NA	1.4	153	8	6	0.030 U	0.51	0.063	0.57	100	8.6	120	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	38	0.020 U	0.12	0.0050 U	1.6	0.010 U	1.0 U	5.6	0.020 U
			Start-up 3	07/17/2002	DNP	7.6	1.3	1026	10	2	0.030 U	0.54	0.050 U	0.54	140	16	170	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	57	0.020 U	0.22	0.0050 U	2.2	0.010 U	1.0 U	8.2	0.020 U
			Start-up 4	07/23/2002	DNP	7.31	3.0	501	7	2	0.030 U	0.47	0.050 U	0.47	200	36	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.57	0.0050 U	4.5	0.011	1.5	21	0.020 U
			Start-up 5	07/30/2002	DNP	7.45	4.0	517	13	2 U	0.030 U	0.58	0.050 U	0.58	200	39	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.49	0.0050 U	4.9	0.012	1.6	22	0.020 U
		SW-0003	Pre-operations	6./17/2002	DNP	7.02	13.2	283	13	2 U	0.070	1.2	0.050 U	1.2	200	50	300	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	77	0.020 U	1.2	0.0050 U	6.6	0.023	1.9	26	0.020 U
		(Transect B)	Start-up 1	06/26/2002	DNP	7.12	NA	318	9	3	0.23	0.60	0.050 U	0.60	190	33	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	62	0.020 U	0.96	0.0050 U	5.0	0.022	1.5	19	0.020 U
			Start-up 2	07/11/2002	DNP	NA	0.9	180	8	4	0.030 U	0.45	0.057	0.51	140	18	170	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	53	0.020 U	0.13	0.0050 U	2.3	0.010 U	1.0 U	8.9	0.020 U
			Start-up 3	07/17/2002	DNP	NA	1.5	NA	8	2 U	0.030 U	0.48	0.050 U	0.48	180	25	200	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	67	0.020 U	0.29	0.0050 U	2.9	0.010 U	1.0 U	13	0.020 U
			Start-up 4	07/24/2002	DNP	7.34	--	525	7	5	0.030 U	0.60	0.050 U	0.60	200	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.92	0.0050 U	4.4	0.030	1.6	21	0.020 U
			Start-up 5	07/30/2002	DNP	7.58	2.8	537	8	2	0.030 U	0.54	0.050 U	0.54	200	40	280	5.0 U	0.20 U	6.2	15	0.010 U	0.0050 U	69	0.020 U	0.42	0.0050 U	4.9	0.011	1.9	23	0.020 U
	ENP	SW-0004	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0029)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 3	07/16/2002	DNP	NA	1.1[d]	NA	13	2 U	0.030 U	0.70	0.050 U	0.70	120	8.3	150	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	42	0.020 U	0.050 U	0.0050 U	1.5	0.010 U	1.0 U	5.3	0.020 U
			Start-up 4	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 5	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		SW-0005	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0030)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 3	07/16/2002	DNP	NA	2.8[d]	NA	13	3	0.030 U	0.56	0.050 U	0.56	100	7.6	130	5.0 U	0.20 U	5.0 U	45	0.010 U	0.0050 U	35	0.020 U	0.080	0.0050 U	1.3	0.010 U	1.0 U	4.7	0.020 U
			Start-up 4	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 5	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		SW-0006	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0031)	Start-up 1	06/26/2002	DNP	8.0	NA	970	5	2 U	0.44	0.59	0.050 U	0.59	200	26	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.44	0.0050 U	3.9	0.031	1.0 U	15	0.020 U
			Start-up 2	07/11/2002	DNP	NA	1.1	159	6	9	0.030 U	0.58	0.050 U	0.58	110	12	140	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	42	0.020 U	0.13	0.0050 U	1.7	0.010 U	1.0 U	6.5	0.020 U
			Start-up 3	07/16/2002	DNP	NA	0.84[d]	NA	8	2 U	0.030 U	0.60	0.050 U	0.60	140	13	160	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	50	0.020 U	0.22	0.0050 U	2.1	0.010 U	1.0 U	8.3	0.020 U
			Start-up 4	07/23/2002	DNP	7.33	1.6	467	5	2	0.066	0.60	0.050 U	0.60	200	27	240	30.0 *	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.62	0.0050 U	3.7	0.010 U	1.0 U	15	0.020 U
			Start-up 5	07/31/2002	DNP	NA	NA	NA	3	3	0.046	0.59	0.050 U	0.59	200	39	280	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	72	0.020 U	0.45	0.0050 U	4.6	0.011	1.1	21	0.020 U
		SW-0007	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0032)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	07/12/2002	DNP	NA	0.9	167	14	2 UQ	0.030 U	0.59	0.050 U	0.59	120	9.8	140	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	42	0.020 U	0.055	0.0050 U	1.4	0.010 U	1.0 U	5.2	0.020 U
			Start-up 3	07/17/2002	DNP	NA	0.7	NA	7	2	0.030 U	0.54	0.067	0.61	160	12	190	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	62	0.020 U	0.11	0.0050 U	1.9	0.010 U	1.0 U	7.0	0.020 U
			Start-up 4	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 5	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		SW-0008	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0033)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	07/12/2002	DNP	NA	0.9	169	10	2 UQ	0.030 U	0.51	0.050 U	0.51	130	9.8	150	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	44	0.020 U	0.050 U	0.0050 U	1.5	0.010 U	1.0 U	5.1	0.020 U
			Start-up 3	07/17/2002	DNP	NA	1.1	NA	11	4	0.030 U	0.43	0.050 U	0.43	160	13	200	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	62	0.020 U	0.11	0.0050 U	1.9	0.010 U	1.0 U	6.9	0.020 U
			Start-up 4	07/24/2002	DNP	7.59	5.1	490	7	5	0.030 U	0.70	0.050 U	0.70	190	33	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	67	0.020 U	0.19	0.0050 U	3.3	0.010 U	1.0	18	0.020 U
			Start-up 5	08/01/2002	DNP	7.38	3.1	444	5	5	0.030 U	0.67	0.050 U	0.67	150	23	200	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	54	0.020 U	0.14	0.0050 U	2.8	0.010 U	1.1	13	0.020 U
		SW-0009	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0034)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	07/12/2002	DNP	NA	0.6	187	11	2 UQ	0.030 U	0.52	0.050 U	0.52	150	25	190	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	50	0.020 U	0.55	0.0050 U	2.1	0.014	1.0 U	9.0	0.020 U
			Start-up 3	07/17/2002	DNP	NA	4.4	NA	10	2 U	0.030 U	0.38	0.050 U	0.38	180	23	230	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.23	0.0050 U	2.8	0.010 U	1.0 U	12.0	0.020 U
			Start-up 4	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 5	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		SW-0010	Pre-operations	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		(MW-0028)	Start-up 1	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 2	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 3	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 4	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
			Start-up 5	NW	DNP	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW

EXHIBIT A-1

Water Quality Data Summary for the S-332D Detention Area, June 17 - August 2, 2002

		Monitoring Location	Monitoring Period	Date	Field Parameters: Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (µmhos/cm)	Analytical Parameters: TP[c] (µg/L)	Ortho-P[c] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
Surface Water	Inflow	IF-0001 (morning)	Start-up 1	06/26/2002	DNP	7.03	NA	363	9	3	0.37	0.69	0.050 U	0.69	210	44	300	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.37	0.0050 U	6.2	0.010 U	2.6	26	0.020 U
				06/27/2002	DNP	7.51	5.9	838	9	2	0.34	0.69	0.050 U	0.69	210	43	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	73	0.020 U	0.3	0.0050 U	5.9	0.010 U	2.5	26	0.020 U
			Supplemental	07/01/2002	DNP	6.62	NA	1318	7	2 U	0.33	0.78	0.050 U	0.78	210	50	280	5.0 U	0.20 U	5.0 U	20	NR	NR	76	NR	NR	NR	5.5	NR	2.3	25	NR
			Start-up 2	07/08/2002	DNP	6.23	3.4	1553	11	2 U	0.11	0.65	0.050 U	0.65	220	51	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	79	0.020 U	0.30	0.0050 U	5.6	0.010 U	2.6	25	0.020 U
				07/09/2002	DNP	NA	NA	NA	11	9	0.12	0.69	0.050	0.74	180	51	290	5.0 U	0.20 U	5.0 U	20	NR	NR	79	NR	NR	NR	5.8	NR	2.8	26	NR
				07/10/2002	DNP	NA	5.3	NA	9	2	0.12	0.62	0.050 U	0.62	220	47	280	5.0 U	0.20 U	5.0 U	20	NR	NR	76	NR	NR	NR	5.7	NR	2.7	26	NR
			Start-up 3	07/16/2002	DNP	NA	4.7	61	13	2 U	0.10	0.61	0.079	0.69	220	43	300	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	72	0.020 U	0.34	0.0050 U	5.0	0.010 U	2.6	24	0.020 U
				07/17/2002	DNP	NA	7.7	NA	8	2	0.075	0.62	0.079	0.70	220	44	300	5.0 U	0.20 U	5.0 U	15	NR	NR	82	NR	NR	NR	5.5	NR	3.1	24	NR
				07/18/2002	DNP	NA	4.3	548	8	2	0.087	0.60	0.096	0.70	220	46	290	5.0 U	0.20 U	5.0 U	15	NR	NR	72	NR	NR	NR	5.1	NR	2.9	24	NR
			Start-up 4	07/23/2002	DNP	7.88	2.0	539	5	3	0.1	0.68	0.083	0.76	210	41	290	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.6	NR	2.5	25	NR
				07/24/2002	DNP	7.2	3.4	557	5	5	0.14	0.93	0.063	0.99	220	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.31	0.0050 U	5.4	0.010 U	2.3	25	0.020 U
				07/25/2002	DNP	7.26	3.3	548	8	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	7.54	1.8	514	5	2	0.16	0.86	0.050 U	0.86	210	39	300	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	67	0.020 U	0.43	0.0050 U	6.2	0.010 U	2.2	23	0.020 U
				07/31/2002	DNP	7.95	2.0	548	8	4	0.19	0.83	0.073	0.90	200	39	280	5.0 U	0.20 U	5.0 U	30 Q	NR	NR	69	NR	NR	NR	6.2	NR	2.2	24	NR
				08/01/2002	DNP	7.92	2.0	597	8	2 U	0.21	0.89	0.050 U	0.89	200	39	290	5.0 U	0.20 U	5.0 U	30	NR	NR	74	NR	NR	NR	6.4	NR	2.3	26	NR
				08/02/2002	DNP	7.71	2.6	543	NS	NS	0.20	0.90	0.050 U	0.90	200	38	270	5.0 U	0.20 U	5.0 U	30	NR	NR	70	NR	NR	NR	6.5	NR	2.2	25	NR
		IF-0002 (afternoon)	Start-up 1	06/26/2002	DNP	7.5	10.5	375	9	2 U	0.34	0.76	0.050 U	0.76	210	45	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.31	0.0050 U	6.3	0.010 U	2.6	28	0.020 U
				06/27/2002	DNP	6.78	6.8	759	6	2	0.34	0.85	0.050 U	0.85	200	44	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.32	0.0050 U	6.0	0.010 U	2.6	26	0.020 U
			Supplemental	07/01/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Start-up 2	07/08/2002	DNP	6.49	3.2	289	19	2 U	0.11	0.71	0.050 U	0.71	220	47	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	83	0.020 U	0.32	0.0050 U	5.9	0.010 U	2.7	26	0.020 U
				07/09/2002	DNP	NA	NA	NA	8	9	0.14	0.62	0.050 U	0.62	220	49	290	5.0 U	0.20 U	5.0 U	15	NR	NR	76	NR	NR	NR	5.5	NR	2.6	25	NR
				07/10/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Start-up 3	07/16/2002	DNP	NA	3.2[d]	NA	10	2 U	0.072	0.80	0.080	0.88	220	43	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.31	0.0050 U	4.9	0.010 U	2.6	23	0.020 U
				07/17/2002	DNP	7.63	7.5	1740	9	2	0.047	0.57	0.084	0.65	220	43	290	5.0 U	0.20 U	5.0 U	15	NR	NR	82	NR	NR	NR	5.7	NR	3.2	24	NR
				07/18/2002	DNP	7.72	4.1	548	10	2	0.090	0.53	0.099	0.63	220	44	290	5.0 U	0.20 U	5.0 U	20	NR	NR	73	NR	NR	NR	5.2	NR	2.9	24	NR
			Start-up 4	07/23/2002	DNP	7.53	3.1	541	7	3	0.096	0.61	0.070	0.68	210	42	290	5.0 U	0.20 U	5.0 U	25	NR	NR	67	NR	NR	NR	5.6	NR	2.6	25	NR
				07/24/2002	DNP	7.54	3.8	546	5	3	0.11	0.86	0.050 U	0.86	210	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.33	0.0050 U	5.7	0.010 U	2.3	25	0.020 U
				07/25/2002	DNP	7.61	3.7	549	7	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	7.67	2.7	525	7	2 U	0.16	0.89	0.050 U	0.89	210	41	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	69	0.020 U	0.46	0.0050 U	6.3	0.010 U	2.3	24	0.020 U
				08/01/2002	DNP	7.45	2.1	644	10	3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
				08/02/2002	DNP	7.78	3.3	386	NS	NS	0.21	0.95	0.050 U	0.95	200	39	280	5.0 U	0.20 U	5.0 U	30	NR	NR	67	NR	NR	NR	6.1	NR	2.1	24	NR
	Outflow	OF-0001[b] (morning)	Start-up 1	06/26/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
				06/27/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Supplemental	07/01/2002	DNP	7.24	3.5	1168	23	16	0.03	0.50	0.050 U	0.50	45 *	7.9 *	55 *	5.0 U	0.20 U	5.0 U	10	NR	NR	16 *	NR	NR	NR	0.97 *	NR	2.4	5.2 *	NR
			Start-up 2	07/08/2002	DNP	6.91	0.8	821	13	2 U	0.030 U	0.47	0.050 U	0.47	200	50	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.050 U	0.0050 U	5.3	0.010 U	2.5	24	0.020 U
				07/09/2002	DNP	NA	NA	NA	9	3	0.030 U	0.49	0.050 U	0.49	220	46	250	5.0 U	0.20 U	5.0 U	15	NR	NR	61	NR	NR	NR	4.7	NR	2.3	23	NR
				07/10/2002	DNP	NA	1.7	NA	18	8	0.030 U	0.48	0.050 U	0.48	190	47	260	5.0 U	0.20 U	5.0 U	20	NR	NR	66	NR	NR	NR	5.1	NR	2.5	24	NR
			Start-up 3	07/16/2002	DNP	NA	6.2	64	18	3	0.030 U	0.59	0.050 U	0.59	210	43	290	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.083	0.0050 U	5.1	0.010 U	2.8	24	0.020 U
				07/17/2002	DNP	NA	3.3	NA	10	2	0.030 U	0.45	0.050 U	0.45	200	43	280	5.0 U	0.20 U	5.0 U	20	NR	NR	74	NR	NR	NR	5.3	NR	2.7	24	NR
				07/18/2002	DNP	8.05	1.6	519	8	2	0.030 U	0.52	0.050 U	0.52	210	44	280	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.2	NR U	2.8	25	NR
			Start-up 4	07/23/2002	DNP	7.77	0.9	571	13	3	0.030 U	0.67	0.050 U	0.67	200	42	270	5.0 U	0.20 U	5.0 U	20	NR	NR	66	NR	NR	NR	5.6	NR	2.6	26	NR
				07/24/2002	DNP	7.93	2.6	528	8	6	0.030 U	0.66	0.050 U	0.66	200	42	240	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	65	0.020 U	0.050 U	0.0050 U	5.4	0.010 U	2.6	25	0.020 U
				07/25/2002	DNP	7.75	1.6	541	7	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	7.81	2.8	501	5	2	0.030 U	0.67	0.050 U	0.67	190	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	63	0.020 U	0.16	0.0050 U	6.1	0.010 U	2.2	24	0.020 U
				07/31/2002	DNP	7.94	3.5	529	19	6	0.030 U	0.67	0.050 U	0.67	190	39	250	5.0 U	0.20 U	5.0 U	25 Q	NR	NR	61	NR	NR	NR	5.8	NR	2.1	23	NR
				08/01/2002	DNP	7.81	3.7	531	10	3	0.030 U	0.66	0.050 U	0.66	170	35	240	5.0 U	0.20 U	5.0 U	25	NR	NR	60	NR	NR	NR	5.7	NR	2.0	22	NR
				08/02/2002	DNP	7.95	7.9	522	NS	NS	0.030 U	0.76	0.050 U	0.76	180	38	250	5.0 U	0.20 U	5.0 U	30	NR	NR	61	NR	NR	NR	6.1	NR	2.1	23	NR
		OF-0002[b] (afternoon)	Start-up 1	06/26/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
				06/27/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Supplemental	07/01/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Start-up 2	07/08/2002	DNP	6.86	0.7	315	9	3	0.030 U	0.58	0.050 U	0.58	190	49	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.050 U	0.0050 U	5.1	0.010 U	2.5	24	0.020 U
				07/09/2002	DNP	NA	NA	NA	9	14	0.030 U	0.48	0.050 U	0.48	180	44	240	5.0 U	0.20 U	5.0 U	20	NR	NR	61	NR	NR	NR	4.8	NR	2.3	23	NR
				07/10/2002	DNP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			Start-up 3	07/16/2002	DNP	NA	0.96[d]	NA	10	2 U	0.030 U	0.20 U	0.053	0.053	210	45	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.066	0.0050 U	5.0	0.010 U	2.7	24	0.020 U
				07/17/2002	DNP	7.88	1.9	1544	15	4	0.030 U	1.3	0.050 U	1.3	200	44	270	5.0 U	0.20 U	5.0 U	20	NR	NR	79	NR	NR	NR	5.3	NR	2.8	24	NR
				07/18/2002	DNP	8.22	7.7	1544	8	2	0.030 U	0.55	0.050 U	0.55	210	44	270	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.1	NR	2.7	24	NR
			Start-up 4	07/23/2002	DNP	7.88	7.1	519	22	3	0.030 U	0.59	0.050 U	0.59	200	42	280	5.0 U	0.20 U	5.0 U	25	NR	NR	65	NR	NR	NR	5.6	NR	2.5	26	NR
				07/24/2002	DNP	7.87	3.3	536	5	3	0.030 U	0.68	0.050 U	0.68	200	42	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.050 U	0.0050 U	5.4	0.010 U	2.5	25	0.020 U
				07/25/2002	DNP	7.8	2.3	540	7	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	7.96	2.8	530	10	3	0.030 U	0.73	0.050 U	0.73	190	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	62	0.020 U	0.13	0.0050 U	6.1	0.010 U	2.4	24	0.020 U
				08/01/2002	DNP	7.82	5.6	618	14	2 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
				08/02/2002	DNP	8.00	4.5	546	NS	NS	0.030 U	0.80	0.050 U	0.80	170	37	250	5.0 U	0.20 U	5.0 U	25	NR	NR	56	NR	NR	NR	5.8	NR	2.0	22	NR

EXHIBIT A-1

Water Quality Data Summary for the S-332D Detention Area, June 17 - August 2, 2002

					Field Parameters				Analytical Parameters																							
		Monitoring Location	Monitoring Period	Date	Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[c] (µg/L)	Ortho-P[c] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
Surface Water	Outflow	OF-0003[d] (morning)	Start-up 4	07/25/2002	DNP	7.64	6.8	553	10	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	7.86	5.7	499	10	2	0.030 U	0.83	0.050 U	0.83	190	40	270	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	63	0.020 U	0.330	0.0050 U	6.2	0.010 U	2.2	24	0.020 U
				07/31/2002	DNP	7.88	6.4	542	10	3	0.030 U	0.70	0.050 U	0.70	190	39	280	5.0 U	0.20 U	5.0 U	30 Q	NR	NR	68	NR	NR	NR	6.4	NR	2.2	25	NR
				08/01/2002	DNP	7.84	2.0	562	8	3	0.030 U	0.72	0.050 U	0.72	180	37	250	5.0 U	0.20 U	5.0 U	30	NR	NR	61	NR	NR	NR	5.8	NR	2.0	18	NR
				08/02/2002	DNP	7.89	9.1	543	NS	NS	0.030 U	0.71	0.050 U	0.71	190	39	260	5.0 U	0.20 U	5.0 U	25	NR	NR	67	NR	NR	NR	6.7	NR	2.2	25	NR
		OF-0004[d] (afternoon)	Start-up 4	07/23/2002	DNP	7.99	2.4	519	7	3	0.030 U	0.55	0.078	0.63	200	43	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.11	0.0050 U	5.6	0.010 U	2.5	25	0.020 U
				07/24/2002	DNP	7.6	4.3	554	10	3	0.030 U	0.68	0.050 U	0.68	210	42	270	5.0 U	0.20 U	5.0 U	20	NR	NR	70	NR	0.16	NR	5.5	NR	2.5	25	NR
				07/25/2002	DNP	7.91	3.8	547	7	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	DNP	8.04	5.1	528	8	5	0.030 U	0.83	0.050 U	0.83	190	39	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	63	0.020 U	0.340	0.0050 U	6.1	0.010 U	2.1	23	0.020 U
				08/01/2002	DNP	7.76	6.1	625	18	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
				08/02/2002	DNP	8.08	8.7	302	NS	NS	0.030 U	0.78	0.050 U	0.78	180	39	260	5.0 U	0.20 U	5.0 U	25	NR	NR	62	NR	NR	NR	6.5	NR	2.2	25	NR
Groundwater	~20 ft Monitor Wells	MW-0028	Pre-operations	06/18/2002	4.85	6.43	5.9	304	24	21	0.23	1.2	0.050 U	1.2	190	29	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.44	0.0050 U	2.8	0.010 U	1.0 U	15	0.020 U
			Start-up 1	06/25/2002	5.47	6.98	2.6	NA	16	15	0.65	0.63	0.050 U	0.63	190	27	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
			Start-up 2	07/11/2002	6.15	NA	1.7	219	14	6	0.22	0.51	0.050 U	0.51	190	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.49	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
			Start-up 3	07/16/2002	NA	NA	1.2	NA	19	9	0.16	0.60	0.050 U	0.60	190	20	220	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	63	0.020 U	0.45	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
			Start-up 4	07/24/2002	5.63	7.06	3.0	460	1,170[f]	5	0.23	0.66	0.050 U	0.66	190	24	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
			Start-up 5	08/01/2002	5.40	7.11	105 [a]	510	12,000[f]	5	0.23	0.99	0.050 U	0.99	190	22	240	46	0.20 U	5.0 U	20	0.010 U	0.0050 U	84	0.020 U	0.54	0.0050 U	2.6	0.010 U	1.0 U	12	0.020 U
		MW-0029	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			Start-up 1	06/26/2002	5.57	7.23	4.0	NA	25	22	0.55	0.6	0.050 U	0.6	200	26	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.62	0.0050 U	2.8	0.010 U	1.0 U	14	0.020 U
			Start-up 2	07/11/2002	6.13	NA	4.6	229	47	53	0.15	0.51	0.050 U	0.51	180	20	200	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.68	0.0050 U	2.3	0.010 U	1.0 U	10	0.020 U
			Start-up 3	07/16/2002	6.01	NA	1.4[d]	NA	33	12	0.13	0.43	0.050 U	0.43	180	16	200	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	61	0.020 U	0.52	0.0050 U	2.0	0.010 U	1.0 U	9	0.020 U
			Start-up 4	07/23/2002	5.86	7.21	1.8	389	1880[f]	12	0.14	0.24	0.050 U	0.24	170	15	200	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	58	0.020 U	0.49	0.0050 U	2.1	0.010 U	1.0 U	9.2	0.020 U
			Start-up 5	07/31/2002	5.57	7.27	5.7	414	780[f]	13	0.19	0.46	0.050 U	0.46	180	16	220	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	66	0.020 U	0.53	0.0050 U	2.2	0.010 U	1.0 U	9.4	0.020 U
		MW-0030	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			Start-up 1	06/26/2002	5.52	7.21	6.3	NA	25	26	0.48	0.57	0.050 U	0.57	190	22	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.58	0.0050 U	2.4	0.010 U	1.0 U	12	0.020 U
			Start-up 2	07/11/2002	6.15	NA	2.1	224	31	40	0.17	0.65	0.97	1.62	200	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.68	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
			Start-up 3	07/16/2002	6.12	NA	1.9[d]	NA	32	12	0.16	0.51	0.050 U	0.51	200	21	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	68	0.020 U	0.60	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
			Start-up 4	07/23/2002	5.74	7.04	1.2	442	27	8	0.19	0.31	0.050 U	0.31	190	21	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.58	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
			Start-up 5	07/31/2002	5.58	7.18	3.1	462	16	13	0.24	0.53	0.050 U	0.53	200	21	240	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	74	0.020 U	0.59	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
		MM-0031	Pre-operations	06/18/2002	4.80	6.77	3.4	295	36	45	0.11	0.87	0.050 U	0.87	190	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.0 U	18	0.020 U
			Start-up 1	06/26/2002	5.44	7.19	4.0	NA	9	8	0.33	0.47	0.050 U	0.47	200	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.17	0.0050 U	5.1	0.010 U	1.3	17	0.020 U
			Start-up 2	07/11/2002	5.12	NA	4.9	237	11	32	0.084	0.63	0.64	1.27	210	43	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.34	0.0050 U	5.1	0.010 U	1.3	21	0.020 U
			Start-up 3	07/16/2002	5.95	NA	0.93[d]	NA	13	2 U	0.053	0.57	0.050 U	0.57	210	37	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.26	0.0050 U	5.0	0.010 U	1.3	21	0.020 U
			Start-up 4	07/23/2002	5.81	7.06	2.2	522	810[f]	3	0.041	0.38	0.050 U	0.38	210	38	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.23	0.0050 U	5.4	0.010 U	1.5	23	0.020 U
			Start-up 5	07/31/2002	5.62	7.17	2.4	543	259[f]	6	0.059	0.64	0.050 U	0.64	200	40	290	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	75	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.7	24	0.020 U
		MW-0023	Pre-operations	06/18/2002	4.79	6.75	8.1	331	11	6	0.055	1.0	0.050 U	1.0	220	42	290	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	78	0.020 U	0.79	0.0050 U	7.1	0.026	2.6	23	0.020 U
			Start-up 1	06/24/2002	5.09	7.74	9.0	4 [a]	12	5	0.19	0.78	0.050 U	0.78	210	34	290	5.0 U	0.21	5.0 U	60	0.010 U	0.0050 U	75	0.020 U	2.0	0.0050 U	6.6	0.026	1.9	22	0.020 U
			Start-up 2	07/11/2002	6.15	NA	3.4	271	11	19	0.067	0.59	0.050 U	0.59	220	48	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	71	0.020 U	1.3	0.0050 U	6.1	0.011	1.9	24	0.020 U
			Start-up 3	07/16/2002	6.02	NA	3.6	NA	11	2 U	0.39	0.48	1.4	1.88	210	41	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	70	0.020 U	1.1	0.0050 U	5.7	0.010 U	1.8	23	0.020 U
			Start-up 4	07/23/2002	5.78	7.05	0.9	538	30	5	0.030 U	0.27	0.050 U	0.27	210	33	280	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	67	0.020 U	1.0	0.0050 U	5.7	0.010 U	2.0	24	0.020 U
			Start-up 5	07/30/2002	5.65	7.11	1.1	529	13	3	0.036	0.58	0.050 U	0.58	210	42	310	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	71	0.020 U	0.89	0.0050 U	5.6	0.010 U	2.1	24	0.020 U
		MW-0011	Pre-operations	06/17/2002	4.35	6.30	7.8	277	16	25	0.23	1.3	0.050 U	1.3	200	42	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	80	0.020 U	0.40	0.0050 U	3.9	0.010 U	1.0 U	21	0.020 U
			Start-up 1	06/24/2002	4.37	7.77	8.1	NA	12	11	0.53	0.67	0.050 U	0.67	200	36	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.39	0.0050 U	4.2	0.010 U	1.0	23	0.020 U
			Start-up 2	07/10/2002	4.69	NA	1.6	241	9	10	0.17	0.54	0.050 U	0.54	210	43	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	73	0.020 U	0.37	0.0050 U	4.2	0.010 U	1.1	22	0.020 U
			Start-up 3	07/18/2002	4.50	7.15	4.5	510	16	5	0.17	0.65	0.050 U	0.65	220	39	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.36	0.0050 U	3.9	0.010 U	1.0	21	0.020 U
			Start-up 4	07/22/2002	4.36	7.19	22.0	509	18	4	0.20	0.64	0.050 U	0.64	210	39	280	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	75	0.020 U	0.41	0.0050 U	4.3	0.010 U	1.1	23	0.020 U
			Start-up 5	08/01/2002	4.57	7.01	10.9	607	19	6	0.24	0.73	0.050 U	0.73	210	40	290	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	80	0.020 U	0.42	0.0050 U	4.6	0.010 U	1.1	25	0.020 U
		MW-0032	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			Start-up 1	06/27/2002	NA	7.49	2.6	729	37	37	0.49	0.51	0.050 U	0.51	190	19	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.63	0.0050 U	2.2	0.010	1.0 U	9.9	0.020 U
			Start-up 2	07/12/2002	6.16	NA	1.1	206	30	38 Q	0.17	0.55	0.050 U	0.55	190	22	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	63	0.020 U	0.56	0.0050 U	2.1	0.010 U	1.0 U	9.7	0.020 U
			Start-up 3	07/17/2002	6.09	NA	4.5	NA	24	9	0.15	0.37	0.050 U	0.37	200	21	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	79	0.020 U	0.59	0.0050 U	2.5	0.010 U	1.0 U	11	0.020 U
			Start-up 4	07/24/2002	5.84	7.09	4.0	497	22	10	0.18	0.56	0.050 U	0.56	200	24	220	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.55	0.0050 U	2.5	0.010 U	1.0 U	13	0.020 U
			Start-up 5	08/01/2002	5.89	7.43	10.9	522	16	11	0.27	0.63	0.050 U	0.63	190	30	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	81	0.020 U	0.57	0.0050 U	2.9	0.010 U	1.0 U	18	0.020 U
		MW-0033	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			Start-up 1	06/27/2002	NA	6.18	0.5	736	14	8	0.49	0.60	0.050 U	0.60	190	22	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	2.4	0.010 U	1.0 U	11	0.020 U
			Start-up 2	07/12/2002	6.23	NA	0.1	218	7	2 UQ	0.19	0.60	0.050 U	0.60	190	36	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	2.7	0.010 U	1.0 U	17	0.020 U
			Start-up 3	07/17/2002	6.11	NA	0.7	NA	9	5	0.16	0.61	0.050 U	0.61	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	3.0	0.010 U	1.0 U	18	0.020 U
			Start-up 4	07/24/2002	5.86	7.04	0.7	517	8	6	0.16	0.70	0.050 U	0.70	190	37	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.5	0.0050 U	3.3	0.010 U	1.0 U	22	0.020 U
			Start-up 5	08/01/2002	5.93	7.16	4.3	591	8	6	0.18	0.67	0.050 U	0.67	200	39	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.54	0.0050 U	3.9	0.010 U	1.0 U	24	0.020 U

EXHIBIT A-1

Water Quality Data Summary for the S-332D Detention Area, June 17 - August 2, 2002

					Field Parameters				Analytical Parameters																							
		Monitoring Location	Monitoring Period	Date	Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[c] (µg/L)	Ortho-P[c] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
Groundwater	~29 ft monitoring wells	MW-0034	Pre-operations	06/18/2002	5.23	6.82	5.0	303	30	27	0.16	1.1	0.050 U	1.1	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.64	0.0050 U	4.8	0.012	1.2	18	0.020 U
			Start-up 1	06/27/2002	5.48	6.56	2.7	409	25	19	0.47	0.49	0.050 U	0.49	22 *	24	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	78	0.020 U	0.73	0.0050 U	3.1	0.010 U	1.0 U	12	0.020 U
			Start-up 2	07/12/2002	6.28	NA	0.7	237	19	6 Q	0.089	0.86	0.050 U	0.86	200	47	270	5.0 U	0.20 U	5.5	25	0.010 U	0.0050 U	66	0.020 U	0.55	0.0050 U	4.2	0.010 U	1.4	21	0.020 U
			Start-up 3	07/17/2002	6.17	NA	1.5	NA	15	5	0.030 U	0.37	0.050 U	0.37	200	41	250	5.0 U	0.20 U	7.9	20	0.010 U	0.0050 U	78	0.020 U	0.48	0.0050 U	4.6	0.010 U	2.0	23	0.020 U
			Start-up 4	07/24/2002	5.91	7.1	2.2	542	10	8	0.030 U	0.49	0.050 U	0.49	200	42	270	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	70	0.020 U	0.34	0.0050 U	4.7	0.010 U	2.1	25	0.020 U
			Start-up 5	08/01/2002	6.02	7.18	1.6	603	7	5	0.030 U	0.53	0.050 U	0.53	190	39	280	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	68	0.020 U	0.15	0.0050 U	4.8	0.010 U	2.0	23	0.020 U
		MW-0026	Pre-operations	06/17/2002	4.98	6.58	8.8	795	11	3	0.18	1.1	0.050 U	1.1	200	37	270	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	78	0.020 U	1.2	0.0050 U	5.0	0.010 U	1.3	19	0.020 U
			Start-up 1	06/24/2002	5.20	7.8	2.9	NA	6	4	0.46	0.61	0.050 U	0.61	200	27	260	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	74	0.020 U	0.13	0.0050 U	4.4	0.011	1.0	17	0.020 U
			Start-up 2	07/08/2002	6.04	6.17	0.9	842	5	6	0.070	0.55	0.050 U	0.55	200	47	270	5.0 U	0.20 U	5.6	25	0.010 U	0.0050 U	74	0.020 U	0.56	0.0050 U	4.6	0.010 U	1.7	23	0.020 U
			Start-up 3	07/15/2002	6.22	NA	0.4	429	10	2	0.030 U	0.20 U	0.050 U	0.20 U	200	42	270	5.0 U	0.20 U	7.6	25	0.010 U	0.0050 U	68	0.020 U	0.47	0.0050 U	4.6	0.010 U	2.0	22	0.020 U
			Start-up 4	07/25/2002	5.99	7.09	17.1	559	3 U	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	5.95	7.2	15.7	516	8	2 U	0.030 U	0.54	0.050 U	0.54	190	40	280	5.0 U	0.20 U	8.7	15	0.010 U	0.0050 U	69	0.020 U	0.050 U	0.0050 U	5.2	0.010 U	2.2	24	0.020 U
		MW-0019	Pre-operations	06/17/2002	4.09	6.58	2.9	255	64	51	0.16	0.93	0.050 U	0.93	180	31	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.25	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
			Start-up 1	06/26/2002	4.18	7.27	12.3	298	59	45	0.59	0.56	0.050 U	0.56	190	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	74	0.020 U	0.49	0.0050 U	3.5	0.010 U	1.0 U	16	0.020 U
			Start-up 2	07/09/2002	NA	NA	NA	NA	39	30	0.13	0.66	0.050 U	0.66	200	33	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
			Start-up 3	07/18/2002	NA	7.15	1.5	469	24	9	0.13	0.50	0.050 U	0.50	200	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	17	0.020 U
			Start-up 4	07/22/2002	3.87	7.08	2.5	491	25	15	0.15	0.45	0.050 U	0.45	200	35	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.47	0.0050 U	3.5	0.010 U	1.0 U	19	0.020 U
			Start-up 5	07/29/2002	3.86	7.12	1.2	456	19	8	0.17	0.69	0.050 U	0.69	200	38	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	19	0.020 U
		MW-0021	Pre-operations	06/17/2002	4.54	6.36	3.0	279	51	38	0.19	1.0	0.050 U	1.0	200	31	280	5.0 U	0.20 U	8.0	10	0.010 U	0.0050 U	82	0.020 U	0.59	0.0050 U	3.5	0.014	6.9	22	0.020 U
			Start-up 1	06/27/2002	NA	7.0	14.3	435	46	39	0.48	0.66	0.050 U	0.66	200	25	250	5.0 U	0.20 U	10.0	10	0.010 U	0.0050 U	81	0.020 U	0.64	0.0050 U	3.3	0.010	9.2	12	0.020 U
			Start-up 2	07/09/2002	5.85	NA	0.5	228	40	31	0.22	0.65	0.050 U	0.65	210	35	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	72	0.020 U	0.62	0.0050 U	3.7	0.010 U	3.7	18	0.020 U
			Start-up 3	07/18/2002	5.61	7.28	8.1	483	42	23	0.19	0.56	0.050 U	0.56	210	31	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.56	0.0050 U	3.3	0.010 U	4.2	15	0.020 U
			Start-up 4	07/22/2002	5.55	7.15	15.0	495	42	22	0.23	0.42	0.050 U	0.42	210	31	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.63	0.0050 U	3.8	0.010 U	4.4	18	0.020 U
			Start-up 5	07/29/2002	5.41	7.11	1.0	452	36	18	0.25	0.65	0.050 U	0.65	210	34	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.72	0.0050 U	3.9	0.010 U	4.4	18	0.020 U
	~40 ft Monitor Wells	MW-0024	Pre-operations	06/18/2002	4.80	6.67	2.0	333	55	53	0.074	1.0	0.36	1.36	210	37	290	5.0 U	0.20 U	18.0	15	0.010 U	0.0050 U	71	0.020 U	0.050 U	0.0050 U	5.0	0.010 U	1.8	38	0.020 U
			Start-up 1	06/24/2002	5.14	7.55	1.9	5 *	61	62	0.17	0.20 U *	0.065	0.065 *	210	31	300	5.0 U	0.23	15.0	15	0.010 U	0.0050 U	71	0.020 U	0.096	0.0050 U	5.1	0.010 U	1.8	40	0.020 U
			Start-up 2	07/11/2002	4.69	NA	3.9	275	58	50	0.052	0.61	0.050 U	0.61	220	44	280	5.0 U	0.22	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.30	0.0050 U	5.3	0.010 U	1.7	31	0.020 U
			Start-up 3	07/16/2002	NA	NA	NA	NA	59	17	0.030 U	0.53	0.050 U	0.53	220	38	280	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	68	0.020 U	0.18	0.0050 U	5.2	0.010 U	1.7	27	0.020 U
			Start-up 4	07/23/2002	5.76	7.05	7.1	527	45	18	0.030 U	0.42	0.050 U	0.42	210	32	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.19	0.0050 U	5.6	0.010 U	1.8	25	0.020 U
			Start-up 5	07/30/2002	5.65	7.11	4.3	517	44	28	0.048	0.57	0.050 U	0.57	210	41	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	70	0.020 U	0.18	0.0050 U	5.7	0.010 U	1.9	27	0.020 U
		MW-0012	Pre-operations	06/17/2002	4.32	6.27	5.4	255	47	43	0.21	1.2	0.050 U	1.2	170	41	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	63	0.020 U	0.31	0.0050 U	3.4	0.010 U	1.1	27	0.020 U
			Start-up 1	06/24/2002	4.35	7.62	5.9	NA	19	17	0.54	0.63	0.050 U	0.63	180	36	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.36	0.0050 U	4.2	0.010 U	1.1	25	0.020 U
			Start-up 2	07/10/2002	NA	NA	NA	NA	11	8	0.18	0.42	0.050 U	0.42	190	43	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.40	0.0050 U	4.1	0.010 U	1.0 U	23	0.020 U
			Start-up 3	07/18/2002	4.48	7.88	7.5	402	18	4	0.17	0.55	0.050 U	0.55	190	37	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	55	0.020 U	0.30	0.0050 U	3.0	0.010 U	1.5	28	0.020 U
			Start-up 4	07/22/2002	4.34	7.05	9.1	514	25	4	0.18	0.55	0.050 U	0.55	200	39	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.43	0.0050 U	4.1	0.010 U	1.0 U	22	0.020 U
			Start-up 5	08/01/2002	4.55	7.1	10.9	597	11	5	0.24	0.73	0.050 U	0.73	200	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	78	0.020 U	0.45	0.0050 U	4.5	0.010 U	1.1	26	0.020 U
		MW-0027	Pre-operations	06/17/2002	4.95	6.62	20.8	512	38	23	0.092	0.92	0.050 U	0.92	200	27	250	5.0 U	0.20 U	5.0 U	10	0.010 U	0.0050 U	83	0.020 U	0.13	0.0050 U	3.2	0.010 U	1.0 U	16	0.020 U
			Start-up 1	06/24/2002	5.20	7.56	4.7	NA	49	43	0.41	0.79	0.050 U	0.79	200	22	250	5.0 U	0.20 U	5.0 U	10	0.010 U	0.0050 U	85	0.020 U	0.13	0.0050 U	3.8	0.010 U	1.0	17	0.020 U
			Start-up 2	07/08/2002	6.08	6.21	1.9	850	38	29	0.12	0.68	0.050 U	0.68	200	44	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	73	0.020 U	0.36	0.0050 U	4.0	0.010 U	1.2	22	0.020 U
			Start-up 3	07/16/2002	6.20	NA	2.6	394	30	10	0.030 U	0.48	0.050 U	0.48	200	40	270	5.0 U	0.20 U	7.3	10	0.010 U	0.0050 U	69	0.020 U	0.12	0.0050 U	4.4	0.010 U	2.0	22	0.020 U
			Start-up 4	07/25/2002	5.94	7.04	14.9	551	19	8	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
			Start-up 5	07/30/2002	5.97	7.17	2.9	515	14	7	0.030 U	0.59	0.070	0.66	200	39	270	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.050 U	0.0050 U	5.1	0.010 U	2.3	24	0.020 U
		MW-0020	Pre-operations	06/17/2002	4.06	6.39	8.8	256	33	30	0.14	0.85	0.050 U	0.85	190	31	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	77	0.020 U	0.39	0.0050 U	3.2	0.010 U	1.0 U	15	0.020 U
			Start-up 1	06/26/2002	4.17	7.24	17.1	290	22	18	0.40	0.55	0.70	1.25	190	28	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.47	0.0050 U	3.4	0.010 U	1.0 U	15	0.020 U
			Start-up 2	07/09/2002	NA	NA	NA	NA	11	6	0.13	0.60	0.050 U	0.60	200	32	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.47	0.0050 U	3.5	0.010 U	1.0 U	16	0.020 U
			Start-up 3	07/18/2002	NA	7.1	1.1	457	15	5	0.13	0.51	0.050 U	0.51	200	31	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.51	0.0050 U	3.3	0.010 U	1.0 U	16	0.020 U
			Start-up 4	07/22/2002	5.84	7.14	6.3	473	19	4	0.14	0.40	0.050 U	0.40	200	32	250	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.52	0.0050 U	3.5	0.010 U	1.0 U	18	0.020 U
			Start-up 5	07/29/2002	3.86	7.13	20.5	455	10	3	0.17	0.70	0.050 U	0.70	200	37	270	10.0	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.57	0.0050 U	3.6	0.011	1.0 U	21	0.020 U
		MW-0022	Pre-operations	06/17/2002	4.55	6.32	16.9	279	52	45	0.27	1.1	0.050 U	1.1	210	34	270	7.0	0.20 U	5.0 U	10	0.010 U	0.0050 U	81	0.020 U	0.87	0.0050 U	3.5	0.023	3.7	16	0.020 U
			Start-up 1	06/27/2002	4.85	6.95	14.9	452	50	40	0.70	0.77	0.050 U	0.77	210	31	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	84	0.020 U	0.86	0.0050 U	3.6	0.017	3.8	16	0.020 U
			Start-up 2	07/09/2002	NA	NA	0.4	224	53	48	0.22	0.67	0.050 U	0.67	220	34	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	75	0.020 U	0.70	0.0050 U	3.7	0.011	6.3	15	0.020 U
			Start-up 3	07/18/2002	5.62	7.17	7.5	492	27	12	0.18	0.69	0.290	0.98	210	33	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.65	0.0050 U	3.6	0.010 U	3.7	18	0.020 U
			Start-up 4	07/22/2002	5.64	7.67	2.9	1000	28	7	0.21	0.52	0.050 U	0.52	200	33	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.67	0.0050 U	3.8	0.010 U	3.7	18	0.020 U
			Start-up 5	07/29/2002	5.40	7.14	0.6	448	21	10	0.25	0.65	0.050 U	0.65	200	34	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.65	0.0050 U	3.6	0.010 U	3.5	17	0.020 U

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Sample collected at the outflow weir of Cell 2

[c] Laboratory verification requested for reported results where Ortho-P higher than Total P.

[d] Turbidity analyzed at lab instead of field, due to malfunctioning field turbidity meter

[e] Sample collected at earth berm at outflow of Cell 1

[f] Questionable value; High total phosphorus values were confirmed by the analytical laboratory through re-analysis, and are likely attributable to suspended material in the water sample.

DNP = Water Table Elevation does not apply to Surface Water or Inflow/Outflow samples

U = Undetected

Q = Analyzed out of required holding time because of delays in sampling caused by poor weather conditions.

NA = Not available due to meter malfunction.

NI = Well not installed at time of sampling event

NR = Sample not required, full set of metals collected only one time per week for Inflow/Outflow samples

NS = No sample collected

NW = Surface water was not present at the time of sampling.

SL = Sample lost in transport due to FedEx plane crash

* Potential outlier pending validation

EXHIBIT A-2

Organochlorine, Organonitrogen, and Phosphorus Pesticide Data for Inflow and Outflow Samples from the S-332D Detention Area, August 2, 2002

	Monitoring Stations					
Parameter	**IF-0001 08/02/2002**	**IF-0002 08/02/2002**	**OF-0001[a] 08/02/2002**	**OF-0002[a] 08/02/2002**	**OF-0003[b] 08/02/2002**	**OF-0004[b] 08/02/2002**
Aldrin	0.0021 U	0.0024 U	0.0019 U	0.0020 U	0.0020 U	0.0022 U
Alpha-BHC	0.0023 U	0.0026 U	0.0021 U	0.0022 U	0.0022 U	0.0024 U
Beta-BHC	0.0035 U	0.0040 U	0.0032 U	0.0034 U	0.0034 U	0.0037 U
Delta-BHC	0.0021 U	0.0024 U	0.0019 U	0.0020 U	0.0020 U	0.0022 U
Gamma-BHC	0.0021 U	0.0024 U	0.0019 U	0.0020 U	0.0020 U	0.0022 U
Carbophenothion (trithion)	0.016 U	0.019 U	0.015 U	0.016 U	0.016 U	0.017 U
Chlordane	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Chlorothalonil	0.016 U	0.019 U	0.015 U	0.016 U	0.016 U	0.017 U
Cypermethrin	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
DDD	0.0049 U	0.0056 U	0.0046 U	0.0048 U	0.0048 U	0.0052 U
DDE	0.0041 U	0.0047 U	0.0038 U	0.0040 U	0.0040 U	0.0043 U
DDT	0.0041 U	0.0047 U	0.0038 U	0.0040 U	0.0040 U	0.0043 U
Dicofol (kelthane)	0.045 U	0.052 U	0.042 U	0.044 U	0.044 U	0.048 U
Dieldrin	0.0021 U	0.0024 U	0.0019 U	0.0020 U	0.0020 U	0.0022 U
Endosulfan I (alpha)	0.0041 U	0.0047 U	0.0038 U	0.0040 U	0.0040 U	0.0043 U
Endosulfan II (beta)	0.0041 U	0.0047 U	0.0038 U	0.0040 U	0.0040 U	0.0043 U
Endosulfan sulfate	0.0049 U	0.0056 U	0.0046 U	0.0048 U	0.0048 U	0.0052 U
Endrin	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Endrin aldehyde	0.0045 U	0.0052 U	0.0042 U	0.0044 U	0.0044 U	0.0048 U
Heptachlor	0.0025 U	0.0028 U	0.0023 U	0.0024 U	0.0024 U	0.0026 U
Heptachlor epoxide	0.0021 U	0.0024 U	0.0019 U	0.0020 U	0.0020 U	0.0022 U
Methoxychlor	0.011 U	0.012 U	0.0099 U	0.010 U	0.010 U	0.011 U
Mirex	0.012 U	0.014 U	0.011 U	0.012 U	0.012 U	0.013 U
Permethrin	0.016 U	0.019 U	0.015 U	0.016 U	0.016 U	0.017 U
Toxaphene	0.10 U	0.12 U	0.095 U	0.099 U	0.10 U	0.11 U
PCB-1016	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1221	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1232	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1242	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1248	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1254	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
PCB-1260	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Trifluralin	0.0082 U	0.0094 U	0.0076 U	0.0079 U	0.0080 U	0.0087 U
Alachlor	0.052 U	0.059 U	0.048 U	0.050 U	0.050 U	0.054 U
Ametryn	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Atrazine	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Azinphos methyl (guthion)	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Bromacil	0.041 U	0.047 U	0.038 U	0.040 U	0.040 U	0.043 U
Butylate	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Chlorpyrifos ethyl	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Chlorpyrifos methyl	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Demeton	0.12 U	0.14 U	0.11 U	0.12 U	0.12 U	0.13 U
Diazinon	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Disulfoton	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Ethion	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Ethoprop	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Fenamiphos (nemacur)	0.031 U	0.035 U	0.029 U	0.030 U	0.030 U	0.033 U
Fonofos (dyfonate)	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Hexazinone	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Malathion	0.031 U	0.035 U	0.029 U	0.030 U	0.030 U	0.033 U
Metalaxyl	0.052 U	0.059 U	0.048 U	0.050 U	0.050 U	0.054 U
Metolachlor	0.062 U	0.071 U	0.057 U	0.059 U	0.060 U	0.065 U
Metribuzin	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Mevinphos	0.062 U	0.071 U	0.057 U	0.059 U	0.060 U	0.065 U
Naled	0.082 U	0.094 U	0.076 U	0.079 U	0.080 U	0.087 U
Norflurazon	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Parathion, ethyl	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Parathion, methyl	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Phorate	0.031 U	0.035 U	0.029 U	0.030 U	0.030 U	0.033 U
Prometryn	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U
Simazine	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Atrazine desethyl	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Atrazine desisopropyl	0.010 U	0.012 U	0.0095 U	0.0099 U	0.010 U	0.011 U
Prometon	0.021 U	0.024 U	0.019 U	0.020 U	0.020 U	0.022 U

Notes:

Data reported by the Florida Department of Environmental Protection Central Laboratory in Tallahassee, Florida

[a]outflow sample collected at the cement weir at downstream end of Cell 2.

[b]outflow sample collected at the earth berm at dwonstream end of Cell 1.

U = undetected, reported at the minimum detection limit

I = reported value is between the method detection limit and the laboratory practical quantitation limi

EXHIBIT A-2

Organochlorine, Organonitrogen, and Phosphorus Pesticide Data for the S-332D Detention Area, July 29 - August 1, 2002

	Monitoring Stations[a]																		
Parameter	SW-0001 07/30/2002	SW-0002 07/30/2002	SW-0003 07/30/2002	SW-0006 07/31/2002	MW-0011 08/01/2002	MW-0012 08/01/2002	MW-0019 07/29/2002	MW-0020 07/29/2002	MW-0021 07/29/2002	MW-0022 07/29/2002	MW-0023 07/30/2002	MW-0024 07/30/2002	MW-0026 07/30/2002	MW-0027 07/30/2002	MW-0028 08/01/2002	MW-0029 07/31/2002	MW-0031 07/31/2002	MW-0032 08/01/2002	MW-0034 08/01/2002
Aldrin	0.0022 U	0.0024 U	0.0021 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0021 U	0.0020 U	0.0019 U	0.0021 U	0.0020 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0020 U
Alpha-BHC	0.0024 U	0.0026 U	0.0023 U	0.0021 U	0.0022 U	0.0021 U	0.0022 U	0.0021 U	0.0022 U	0.0023 U	0.0022 U	0.0021 U	0.0023 U	0.0022 U	0.0022 U	0.0021 U	0.0022 U	0.0022 U	0.0022 U
Beta-BHC	0.0037 U	0.0040 U	0.0036 U	0.0032 U	0.0033 U	0.0033 U	0.0034 U	0.0033 U	0.0033 U	0.0036 U	0.0033 U	0.0033 U	0.0035 U	0.0034 U	0.018 U	0.022 U	0.0034 U	0.0034 U	0.0033 U
Delta-BHC	0.0022 U	0.0024 U	0.0021 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0021 U	0.0020 U	0.0019 U	0.0021 U	0.0020 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0020 U
Gamma-BHC	0.0022 U	0.0024 U	0.0021 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0021 U	0.0020 U	0.0019 U	0.0021 U	0.0020 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0020 U
Carbophenothion (trithion)	0.017 U	0.019 U	0.017 U	0.015 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.017 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Chlordane	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Chlorothalonil	0.017 U	0.019 U	0.017 U	0.015 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.017 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Cypermethrin	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
DDD	0.0052 U	0.0056 U	0.0051 U	0.0046 U	0.0047 U	0.0047 U	0.0048 U	0.0046 U	0.0047 U	0.0051 U	0.0047 U	0.0047 U	0.0049 U	0.0048 U	0.0047 U	0.0047 U	0.0048 U	0.0048 U	0.0047 U
DDE	0.0043 U	0.0047 U	0.0043 U	0.0038 U	0.0039 U	0.0039 U	0.0040 U	0.0038 U	0.0039 U	0.0042 U	0.0039 U	0.0039 U	0.0041 U	0.0040 U	0.0039 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U
DDT	0.0043 U	0.0047 U	0.0043 U	0.0038 U	0.0039 U	0.0039 U	0.0040 U	0.0038 U	0.0039 U	0.0042 U	0.0039 U	0.0039 U	0.0041 U	0.0040 U	0.0039 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U
Dicofol (kelthane)	0.048 U	0.052 U	0.047 U	0.042 U	0.043 U	0.043 U	0.044 U	0.042 U	0.043 U	0.046 U	0.043 U	0.043 U	0.045 U	0.044 U	0.043 U	0.043 U	0.044 U	0.044 U	0.043 U
Dieldrin	0.0022 U	0.0024 U	0.0021 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0021 U	0.0020 U	0.0019 U	0.0021 U	0.0020 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0020 U
Endosulfan I (alpha)	0.0043 U	0.0047 U	0.0043 U	0.0038 U	0.0039 U	0.0039 U	0.0040 U	0.0038 U	0.0039 U	0.0042 U	0.0039 U	0.0039 U	0.0041 U	0.0040 U	0.0039 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U
Endosulfan II (beta)	0.0043 U	0.0047 U	0.0043 U	0.0038 U	0.0039 U	0.0039 U	0.0040 U	0.0038 U	0.0039 U	0.0042 U	0.0039 U	0.0039 U	0.0041 U	0.0040 U	0.0039 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U
Endosulfan sulfate	0.0052 U	0.0056 U	0.0051 U	0.0046 U	0.0047 U	0.0047 U	0.0048 U	0.0046 U	0.0047 U	0.0051 U	0.0047 U	0.0047 U	0.0049 U	0.0048 U	0.0047 U	0.0047 U	0.0048 U	0.0048 U	0.0047 U
Endrin	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Endrin aldehyde	0.0048 U	0.0052 U	0.0047 U	0.0042 U	0.0043 U	0.0043 U	0.0044 U	0.0042 U	0.0043 U	0.0046 U	0.0043 U	0.0043 U	0.0045 U	0.0044 U	0.0043 U	0.0043 U	0.0044 U	0.0044 U	0.0043 U
Heptachlor	0.0026 U	0.0028 U	0.0026 U	0.0023 U	0.0024 U	0.0023 U	0.0024 U	0.0023 U	0.0024 U	0.0025 U	0.0024 U	0.0023 U	0.0025 U	0.0024 U	0.0024 U	0.0023 U	0.0024 U	0.0024 U	0.0024 U
Heptachlor epoxide	0.0022 U	0.0024 U	0.0021 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0021 U	0.0020 U	0.0019 U	0.0021 U	0.0020 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0020 U
Methoxychlor	0.011 U	0.012 U	0.011 U	0.0099 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.011 U	0.010 U	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Mirex	0.013 U	0.014 U	0.013 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U
Permethrin	0.017 U	0.019 U	0.017 U	0.015 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.017 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Toxaphene	0.11 U	0.12 U	0.11 U	0.095 U	0.098 U	0.097 U	0.099 U	0.096 U	0.098 U	0.11 U	0.098 U	0.097 U	0.10 U	0.10 U	0.098 U	0.097 U	0.10 U	0.099 U	0.098 U
PCB-1016	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1221	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1232	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1242	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1248	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1254	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
PCB-1260	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.020 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Trifluralin	0.0087 U	0.0094 U	0.0085 U	0.0076 U	0.0078 U	0.0078 U	0.0079 U	0.0077 U	0.0078 U	0.0084 U	0.0078 U	0.0078 U	0.0082 U	0.0080 U	0.0078 U	0.0078 U	0.0080 U	0.0079 U	0.0078 U
Alachlor	0.054 U	0.059 U	0.053 U	0.048 U	0.049 U	0.049 U	0.050 U	0.048 U	0.049 U	0.053 U	0.049 U	0.049 U	0.052 U	0.047 U	0.049 U	0.049 U	0.050 U	0.050 U	0.049 U
Ametryn	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Atrazine	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Azinphos methyl (guthion)	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Bromacil	0.043 U	0.047 U	0.043 U	0.038 U	0.039 U	0.039 U	0.040 U	0.038 U	0.039 U	0.042 U	0.039 U	0.039 U	0.041 U	0.038 U	0.039 U	0.039 U	0.040 U	0.040 U	0.039 U
Butylate	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Chlorpyrifos ethyl	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Chlorpyrifos methyl	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Demeton	0.13 U	0.14 U	0.13 U	0.11 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.13 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Diazinon	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Disulfoton	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Ethion	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Ethoprop	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Fenamiphos (nemacur)	0.033 U	0.035 U	0.032 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.029 U	0.032 U	0.029 U	0.029 U	0.031 U	0.028 U	0.029 U	0.029 U	0.030 U	0.030 U	0.029 U
Fonofos (dyfonate)	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Hexazinone	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Malathion	0.033 U	0.035 U	0.032 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.029 U	0.032 U	0.029 U	0.029 U	0.031 U	0.028 U	0.029 U	0.029 U	0.030 U	0.030 U	0.029 U
Metalaxyl	0.054 U	0.059 U	0.053 U	0.048 U	0.049 U	0.049 U	0.050 U	0.048 U	0.049 U	0.053 U	0.049 U	0.049 U	0.052 U	0.047 U	0.049 U	0.049 U	0.050 U	0.050 U	0.049 U
Metolachlor	0.065 U	0.071 U	0.064 U	0.057 U	0.059 U	0.058 U	0.059 U	0.058 U	0.059 U	0.063 U	0.059 U	0.058 U	0.062 U	0.057 U	0.059 U	0.058 U	0.060 U	0.059 U	0.059 U
Metribuzin	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Mevinphos	0.065 U	0.071 U	0.064 U	0.057 U	0.059 U	0.058 U	0.059 U	0.058 U	0.059 U	0.063 U	0.059 U	0.058 U	0.062 U	0.057 U	0.059 U	0.058 U	0.060 U	0.059 U	0.059 U
Naled	0.087 U	0.094 U	0.085 U	0.076 U	0.078 U	0.078 U	0.079 U	0.077 U	0.078 U	0.084 U	0.078 U	0.078 U	0.082 U	0.075 U	0.078 U	0.078 U	0.080 U	0.079 U	0.078 U
Norflurazon	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Parathion, ethyl	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Parathion, methyl	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Phorate	0.033 U	0.035 U	0.032 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.029 U	0.032 U	0.029 U	0.029 U	0.031 U	0.028 U	0.029 U	0.029 U	0.030 U	0.030 U	0.029 U
Prometryn	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U
Simazine	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Atrazine desethyl	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Atrazine desisopropyl	0.011 U	0.012 U	0.011 U	0.0095 U	0.0098 U	0.0097 U	0.0099 U	0.0096 U	0.0098 U	0.011 U	0.0098 U	0.0097 U	0.010 U	0.0094 U	0.0098 U	0.0097 U	0.010 U	0.0099 U	0.0098 U
Prometon	0.022 U	0.024 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.021 U	0.020 U	0.019 U	0.021 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.020 U

Notes:

Data reported by the Florida Department of Environmental Protection Central Laboratory in Tallahassee, Florida.

U = undetected, reported at the minimum detection limit.

I = reported value is between the method detection limit and the laboratory practical quantitation limit.

[a] Monitoring wells MW-0030 and MW-0033 were not sampled for pesticides.

EXHIBIT A-2

Organochlorine, Organonitrogen, and Phosphorus Pesticide Data for the S-332D Detention Area, June 24-27, 2002

	Monitoring Stations[a]																		
Parameter	SW-0001 06/27/2002	SW-0002 06/26/2002	SW-0003 06/26/2002	SW-0006 06/26/2002	MW-0011 06/24/2002	MW-0012 06/24/2002	MW-0019 06/25/2002	MW-0020 06/25/2002	MW-0021 06/25/2002	MW-0022 06/25/2002	MW-0023 06/24/2002	MW-0024 06/24/2002	MW-0026 06/24/2002	MW-0027 06/24/2002	MW-0028 06/25/2002	MW-0029 06/26/2002	MW-0031 06/26/2002	MW-0032 06/27/2002	MW-0034 06/27/2002
Aldrin	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0019 U	0.0019 U	0.0020 U	0.0024 U	0.0019 U
Alpha-BHC	0.0022 U	0.0021 U	0.0022 U	0.0021 U	0.0022 U	0.0021 U	0.0021 U	0.0021 U	0.0021 U	0.0021 U	0.0022 U	0.0021 U	0.0022 U	0.0022 U	0.0021 U	0.0021 U	0.0022 U	0.0026 U	0.0021 U
Beta-BHC	0.0034 U	0.0066 U	0.0034 U	0.0032 U	0.0034 U	0.0033 U	0.018 U	0.0048 U	0.0033 U	0.0033 U	0.0034 U	0.0033 U	0.0034 U	0.0034 U	0.0033 U	0.0033 U	0.0034 U	0.0040 U	0.0033 U
Delta-BHC	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0019 U	0.0019 U	0.0020 U	0.0024 U	0.0019 U
Gamma-BHC	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0019 U	0.0019 U	0.0020 U	0.0024 U	0.0019 U
Carbophenothion (trithion)	0.016 U	0.015 U	0.016 U	0.015 U	0.016 U	0.016 U	0.015 U	0.016 U	0.015 U	0.015 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.019 U	0.015 U
Chlordane	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
Chlorothalonil	0.016 U	0.015 U	0.016 U	0.015 U	0.016 U	0.016 U	0.015 U	0.092 U	0.015 U	0.015 U	0.017 U	0.016 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.019 U	0.015 U
Cypermethrin	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
DDD	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0048 U	0.0047 U	0.0046 U	0.0047 U	0.0046 U	0.0046 U	0.0048 U	0.0047 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0048 U	0.0056 U	0.0046 U
DDE	0.0040 U	0.0038 U	0.0040 U	0.0038 U	0.0040 U	0.0039 U	0.0038 U	0.0039 U	0.0038 U	0.0038 U	0.0040 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U	0.0038 U	0.0040 U	0.0047 U	0.0038 U
DDT	0.0040 U	0.0038 U	0.0040 U	0.0038 U	0.0040 U	0.0039 U	0.0062 U	0.0039 U	0.0038 U	0.0038 U	0.0040 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U	0.0038 U	0.0040 U	0.0047 U	0.0038 U
Dicofol (kelthane)	0.044 U	0.042 U	0.044 U	0.042 U	0.044 U	0.043 U	0.042 U	0.043 U	0.042 U	0.042 U	0.044 U	0.043 U	0.044 U	0.044 U	0.043 U	0.042 U	0.044 U	0.052 U	0.042 U
Dieldrin	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0019 U	0.0019 U	0.0020 U	0.0024 U	0.0019 U
Endosulfan I (alpha)	0.0040 U	0.0038 U	0.0040 U	0.0038 U	0.0040 U	0.0039 U	0.0038 U	0.0039 U	0.0038 U	0.0038 U	0.0040 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U	0.0038 U	0.0040 U	0.0047 U	0.0038 U
Endosulfan II (beta)	0.0040 U	0.0038 U	0.0040 U	0.0038 U	0.0040 U	0.0039 U	0.0038 U	0.0039 U	0.0045 I	0.0038 U	0.0040 U	0.0039 U	0.0040 U	0.0040 U	0.0039 U	0.0038 U	0.0040 U	0.0047 U	0.0038 U
Endosulfan sulfate	0.0048 U	0.012 I	0.0074 I	0.0045 U	0.0048 U	0.0047 U	0.0046 U	0.0047 U	0.0046 U	0.0046 U	0.0048 U	0.0047 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0048 U	0.0056 U	0.0046 U
Endrin	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
Endrin aldehyde	0.0044 U	0.0042 U	0.0044 U	0.0042 U	0.0044 U	0.0043 U	0.0042 U	0.0043 U	0.0042 U	0.0042 U	0.0044 U	0.0043 U	0.0044 U	0.0044 U	0.0043 U	0.0042 U	0.0044 U	0.0052 U	0.0042 U
Heptachlor	0.0024 U	0.0023 U	0.0024 U	0.0023 U	0.0024 U	0.0023 U	0.0023 U	0.0023 U	0.0023 U	0.0023 U	0.0024 U	0.0023 U	0.0024 U	0.0024 U	0.0023 U	0.0023 U	0.0024 U	0.0028 U	0.0023 U
Heptachlor epoxide	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0020 U	0.0019 U	0.0020 U	0.0020 U	0.0019 U	0.0019 U	0.0020 U	0.0024 U	0.0019 U
Methoxychlor	0.010 U	0.0098 U	0.010 U	0.0098 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.012 U	0.010 U
Mirex	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.014 U	0.012 U
Permethrin	0.016 U	0.015 U	0.016 U	0.015 U	0.016 U	0.016 U	0.015 U	0.016 U	0.015 U	0.015 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.019 U	0.015 U
Toxaphene	0.10 U	0.094 U	0.10 U	0.094 U	0.10 U	0.097 U	0.096 U	0.097 U	0.096 U	0.096 U	0.10 U	0.097 U	0.099 U	0.10 U	0.097 U	0.096 U	0.099 U	0.12 U	0.096 U
PCB-1016	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1221	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1232	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1242	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1248	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1254	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
PCB-1260	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.019 U
Trifluralin	0.0080 U	0.0075 U	0.0081 U	0.0075 U	0.0080 U	0.0078 U	0.0077 U	0.0078 U	0.0077 U	0.0077 U	0.0081 U	0.0078 U	0.0079 U	0.0080 U	0.0078 U	0.0077 U	0.0079 U	0.0094 U	0.0077 U
Alachlor	0.050 U	0.047 U	0.051 U	0.047 U	0.050 U	0.049 U	0.11 U	0.049 U	0.048 U	0.048 U	0.051 U	0.049 U	0.050 U	0.050 U	0.049 U	0.048 U	0.050 U	0.059 U	0.049 U
Ametryn	0.010 U	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Atrazine	0.012 I	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Azinphos methyl (guthion)	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Bromacil	0.040 U	0.038 U	0.040 U	0.038 U	0.040 U	0.039 U	0.050 U	0.039 U	0.038 U	0.038 U	0.040 U	0.039 U	0.040 U	0.040 U	0.039 U	0.038 U	0.040 U	0.047 U	0.039 U
Butylate	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Chlorpyrifos ethyl	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Chlorpyrifos methyl	0.010 U	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Demeton	0.12 U	0.11 U	0.12 U	0.11 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.14 U	0.12 U
Diazinon	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Disulfoton	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.037 U	0.029 I	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Ethion	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Ethoprop	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Fenamiphos (nemacur)	0.030 U	0.028 U	0.030 U	0.028 U	0.030 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.030 U	0.030 U	0.029 U	0.029 U	0.030 U	0.035 U	0.029 U
Fonofos (dyfonate)	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Hexazinone	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Malathion	0.030 U	0.028 U	0.030 U	0.028 U	0.030 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.030 U	0.030 U	0.029 U	0.029 U	0.030 U	0.035 U	0.029 U
Metalaxyl	0.050 U	0.047 U	0.051 U	0.047 U	0.050 U	0.049 U	0.048 U	0.049 U	0.048 U	0.048 U	0.051 U	0.049 U	0.050 U	0.050 U	0.049 U	0.048 U	0.050 U	0.059 U	0.049 U
Metolachlor	0.060 U	0.057 U	0.061 U	0.057 U	0.060 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.061 U	0.058 U	0.059 U	0.060 U	0.058 U	0.058 U	0.059 U	0.071 U	0.059 U
Metribuzin	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Mevinphos	0.080 U	0.075 U	0.081 U	0.075 U	0.060 U	0.058 U	0.077 U	0.078 U	0.077 U	0.077 U	0.061 U	0.058 U	0.059 U	0.060 U	0.078 U	0.077 U	0.079 U	0.094 U	0.078 U
Naled	0.080 U	0.075 U	0.081 U	0.075 U	0.080 U	0.078 U	0.077 U	0.078 U	0.077 U	0.077 U	0.081 U	0.078 U	0.079 U	0.080 U	0.078 U	0.077 U	0.079 U	0.094 U	0.078 U
Norflurazon	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Parathion, ethyl	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Parathion, methyl	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Phorate	0.030 U	0.028 U	0.030 U	0.028 U	0.030 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.030 U	0.029 U	0.030 U	0.030 U	0.029 U	0.029 U	0.030 U	0.035 U	0.029 U
Prometryn	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U
Simazine	0.010 U	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Atrazine desethyl	0.010 U	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Atrazine desisopropyl	0.010 U	0.0094 U	0.010 U	0.0094 U	0.010 U	0.0097 U	0.0096 U	0.0097 U	0.0096 U	0.0096 U	0.010 U	0.0097 U	0.0099 U	0.010 U	0.0097 U	0.0096 U	0.0099 U	0.012 U	0.0098 U
Prometon	0.020 U	0.019 U	0.020 U	0.019 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.020 U	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.020 U	0.024 U	0.020 U

Notes:

Data reported by the Florida Department of Environmental Protection Central Laboratory in Tallahassee, Florida.

U = undetected, reported at the minimum detection limit.

I = reported value is between the method detection limit and the laboratory practical quantitation limit.

[a] Monitoring wells MW-0030 and MW-0033 were not sampled for pesticides.

EXHIBIT A-3

Analytical Results for Mercury Samples from Basins S-332C and S-332D

Monitoring Location	Monitoring Period	Date	Hg (ng/L)	MMHg (ng/L)
MW-0021	Start-up 3	07/18/2002	0.65	0.448
(Basin D)	Start-up 5	08/02/2002	0.49	0.188
MW-0022	Start-up 3	07/18/2002	1.19	0.365
(Basin D)	Start-up 5	08/02/2002	0.44	0.166
MW-0039	Start-up 3	07/18/2002	0.94	0.129
(Basin D)	Start-up 5	08/02/2002	0.53	0.063
MW-0040	Start-up 3	07/18/2002	1.92	0.260
(Basin D)	Start-up 5	08/02/2002	0.84	0.350
MW-0001	Start-up 3	07/18/2002	0.25	0.060
(Basin C)	Start-up 5	08/02/2002	0.98	0.063
MW-0004	Start-up 3	07/18/2002	0.49	0.050
(Basin C)	Start-up 5	08/02/2002	0.15 U	0.025
MW-0005	Start-up 3	07/18/2002	0.56	0.245
(Basin C)	Start-up 5	08/02/2002	0.36	0.252

U = Undetected

ng/L = nanograms per liter

APPENDIX B

Surface and Groundwater Data Sorts Supporting Potentially Relevant Comparisons

EXHIBIT B-1

Comparison of Analytical Results of Groundwater Samples from the S-332D Detention Area and Everglades National Park

						Field Parameters				Analytical Parameters																								
Monitoring Location	Transect	Well Depth (ft)	Screen Length (ft)	Monitoring Period	Date	Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[b] (µg/L)	Ortho-P[b] (µg/L)	Ammonia	TKN[a]	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
MW-0028	ENP BackGround	20.8	2	Pre-operations	06/18/2002	4.85	6.43	5.9	304	24	21	0.23	1.2	0.050 U	1.2	190	29	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.44	0.0050 U	2.8	0.010 U	1.0 U	15	0.020 U
				Start-up 1	06/25/2002	5.47	6.98	2.6	NA	16	15	0.65	0.63	0.050 U	0.63	190	27	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
				Start-up 2	07/11/2002	6.15	NA	1.7	219	14	6	0.22	0.51	0.050 U	0.51	190	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.49	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
				Start-up 3	07/16/2002	NA	NA	1.2	NA	19	9	0.16	0.60	0.050 U	0.60	190	20	220	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	63	0.020 U	0.45	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
				Start-up 4	07/24/2002	5.63	7.06	3.0	460	1170[c]	5	0.23	0.66	0.050 U	0.66	190	24	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
				Start-up 5	08/01/2002	5.40	7.11	105 *	510	12000[c]	5	0.23	0.99	0.050 U	0.99	190	22	240	46	0.20 U	5.0 U	20	0.010 U	0.0050 U	84	0.020 U	0.54	0.0050 U	2.6	0.010 U	1.0 U	12	0.020 U
MW-0029	ENP/A	19.2	2	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
				Start-up 1	06/26/2002	5.57	7.23	4.0	NA	25	22	0.55	0.6	0.050 U	0.6	200	26	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.62	0.0050 U	2.8	0.010 U	1.0 U	14	0.020 U
				Start-up 2	07/11/2002	6.13	NA	4.6	229	47	53	0.15	0.51	0.050 U	0.51	180	20	200	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.68	0.0050 U	2.3	0.010 U	1.0 U	10	0.020 U
				Start-up 3	07/16/2002	6.01	NA	1.4[d]	NA	33	12	0.13	0.43	0.050 U	0.43	180	16	200	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	61	0.020 U	0.52	0.0050 U	2.0	0.010 U	1.0 U	9	0.020 U
				Start-up 4	07/23/2002	5.86	7.21	1.8	389	1880[c]	12	0.14	0.24	0.050 U	0.24	170	15	200	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	58	0.020 U	0.49	0.0050 U	2.1	0.010 U	1.0 U	9.2	0.020 U
				Start-up 5	07/31/2002	5.57	7.27	5.7	414	780[c]	13	0.19	0.46	0.050 U	0.46	180	16	220	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	66	0.020 U	0.53	0.0050 U	2.2	0.010 U	1.0 U	9.4	0.020 U
MW-0030	ENP/A	16.25	2	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
				Start-up 1	06/26/2002	5.52	7.21	6.3	NA	25	26	0.48	0.57	0.050 U	0.57	190	22	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.58	0.0050 U	2.4	0.010 U	1.0 U	12	0.020 U
				Start-up 2	07/11/2002	6.15	NA	2.1	224	31	40	0.17	0.65	0.97	1.62	200	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.68	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
				Start-up 3	07/16/2002	6.12	NA	1.9[d]	NA	32	12	0.16	0.51	0.050 U	0.51	200	21	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	68	0.020 U	0.60	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
				Start-up 4	07/23/2002	5.74	7.04	1.2	442	27	8	0.19	0.31	0.050 U	0.31	190	21	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.58	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
				Start-up 5	07/31/2002	5.58	7.18	3.1	462	16	13	0.24	0.53	0.050 U	0.53	200	21	240	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	74	0.020 U	0.59	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
MM-0031	ENP/A	22.34	2	Pre-operations	Not Installed	4.80	6.77	3.4	295	36	45	0.11	0.87	0.050 U	0.87	190	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.0 U	18	0.020 U
				Start-up 1	06/26/2002	5.44	7.19	4.0	NA	9	8	0.33	0.47	0.050 U	0.47	200	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.17	0.0050 U	5.1	0.010 U	1.3	17	0.020 U
				Start-up 2	07/11/2002	5.12	NA	4.9	237	11	32	0.084	0.63	0.64	1.27	210	43	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.34	0.0050 U	5.1	0.010 U	1.3	21	0.020 U
				Start-up 3	07/16/2002	5.95	NA	0.93[d]	NA	13	2 U	0.053	0.57	0.050 U	0.57	210	37	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.26	0.0050 U	5.0	0.010 U	1.3	21	0.020 U
				Start-up 4	07/23/2002	5.81	7.06	2.2	522	810[c]	3	0.041	0.38	0.050 U	0.38	210	38	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.23	0.0050 U	5.4	0.010 U	1.5	23	0.020 U
				Start-up 5	07/31/2002	5.62	7.17	2.4	543	259[c]	6	0.059	0.64	0.050 U	0.64	200	40	290	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	75	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.7	24	0.020 U
MW-0023	A	24.4	2	Pre-operations	06/18/2002	4.79	6.75	8.1	331	11	6	0.055	1.0	0.050 U	1.0	220	42	290	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	78	0.020 U	0.79	0.0050 U	7.1	0.026	2.6	23	0.020 U
				Start-up 1	06/24/2002	5.09	7.74	9.0	4 *	12	5	0.19	0.78	0.050 U	0.78	210	34	290	5.0 U	0.21	5.0 U	60	0.010 U	0.0050 U	75	0.020 U	2.0	0.0050 U	6.6	0.026	1.9	22	0.020 U
				Start-up 2	07/11/2002	6.15	NA	3.4	271	11	19	0.067	0.59	0.050 U	0.59	220	48	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	71	0.020 U	1.3	0.0050 U	6.1	0.011	1.9	24	0.020 U
				Start-up 3	07/16/2002	6.02	NA	3.6	NA	11	2 U	0.39	0.48	1.4	1.88	210	41	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	70	0.020 U	1.1	0.0050 U	5.7	0.010 U	1.8	23	0.020 U
				Start-up 4	07/23/2002	5.78	7.05	0.9	538	30	5	0.030 U	0.27	0.050 U	0.27	210	33	280	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	67	0.020 U	1.0	0.0050 U	5.7	0.010 U	2.0	24	0.020 U
				Start-up 5	07/30/2002	5.65	7.11	1.1	529	13	3	0.036	0.58	0.050 U	0.58	210	42	310	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	71	0.020 U	0.89	0.0050 U	5.6	0.010 U	2.1	24	0.020 U
MW-0011	A	21.75	5	Pre-operations	06/17/2002	4.35	6.30	7.8	277	16	25	0.23	1.3	0.050 U	1.3	200	42	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	80	0.020 U	0.40	0.0050 U	3.9	0.010 U	1.0 U	21	0.020 U
				Start-up 1	06/24/2002	4.37	7.77	8.1	NA	12	11	0.53	0.67	0.050 U	0.67	200	36	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.39	0.0050 U	4.2	0.010 U	1.0	23	0.020 U
				Start-up 2	07/10/2002	4.69	NA	1.6	241	9	10	0.17	0.54	0.050 U	0.54	210	43	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	73	0.020 U	0.37	0.0050 U	4.2	0.010 U	1.1	22	0.020 U
				Start-up 3	07/18/2002	4.50	7.15	4.5	510	16	5	0.17	0.65	0.050 U	0.65	220	39	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.36	0.0050 U	3.9	0.010 U	1.0	21	0.020 U
				Start-up 4	07/22/2002	4.36	7.19	22.0	509	18	4	0.20	0.64	0.050 U	0.64	210	39	280	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	75	0.020 U	0.41	0.0050 U	4.3	0.010 U	1.1	23	0.020 U
				Start-up 5	08/01/2002	4.57	7.01	10.9	607	19	6	0.24	0.73	0.050 U	0.73	210	40	290	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	80	0.020 U	0.42	0.0050 U	4.6	0.010 U	1.1	25	0.020 U
MW-0032	ENP/B	17.4	2	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
				Start-up 1	06/27/2002	NA	7.49	2.6	729	37	37	0.49	0.51	0.050 U	0.51	190	19	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.63	0.0050 U	2.2	0.010	1.0 U	9.9	0.020 U
				Start-up 2	07/12/2002	6.16	NA	1.1	206	30	38 Q	0.17	0.55	0.050 U	0.55	190	22	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	63	0.020 U	0.56	0.0050 U	2.1	0.010 U	1.0 U	9.7	0.020 U
				Start-up 3	07/17/2002	6.09	NA	4.5	NA	24	9	0.15	0.37	0.050 U	0.37	200	21	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	79	0.020 U	0.59	0.0050 U	2.5	0.010 U	1.0 U	11	0.020 U
				Start-up 4	07/24/2002	5.84	7.09	4.0	497	22	10	0.18	0.56	0.050 U	0.56	200	24	220	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.55	0.0050 U	2.5	0.010 U	1.0 U	13	0.020 U
				Start-up 5	08/01/2002	5.89	7.43	10.9	522	16	11	0.27	0.63	0.050 U	0.63	190	30	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	81	0.020 U	0.57	0.0050 U	2.9	0.010 U	1.0 U	18	0.020 U
MW-0033	ENP/B	22.4	2	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
				Start-up 1	06/27/2002	NA	6.18	0.5	736	14	8	0.49	0.60	0.050 U	0.60	190	22	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	2.4	0.010 U	1.0 U	11	0.020 U
				Start-up 2	07/12/2002	6.23	NA	0.1	218	7	2 UQ	0.19	0.60	0.050 U	0.60	190	36	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	2.7	0.010 U	1.0 U	17	0.020 U
				Start-up 3	07/17/2002	6.11	NA	0.7	NA	9	5	0.16	0.61	0.050 U	0.61	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	3.0	0.010 U	1.0 U	18	0.020 U
				Start-up 4	07/24/2002	5.86	7.04	0.7	517	8	6	0.16	0.70	0.050 U	0.70	190	37	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.5	0.0050 U	3.3	0.010 U	1.0 U	22	0.020 U
				Start-up 5	08/01/2002	5.93	7.16	4.3	591	8	6	0.18	0.67	0.050 U	0.67	200	39	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.54	0.0050 U	3.9	0.010 U	1.0 U	24	0.020 U
MW-0034	ENP/B	21.73	2	Pre-operations	06/18/2002	5.23	6.82	5.0	303	30	27	0.16	1.1	0.050 U	1.1	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.64	0.0050 U	4.8	0.012	1.2	18	0.020 U
				Start-up 1	06/27/2002	5.48	6.56	2.7	409	25	19	0.47	0.49	0.050 U	0.49	22 *	24	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	78	0.020 U	0.73	0.0050 U	3.1	0.010 U	1.0 U	12	0.020 U
				Start-up 2	07/12/2002	6.28	NA	0.7	237	19	6 Q	0.089	0.86	0.050 U	0.86	200	47	270	5.0 U	0.20 U	5.5	25	0.010 U	0.0050 U	66	0.020 U	0.55	0.0050 U	4.2	0.010 U	1.4	21	0.020 U
				Start-up 3	07/17/2002	6.17	NA	1.5	NA	15	5	0.030 U	0.37	0.050 U	0.37	200	41	250	5.0 U	0.20 U	7.9	20	0.010 U	0.0050 U	78	0.020 U	0.48	0.0050 U	4.6	0.010 U	2.0	23	0.020 U
				Start-up 4	07/24/2002	5.91	7.1	2.2	542	10	8	0.030 U	0.49	0.050 U	0.49	200	42	270	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	70	0.020 U	0.34	0.0050 U	4.7	0.010 U	2.1	25	0.020 U
				Start-up 5	08/01/2002	6.02	7.18	1.6	603	7	5	0.030 U	0.53	0.050 U	0.53	190	39	280	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	68	0.020 U	0.15	0.0050 U	4.8	0.010 U	2.0	23	0.020 U
MW-0026	B	24.2	2	Pre-operations	06/17/2002	4.98	6.58	8.8	795	11	3	0.18	1.1	0.050 U	1.1	200	37	270	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	78	0.020 U	1.2	0.0050 U	5.0	0.010 U	1.3	19	0.020 U
				Start-up 1	06/24/2002	5.20	7.8	2.9	NA	6	4	0.46	0.61	0.050 U	0.61	200	27	260	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	74	0.020 U	0.13	0.0050 U	4.4	0.011	1.0	17	0.020 U
				Start-up 2	07/08/2002	6.04	6.17	0.9	842	5	6	0.070	0.55	0.050 U	0.55	200	47	270	5.0 U	0.20 U	5.6	25	0.010 U	0.0050 U	74	0.020 U	0.56	0.0050 U	4.6	0.010 U	1.7	23	0.020 U
				Start-up 3	07/15/2002	6.22	NA	0.4	429	10	2	0.030 U	0.20 U	0.050 U	0.20 U	200	42	270	5.0 U	0.20 U	7.6	25	0.010 U	0.0050 U	68	0.020 U	0.47	0.0050 U	4.6	0.010 U	2.0	22	0.020 U
				Start-up 4	07/25/2002	5.99	7.09	17.1	559	3 U	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
				Start-up 5	07/30/2002	5.95	7.2	15.7	516	8	2 U	0.030 U	0.54	0.050 U	0.54	190	40	280	5.0 U	0.20 U	8.7	15	0.010 U	0.0050 U	69	0.020 U	0.050 U	0.0050 U	5.2	0.010 U	2.2	24	0.020 U
MW-0019	B	23.29	2	Pre-operations	06/17/2002	4.09	6.58	2.9	255	64	51	0.16	0.93	0.050 U	0.93	180	31	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.25	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
				Start-up 1	06/26/2002	4.18	7.27	12.3	298	59	45	0.59	0.56	0.050 U	0.56	190	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	74	0.020 U	0.49	0.0050 U	3.5	0.010 U	1.0 U	16	0.020 U
				Start-up 2	07/09/2002	NA	NA	NA	NA	39	30	0.13	0.66	0.050 U	0.66	200	33	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
				Start-up 3	07/18/2002	NA	7.15	1.5	469	24	9	0.13	0.50	0.050 U	0.50	200	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	17	0.020 U
				Start-up 4	07/22/2002	3.87	7.08	2.5	491	25	15	0.15	0.45	0.050 U	0.45	200	35	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.47	0.0050 U	3.5	0.010 U	1.0 U	19	0.020 U
				Start-up 5	07/29/2002	3.86	7.12	1.2	456	19	8	0.17	0.69	0.050 U	0.69	200	38	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	19	0.020 U
MW-0021	Frog Pond South	22.03	2	Pre-operations	06/17/2002	4.54	6.36	3.0	279	51	38	0.19	1.0	0.050 U	1.0	200	31	280	5.0 U	0.20 U	8.0	10	0.010 U	0.0050 U	82	0.020 U	0.59	0.0050 U	3.5	0.014	6.9	22	0.020 U
				Start-up 1	06/27/2002	NA	7.0	14.3	435	46	39	0.48	0.66	0.050 U	0.66	200	25	250	5.0 U	0.20 U	10.0	10	0.010 U	0.0050 U	81	0.020 U	0.64	0.0050 U	3.3	0.010	9.2	12	0.020 U
				Start-up 2	07/09/2002	5.85	NA	0.5	228	40	31	0.22	0.65	0.050 U	0.65	210	35	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	72	0.020 U	0.62	0.0050 U	3.7	0.010 U	3.7	18	0.020 U
				Start-up 3	07/18/2002	5.61	7.28	8.1	483	42	23	0.19	0.56	0.050 U	0.56	210	31	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.56	0.0050 U	3.3	0.010 U	4.2	15	0.020 U
				Start-up 4	07/22/2002	5.55	7.15	15.0	495	42	22	0.23	0.42	0.050 U	0.42	210	31	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.63	0.0050 U	3.8	0.010 U	4.4	18	0.020 U
				Start-up 5	07/29/2002	5.41	7.11	1.0	452	36	18	0.25	0.65	0.050 U	0.65	210	34	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.72	0.0050 U	3.9	0.010 U	4.4	18	0.020 U

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Requested laboratory verification for reported results where Ortho-P higher than TP.

[c] Questionable value; High total phosphorus values were confirmed by the analytical laboratory through re-analysis, and are likely attributable to suspended material in the water sample.

[d] Turbidity analyzed at lab instead of field due to malfunctioning field turbidity meter.

-- = No data

U = Undetected

Q = Analyzed out of required holding time because of delays in sampling caused by poor weather conditions.

NA = Not available due to meter malfunction.

NI = Well not installed at time of sampling.

NS = No sample collected.

SL = Sample lost in transport due to FedEx plane crash.

* Potential outlier pending validation

EXHIBIT B-2

Comparison of Analytical Results of Well Clusters at the S-332D Detention Area

						Field Parameters				Analytical Parameters																							
Transect	Monitoring Location	Well Depth (ft)	Screen Length (ft)	Monitoring Period	Date	Water Table Elevation (ft NVGD)	pH	Turbidity (NTU)	Conductivity (umhos/cm)	TP[b] (µg/L)	Ortho-P[b] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
A	MW-0023	24.4	2	Pre-operations	06/18/2002	4.79	6.75	8.1	331	11	6	0.055	1.0	0.050 U	1.0	220	42	290	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	78	0.020 U	0.79	0.0050 U	7.1	0.026	2.6	23	0.020 U
				Start-up 1	06/24/2002	5.09	7.74	9.0	4 *	12	5	0.19	0.78	0.050 U	0.78	210	34	290	5.0 U	0.21	5.0 U	60	0.010 U	0.0050 U	75	0.020 U	2.0	0.0050 U	6.6	0.026	1.9	22	0.020 U
				Start-up 2	07/11/2002	6.15	NA	3.4	271	11	19	0.067	0.59	0.050 U	0.59	220	48	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	71	0.020 U	1.3	0.0050 U	6.1	0.011	1.9	24	0.020 U
				Start-up 3	07/16/2002	6.02	NA	3.6	NA	11	2 U	0.39	0.48	1.4	1.88	210	41	280	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	70	0.020 U	1.1	0.0050 U	5.7	0.010 U	1.8	23	0.020 U
				Start-up 4	07/23/2002	5.78	7.05	0.9	538	30	5	0.030 U	0.27	0.050 U	0.27	210	33	280	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	67	0.020 U	1.0	0.0050 U	5.7	0.010 U	2.0	24	0.020 U
				Start-up 5	07/30/2002	5.65	7.11	1.1	529	13	3	0.036	0.58	0.050 U	0.58	210	42	310	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	71	0.020 U	0.89	0.0050 U	5.6	0.010 U	2.1	24	0.020 U
	MW-0024	44.5	2	Pre-operations	06/18/2002	4.80	6.67	2.0	333	55	53	0.074	1.0	0.36	1.36	210	37	290	5.0 U	0.20 U	18.0	15	0.010 U	0.0050 U	71	0.020 U	0.050 U	0.0050 U	5.0	0.010 U	1.8	38	0.020 U
				Start-up 1	06/24/2002	5.14	7.55	1.9	5 *	61	62	0.17	0.20 U *	0.065	0.065 *	210	31	300	5.0 U	0.23	15.0	15	0.010 U	0.0050 U	71	0.020 U	0.096	0.0050 U	5.1	0.010 U	1.8	40	0.020 U
				Start-up 2	07/11/2002	4.69	NA	3.9	275	58	50	0.052	0.61	0.050 U	0.61	220	44	280	5.0 U	0.22	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.30	0.0050 U	5.3	0.010 U	1.7	31	0.020 U
				Start-up 3	07/16/2002	NA	NA	NA	NA	59	17	0.030 U	0.53	0.050 U	0.53	220	38	280	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	68	0.020 U	0.18	0.0050 U	5.2	0.010 U	1.7	27	0.020 U
				Start-up 4	07/23/2002	5.76	7.05	7.1	527	45	18	0.030 U	0.42	0.050 U	0.42	210	32	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.19	0.0050 U	5.6	0.010 U	1.8	25	0.020 U
				Start-up 5	07/30/2002	5.65	7.11	4.3	517	44	28	0.048	0.57	0.050 U	0.57	210	41	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	70	0.020 U	0.18	0.0050 U	5.7	0.010 U	1.9	27	0.020 U
A	MW-0011	21.75	5	Pre-operations	06/17/2002	4.35	6.30	7.8	277	16	25	0.23	1.3	0.050 U	1.3	200	42	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	80	0.020 U	0.40	0.0050 U	3.9	0.010 U	1.0 U	21	0.020 U
				Start-up 1	06/24/2002	4.37	7.77	8.1	NA	12	11	0.53	0.67	0.050 U	0.67	200	36	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.39	0.0050 U	4.2	0.010 U	1.0	23	0.020 U
				Start-up 2	07/10/2002	4.69	NA	1.6	241	9	10	0.17	0.54	0.050 U	0.54	210	43	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	73	0.020 U	0.37	0.0050 U	4.2	0.010 U	1.1	22	0.020 U
				Start-up 3	07/18/2002	4.50	7.15	4.5	510	16	5	0.17	0.65	0.050 U	0.65	220	39	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.36	0.0050 U	3.9	0.010 U	1.0	21	0.020 U
				Start-up 4	07/22/2002	4.36	7.19	22.0	509	18	4	0.20	0.64	0.050 U	0.64	210	39	280	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	75	0.020 U	0.41	0.0050 U	4.3	0.010 U	1.1	23	0.020 U
				Start-up 5	08/01/2002	4.57	7.01	10.9	607	19	6	0.24	0.73	0.050 U	0.73	210	40	290	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	80	0.020 U	0.42	0.0050 U	4.6	0.010 U	1.1	25	0.020 U
	MW-0012	43	5	Pre-operations	06/17/2002	4.32	6.27	5.4	255	47	43	0.21	1.2	0.050 U	1.2	170	41	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	63	0.020 U	0.31	0.0050 U	3.4	0.010 U	1.1	27	0.020 U
				Start-up 1	06/24/2002	4.35	7.62	5.9	NA	19	17	0.54	0.63	0.050 U	0.63	180	36	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.36	0.0050 U	4.2	0.010 U	1.1	25	0.020 U
				Start-up 2	07/10/2002	NA	NA	NA	NA	11	8	0.18	0.42	0.050 U	0.42	190	43	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.40	0.0050 U	4.1	0.010 U	1.0 U	23	0.020 U
				Start-up 3	07/18/2002	4.48	7.88	7.5	402	18	4	0.17	0.55	0.050 U	0.55	190	37	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	55	0.020 U	0.30	0.0050 U	3.0	0.010 U	1.5	28	0.020 U
				Start-up 4	07/22/2002	4.34	7.05	9.1	514	25	4	0.18	0.55	0.050 U	0.55	200	39	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.43	0.0050 U	4.1	0.010 U	1.0 U	22	0.020 U
				Start-up 5	08/01/2002	4.55	7.1	10.9	597	11	5	0.24	0.73	0.050 U	0.73	200	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	78	0.020 U	0.45	0.0050 U	4.5	0.010 U	1.1	26	0.020 U
B	MW-0026	24.2	2	Pre-operations	06/17/2002	4.98	6.58	8.8	795	11	3	0.18	1.1	0.050 U	1.1	200	37	270	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	78	0.020 U	1.2	0.0050 U	5.0	0.010 U	1.3	19	0.020 U
				Start-up 1	06/24/2002	5.20	7.8	2.9	NA	6	4	0.46	0.61	0.050 U	0.61	200	27	260	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	74	0.020 U	0.13	0.0050 U	4.4	0.011	1.0	17	0.020 U
				Start-up 2	07/08/2002	6.04	6.17	0.9	842	5	6	0.070	0.55	0.050 U	0.55	200	47	270	5.0 U	0.20 U	5.6	25	0.010 U	0.0050 U	74	0.020 U	0.56	0.0050 U	4.6	0.010 U	1.7	23	0.020 U
				Start-up 3	07/15/2002	6.22	NA	0.4	429	10	2	0.030 U	0.20 U	0.050 U	0.20 U	200	42	270	5.0 U	0.20 U	7.6	25	0.010 U	0.0050 U	68	0.020 U	0.47	0.0050 U	4.6	0.010 U	2.0	22	0.020 U
				Start-up 4	07/25/2002	5.99	7.09	17.1	559	3 U	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
				Start-up 5	07/30/2002	5.95	7.2	15.7	516	8	2 U	0.030 U	0.54	0.050 U	0.54	190	40	280	5.0 U	0.20 U	8.7	15	0.010 U	0.0050 U	69	0.020 U	0.050 U	0.0050 U	5.2	0.010 U	2.2	24	0.020 U
	MW-0027	44.2	2	Pre-operations	06/17/2002	4.95	6.62	20.8	512	38	23	0.092	0.92	0.050 U	0.92	200	27	250	5.0 U	0.20 U	5.0 U	10	0.010 U	0.0050 U	83	0.020 U	0.13	0.0050 U	3.2	0.010 U	1.0 U	16	0.020 U
				Start-up 1	06/24/2002	5.20	7.56	4.7	NA	49	43	0.41	0.79	0.050 U	0.79	200	22	250	5.0 U	0.20 U	5.0 U	10	0.010 U	0.0050 U	85	0.020 U	0.13	0.0050 U	3.8	0.010 U	1.0	17	0.020 U
				Start-up 2	07/08/2002	6.08	6.21	1.9	850	38	29	0.12	0.68	0.050 U	0.68	200	44	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	73	0.020 U	0.36	0.0050 U	4.0	0.010 U	1.2	22	0.020 U
				Start-up 3	07/16/2002	6.20	NA	2.6	394	30	10	0.030 U	0.48	0.050 U	0.48	200	40	270	5.0 U	0.20 U	7.3	10	0.010 U	0.0050 U	69	0.020 U	0.12	0.0050 U	4.4	0.010 U	2.0	22	0.020 U
				Start-up 4	07/25/2002	5.94	7.04	14.9	551	19	8	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
				Start-up 5	07/30/2002	5.97	7.17	2.9	515	14	7	0.030 U	0.59	0.070	0.66	200	39	270	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.050 U	0.0050 U	5.1	0.010 U	2.3	24	0.020 U
B	MW-0019	23.29	2	Pre-operations	06/17/2002	4.09	6.58	2.9	255	64	51	0.16	0.93	0.050 U	0.93	180	31	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.25	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
				Start-up 1	06/26/2002	4.18	7.27	12.3	298	59	45	0.59	0.56	0.050 U	0.56	190	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	74	0.020 U	0.49	0.0050 U	3.5	0.010 U	1.0 U	16	0.020 U
				Start-up 2	07/09/2002	NA	NA	NA	NA	39	30	0.13	0.66	0.050 U	0.66	200	33	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	3.4	0.010 U	1.0 U	16	0.020 U
				Start-up 3	07/18/2002	NA	7.15	1.5	469	24	9	0.13	0.50	0.050 U	0.50	200	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	17	0.020 U
				Start-up 4	07/22/2002	3.87	7.08	2.5	491	25	15	0.15	0.45	0.050 U	0.45	200	35	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.47	0.0050 U	3.5	0.010 U	1.0 U	19	0.020 U
				Start-up 5	07/29/2002	3.86	7.12	1.2	456	19	8	0.17	0.69	0.050 U	0.69	200	38	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.46	0.0050 U	3.2	0.010 U	1.0 U	19	0.020 U
	MW-0020	43.81	2	Pre-operations	06/17/2002	4.06	6.39	8.8	256	33	30	0.14	0.85	0.050 U	0.85	190	31	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	77	0.020 U	0.39	0.0050 U	3.2	0.010 U	1.0 U	15	0.020 U
				Start-up 1	06/26/2002	4.17	7.24	17.1	290	22	18	0.40	0.55	0.70	1.25	190	28	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.47	0.0050 U	3.4	0.010 U	1.0 U	15	0.020 U
				Start-up 2	07/09/2002	NA	NA	NA	NA	11	6	0.13	0.60	0.050 U	0.60	200	32	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.47	0.0050 U	3.5	0.010 U	1.0 U	16	0.020 U
				Start-up 3	07/18/2002	NA	7.1	1.1	457	15	5	0.13	0.51	0.050 U	0.51	200	31	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.51	0.0050 U	3.3	0.010 U	1.0 U	16	0.020 U
				Start-up 4	07/22/2002	5.84	7.14	6.3	473	19	4	0.14	0.40	0.050 U	0.40	200	32	250	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.52	0.0050 U	3.5	0.010 U	1.0 U	18	0.020 U
				Start-up 5	07/29/2002	3.86	7.13	20.5	455	10	3	0.17	0.70	0.050 U	0.70	200	37	270	10.0	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.57	0.0050 U	3.6	0.011	1.0 U	21	0.020 U
Frog Pond South	MW-0021	22.03	2	Pre-operations	06/17/2002	4.54	6.36	3.0	279	51	38	0.19	1.0	0.050 U	1.0	200	31	280	5.0 U	0.20 U	8.0	10	0.010 U	0.0050 U	82	0.020 U	0.59	0.0050 U	3.5	0.014	6.9	22	0.020 U
				Start-up 1	06/27/2002	NA	7.0	14.3	435	46	39	0.48	0.66	0.050 U	0.66	200	25	250	5.0 U	0.20 U	10.0	10	0.010 U	0.0050 U	81	0.020 U	0.64	0.0050 U	3.3	0.010	9.2	12	0.020 U
				Start-up 2	07/09/2002	5.85	NA	0.5	228	40	31	0.22	0.65	0.050 U	0.65	210	35	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	72	0.020 U	0.62	0.0050 U	3.7	0.010 U	3.7	18	0.020 U
				Start-up 3	07/18/2002	5.61	7.28	8.1	483	42	23	0.19	0.56	0.050 U	0.56	210	31	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.56	0.0050 U	3.3	0.010 U	4.2	15	0.020 U
				Start-up 4	07/22/2002	5.55	7.15	15.0	495	42	22	0.23	0.42	0.050 U	0.42	210	31	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.63	0.0050 U	3.8	0.010 U	4.4	18	0.020 U
				Start-up 5	07/29/2002	5.41	7.11	1.0	452	36	18	0.25	0.65	0.050 U	0.65	210	34	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.72	0.0050 U	3.9	0.010 U	4.4	18	0.020 U
	MW-0022	43.8	2	Pre-operations	06/17/2002	4.55	6.32	16.9	279	52	45	0.27	1.1	0.050 U	1.1	210	34	270	7.0	0.20 U	5.0 U	10	0.010 U	0.0050 U	81	0.020 U	0.87	0.0050 U	3.5	0.023	3.7	16	0.020 U
				Start-up 1	06/27/2002	4.85	6.95	14.9	452	50	40	0.70	0.77	0.050 U	0.77	210	31	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	84	0.020 U	0.86	0.0050 U	3.6	0.017	3.8	16	0.020 U
				Start-up 2	07/09/2002	NA	NA	0.4	224	53	48	0.22	0.67	0.050 U	0.67	220	34	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	75	0.020 U	0.70	0.0050 U	3.7	0.011	6.3	15	0.020 U
				Start-up 3	07/18/2002	5.62	7.17	7.5	492	27	12	0.18	0.69	0.290	0.98	210	33	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.65	0.0050 U	3.6	0.010 U	3.7	18	0.020 U
				Start-up 4	07/22/2002	5.64	7.67	2.9	1000	28	7	0.21	0.52	0.050 U	0.52	200	33	240	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.67	0.0050 U	3.8	0.010 U	3.7	18	0.020 U
				Start-up 5	07/29/2002	5.40	7.14	0.6	448	21	10	0.25	0.65	0.050 U	0.65	200	34	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.65	0.0050 U	3.6	0.010 U	3.5	17	0.020 U

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Laboratory verification requested for reported results where Ortho-P is higher than TP.

-- = No data

U = Undetected

NA = Not available due to meter malfunction.

SL = Sample lost due to FedEx plane crash.

* Potential outlier pending validation.

EXHIBIT B-3

Comparison of Analytical Results of Surface Water and Groundwater Samples within the Everglades National Park

Transect	Monitoring Location	Monitoring Period	Date	Field Parameters			Analytical Parameters																								
				pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[d] (µg/L)	Ortho-P[d] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
A	SW-0004	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 3	07/16/2002	NA	1.1[b]	NA	13	2 U	0.030 U	0.70	0.050 U	0.70	120	8.3	150	5.0 U	0.20 U	5.0 U	40	0.010 U	0.0050 U	42	0.020 U	0.050 U	0.0050 U	1.5	0.010 U	1.0 U	5.3	0.020 U
		Start-up 4	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 5	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
	MW-0029	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Start-up 1	06/26/2002	7.23	4.0	NA	25	22	0.55	0.6	0.050 U	0.6	200	26	260	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	69	0.020 U	0.62	0.0050 U	2.8	0.010 U	1.0 U	14	0.020 U
		Start-up 2	07/11/2002	NA	4.6	229	47	53	0.15	0.51	0.050 U	0.51	180	20	200	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.68	0.0050 U	2.3	0.010 U	1.0 U	10	0.020 U
		Start-up 3	07/16/2002	NA	1.4[b]	NA	33	12	0.13	0.43	0.050 U	0.43	180	16	200	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	61	0.020 U	0.52	0.0050 U	2.0	0.010 U	1.0 U	9	0.020 U
		Start-up 4	07/23/2002	7.21	1.8	389	1880[f]	12	0.14	0.24	0.050 U	0.24	170	15	200	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	58	0.020 U	0.49	0.0050 U	2.1	0.010 U	1.0 U	9.2	0.020 U
		Start-up 5	07/31/2002	7.27	5.7	414	780[f]	13	0.19	0.46	0.050 U	0.46	180	16	220	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	66	0.020 U	0.53	0.0050 U	2.2	0.010 U	1.0 U	9.4	0.020 U
A	SW-0005	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 3	07/16/2002	NA	2.8[b]	NA	13	3	0.030 U	0.56	0.050 U	0.56	100	7.6	130	5.0 U	0.20 U	5.0 U	45	0.010 U	0.0050 U	35	0.020 U	0.080	0.0050 U	1.3	0.010 U	1.0 U	4.7	0.020 U
		Start-up 4	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 5	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
	MW-0030	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Start-up 1	06/26/2002	7.21	6.3	NA	25	26	0.48	0.57	0.050 U	0.57	190	22	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	67	0.020 U	0.58	0.0050 U	2.4	0.010 U	1.0 U	12	0.020 U
		Start-up 2	07/11/2002	NA	2.1	224	31	40	0.17	0.65	0.97	1.62	200	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	75	0.020 U	0.68	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
		Start-up 3	07/16/2002	NA	1.9[b]	NA	32	12	0.16	0.51	0.050 U	0.51	200	21	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	68	0.020 U	0.60	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
		Start-up 4	07/23/2002	7.04	1.2	442	27	8	0.19	0.31	0.050 U	0.31	190	21	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.58	0.0050 U	2.5	0.010 U	1.0 U	12	0.020 U
		Start-up 5	07/31/2002	7.18	3.1	462	16	13	0.24	0.53	0.050 U	0.53	200	21	240	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	74	0.020 U	0.59	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
A	SW-0006	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	06/26/2002	8.0	NA	970	5	2 U	0.44	0.59	0.050 U	0.59	200	26	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.44	0.0050 U	3.9	0.031	1.0 U	15	0.020 U
		Start-up 2	07/11/2002	NA	1.1	159	6	9	0.030 U	0.58	0.050 U	0.58	110	12	140	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	42	0.020 U	0.13	0.0050 U	1.7	0.010 U	1.0 U	6.5	0.020 U
		Start-up 3	07/16/2002	NA	0.84[b]	NA	8	2 U	0.030 U	0.60	0.050 U	0.60	140	13	160	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	50	0.020 U	0.22	0.0050 U	2.1	0.010 U	1.0 U	8.3	0.020 U
		Start-up 4	07/23/2002	7.33	1.6	467	5	2	0.066	0.60	0.050 U	0.60	200	27	240	30 *	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.62	0.0050 U	3.7	0.010 U	1.0 U	15	0.020 U
		Start-up 5	07/31/2002	NA	NA	NA	3	3	0.046	0.59	0.050 U	0.59	200	39	280	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	72	0.020 U	0.45	0.0050 U	4.6	0.011	1.1	21	0.020 U
	MM-0031	Pre-operations	06/18/2002	6.77	3.4	295	36	45	0.11	0.87	0.050 U	0.87	190	33	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.0 U	18	0.020 U
		Start-up 1	06/26/2002	7.19	4.0	NA	9	8	0.33	0.47	0.050 U	0.47	200	28	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	66	0.020 U	0.17	0.0050 U	5.1	0.010 U	1.3	17	0.020 U
		Start-up 2	07/11/2002	NA	4.9	237	11	32	0.084	0.63	0.64	1.27	210	43	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	72	0.020 U	0.34	0.0050 U	5.1	0.010 U	1.3	21	0.020 U
		Start-up 3	07/16/2002	NA	0.93[b]	NA	13	2 U	0.053	0.57	0.050 U	0.57	210	37	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.26	0.0050 U	5.0	0.010 U	1.3	21	0.020 U
		Start-up 4	07/23/2002	7.06	2.2	522	810[f]	3	0.041	0.38	0.050 U	0.38	210	38	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.23	0.0050 U	5.4	0.010 U	1.5	23	0.020 U
		Start-up 5	07/31/2002	7.17	2.4	543	259[f]	6	0.059	0.64	0.050 U	0.64	200	40	290	5.0 U	0.20 U	5.0 U	20 Q	0.010 U	0.0050 U	75	0.020 U	0.22	0.0050 U	5.7	0.010 U	1.7	24	0.020 U
B	SW-0007	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	07/12/2002	NA	0.9	167	14	2 UQ	0.030 U	0.59	0.050 U	0.59	120	9.8	140	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	42	0.020 U	0.055	0.0050 U	1.4	0.010 U	1.0 U	5.2	0.020 U
		Start-up 3	07/17/2002	NA	0.7	NA	7	2	0.030 U	0.54	0.067	0.61	160	12	190	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	62	0.020 U	0.11	0.0050 U	1.9	0.010 U	1.0 U	7.0	0.020 U
		Start-up 4	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 5	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
	MW-0032	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Start-up 1	06/27/2002	7.49	2.6	729	37	37	0.49	0.51	0.050 U	0.51	190	19	230	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	76	0.020 U	0.63	0.0050 U	2.2	0.010	1.0 U	9.9	0.020 U
		Start-up 2	07/12/2002	NA	1.1	206	30	38 Q	0.17	0.55	0.050 U	0.55	190	22	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	63	0.020 U	0.56	0.0050 U	2.1	0.010 U	1.0 U	9.7	0.020 U
		Start-up 3	07/17/2002	NA	4.5	NA	24	9	0.15	0.37	0.050 U	0.37	200	21	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	79	0.020 U	0.59	0.0050 U	2.5	0.010 U	1.0 U	11	0.020 U
		Start-up 4	07/24/2002	7.09	4.0	497	22	10	0.18	0.56	0.050 U	0.56	200	24	220	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.55	0.0050 U	2.5	0.010 U	1.0 U	13	0.020 U
		Start-up 5	08/01/2002	7.43	10.9	522	16	11	0.27	0.63	0.050 U	0.63	190	30	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	81	0.020 U	0.57	0.0050 U	2.9	0.010 U	1.0 U	18	0.020 U
B	SW-0008	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	07/12/2002	NA	0.9	169	10	2 UQ	0.030 U	0.51	0.050 U	0.51	130	9.8	150	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	44	0.020 U	0.050 U	0.0050 U	1.5	0.010 U	1.0 U	5.1	0.020 U
		Start-up 3	07/17/2002	NA	1.1	NA	11	4	0.030 U	0.43	0.050 U	0.43	160	13	200	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	62	0.020 U	0.11	0.0050 U	1.9	0.010 U	1.0 U	6.9	0.020 U
		Start-up 4	07/24/2002	7.59	5.1	490	7	5	0.030 U	0.70	0.050 U	0.70	190	33	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	67	0.020 U	0.19	0.0050 U	3.3	0.010 U	1.0	18	0.020 U
		Start-up 5	08/01/2002	7.38	3.1	444	5	5	0.030 U	0.67	0.050 U	0.67	150	23	200	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	54	0.020 U	0.14	0.0050 U	2.8	0.010 U	1.1	13	0.020 U
	MW-0033	Pre-operations	Not Installed	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Start-up 1	06/27/2002	6.18	0.5	736	14	8	0.49	0.60	0.050 U	0.60	190	22	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	2.4	0.010 U	1.0 U	11	0.020 U
		Start-up 2	07/12/2002	NA	0.1	218	7	2 UQ	0.19	0.60	0.050 U	0.60	190	36	240	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.48	0.0050 U	2.7	0.010 U	1.0 U	17	0.020 U
		Start-up 3	07/17/2002	NA	0.7	NA	9	5	0.16	0.61	0.050 U	0.61	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.51	0.0050 U	3.0	0.010 U	1.0 U	18	0.020 U
		Start-up 4	07/24/2002	7.04	0.7	517	8	6	0.16	0.70	0.050 U	0.70	190	37	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.5	0.0050 U	3.3	0.010 U	1.0 U	22	0.020 U
		Start-up 5	08/01/2002	7.16	4.3	591	8	6	0.18	0.67	0.050 U	0.67	200	39	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	77	0.020 U	0.54	0.0050 U	3.9	0.010 U	1.0 U	24	0.020 U

EXHIBIT B-3

Comparison of Analytical Results of Surface Water and Groundwater Samples within the Everglades National Park

Transect	Monitoring Location	Monitoring Period	Date	Field Parameters			Analytical Parameters																								
				pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[d] (µg/L)	Ortho-P[d] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
B	SW-0009	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	07/12/2002	NA	0.6	187	11	2 UQ	0.030 U	0.52	0.050 U	0.52	150	25	190	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	50	0.020 U	0.55	0.0050 U	2.1	0.014	1.0 U	9.0	0.020 U
		Start-up 3	07/17/2002	NA	4.4	NA	10	2 U	0.030 U	0.38	0.050 U	0.38	180	23	230	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.23	0.0050 U	2.8	0.010 U	1.0 U	12.0	0.020 U
		Start-up 4	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 5	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
	MW-0034	Pre-operations	06/18/2002	6.82	5.0	303	30	27	0.16	1.1	0.050 U	1.1	190	34	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.64	0.0050 U	4.8	0.012	1.2	18	0.020 U
		Start-up 1	06/27/2002	6.56	2.7	409	25	19	0.47	0.49	0.050 U	0.49	22 *	24	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	78	0.020 U	0.73	0.0050 U	3.1	0.010 U	1.0 U	12	0.020 U
		Start-up 2	07/12/2002	NA	0.7	237	19	6 Q	0.089	0.86	0.050 U	0.86	200	47	270	5.0 U	0.20 U	5.5	25	0.010 U	0.0050 U	66	0.020 U	0.55	0.0050 U	4.2	0.010 U	1.4	21	0.020 U
		Start-up 3	07/17/2002	NA	1.5	NA	15	5	0.030 U	0.37	0.050 U	0.37	200	41	250	5.0 U	0.20 U	7.9	20	0.010 U	0.0050 U	78	0.020 U	0.48	0.0050 U	4.6	0.010 U	2.0	23	0.020 U
		Start-up 4	07/24/2002	7.1	2.2	542	10	8	0.030 U	0.49	0.050 U	0.49	200	42	270	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	70	0.020 U	0.34	0.0050 U	4.7	0.010 U	2.1	25	0.020 U
		Start-up 5	08/01/2002	7.18	1.6	603	7	5	0.030 U	0.53	0.050 U	0.53	190	39	280	5.0 U	0.20 U	7.0	20	0.010 U	0.0050 U	68	0.020 U	0.15	0.0050 U	4.8	0.010 U	2.0	23	0.020 U
Background	SW-0010	Pre-operations	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 1	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 2	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 3	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 4	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
		Start-up 5	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
	MW-0028	Pre-operations	06/18/2002	6.43	5.9	304	24	21	0.23	1.2	0.050 U	1.2	190	29	230	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.44	0.0050 U	2.8	0.010 U	1.0 U	15	0.020 U
		Start-up 1	06/25/2002	6.98	2.6	NA	16	15	0.65	0.63	0.050 U	0.63	190	27	250	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
		Start-up 2	07/11/2002	NA	1.7	219	14	6	0.22	0.51	0.050 U	0.51	190	25	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.49	0.0050 U	2.6	0.010 U	1.0 U	13	0.020 U
		Start-up 3	07/16/2002	NA	1.2	NA	19	9	0.16	0.60	0.050 U	0.60	190	20	220	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	63	0.020 U	0.45	0.0050 U	2.3	0.010 U	1.0 U	11	0.020 U
		Start-up 4	07/24/2002	7.06	3.0	460	1170[c]	5	0.23	0.66	0.050 U	0.66	190	24	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.53	0.0050 U	2.7	0.010 U	1.0 U	14	0.020 U
		Start-up 5	08/01/2002	7.11	105 *	510	12000[c]	5	0.23	0.99	0.050 U	0.99	190	22	240	46	0.20 U	5.0 U	20	0.010 U	0.0050 U	84	0.020 U	0.54	0.0050 U	2.6	0.010 U	1.0 U	12	0.020 U

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Turbidity analyzed at lab instead of field due to malfunctioning field turbidity meter.

[c] Questionable value; high TP values were confirmed by the analytical laboratory through re-analysis, and are likely attributable to suspended material in the water sample.

[d] Laboratory verification requested for reported results where Ortho-P higher than Total P.

-- = No data

U = Undetected

Q = Analyzed out of required holding time because of delays in sampling caused by poor weather conditions.

NA = Not available due to meter malfunction.

NI = Well not installed at time of sampling.

NS = No sample collected.

NW = Surface water was not present at the time of sampling.

* Potential outlier pending validation.

EXHIBIT B-4

Analytical Results for Surface Water Samples from L-31W Canal

Monitoring Location	Monitoring Period	Date	Field Parameters			Analytical Parameters																								
			pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[b] (µg/L)	Ortho-P[b] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
SW-0001	Pre-operations	06/18/2002	6.40	6.8	362	6	5	0.059	1.7	0.050 U	1.7	210	47	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	72	0.020 U	0.69	0.0050 U	7.3	0.021	2.3	29	0.020 U
(North of Basin)	Start-up 1	06/27/2002	5.84	11.1	736	3	2	0.13	0.69	0.097	0.69	200	40	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	73	0.020 U	0.78	0.0500 U	5.7	0.011	2.1	24	0.020 U
	Start-up 2	07/11/2002	NA	4.1	209	8	9	0.03 U	0.51	0.050 U	0.51	180	34	220	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	64	0.020 U	0.5	0.0500 U	3.9	0.010 U	1.3	17	0.020 U
	Start-up 3	07/17/2002	7.61	1.5	1162	11	2 U	0.030 U	0.44	0.050 U	0.44	160	19	180	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	58	0.020 U	0.34	0.0500 U	2.6	0.010 U	1.0 U	10	0.020 U
	Start-up 4	07/24/2002	7.47	5.6	529	10	2 U	0.030 U	0.62	0.050 U	0.62	200	38	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.53	0.0500 U	4.6	0.016	1.7	22	0.020 U
	Start-up 5	07/30/2002	7.67	9.5	520	5	5	0.030 U	0.62	0.050 U	0.62	200	40	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.79	0.0500 U	5.1	0.011	1.8	23	0.020 U
SW-0002	Pre-operations	06/17/2002	7.05	10.8	284	11	2 U	0.078	1.0	0.050 U	1.0	200	50	300	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	76	0.020 U	1.2	0.0500 U	6.5	0.024	2.0	26	0.020 U
(Transect A)	Start-up 1	06/26/2002	7.63	NA	757	8	2 U	0.19	0.59	0.050 U	0.59	190	35	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.85	0.0050 U	5.1	0.023	1.7	20	0.020 U
	Start-up 2	07/11/2002	NA	1.4	153	8	6	0.030 U	0.51	0.063	0.57	100	8.6	120	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	38	0.020 U	0.12	0.0050 U	1.6	0.010 U	1.0 U	5.6	0.020 U
	Start-up 3	07/17/2002	7.6	1.3	1026	10	2	0.030 U	0.54	0.050 U	0.54	140	16	170	5.0 U	0.20 U	5.0 U	35	0.010 U	0.0050 U	57	0.020 U	0.22	0.0050 U	2.2	0.010 U	1.0 U	8.2	0.020 U
	Start-up 4	07/23/2002	7.31	3.0	501	7	2	0.030 U	0.47	0.050 U	0.47	200	36	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.57	0.0050 U	4.5	0.011	1.5	21	0.020 U
	Start-up 5	07/30/2002	7.45	4.0	517	13	2 U	0.030 U	0.58	0.050 U	0.58	200	39	250	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.49	0.0050 U	4.9	0.012	1.6	22	0.020 U
SW-0003	Pre-operations	6/17/2002	7.02	13.2	283	13	2 U	0.070	1.2	0.050 U	1.2	200	50	300	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	77	0.020 U	1.2	0.0050 U	6.6	0.023	1.9	26	0.020 U
(Transect B)	Start-up 1	06/26/2002	7.12	NA	318	9	3	0.23	0.60	0.050 U	0.60	190	33	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	62	0.020 U	0.96	0.0050 U	5.0	0.022	1.5	19	0.020 U
	Start-up 2	07/11/2002	NA	0.9	180	8	4	0.030 U	0.45	0.057	0.51	140	18	170	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	53	0.020 U	0.13	0.0050 U	2.3	0.010 U	1.0 U	8.9	0.020 U
	Start-up 3	07/17/2002	NA	1.5	NA	8	2 U	0.030 U	0.48	0.050 U	0.48	180	25	200	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	67	0.020 U	0.29	0.0050 U	2.9	0.010 U	1.0 U	13	0.020 U
	Start-up 4	07/24/2002	7.34	NA	525	7	5	0.030 U	0.60	0.050 U	0.60	200	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.92	0.0050 U	4.4	0.030	1.6	21	0.020 U
	Start-up 5	07/30/2002	7.58	2.8	537	8	2	0.030 U	0.54	0.050 U	0.54	200	40	280	5.0 U	0.20 U	6.2	15	0.010 U	0.0050 U	69	0.020 U	0.42	0.0050 U	4.9	0.011	1.9	23	0.020 U

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Laboratory verification requested for reported results where Ortho-P higher than TP.

-- = No data

U = Undetected

NA = Not available due to meter malfunction.

EXHIBIT B-5

Analytical Results for Inflow and Outflow Surface Water Samples from the S-332D Detention Area

	Monitoring Location	Monitoring Period	Date	Field Parameters			Analytical Parameters																							
				pH	Turbidity (NTU)	Conductivity (µmhos/cm)	TP[c] (µg/L)	Ortho-P[c] (µg/L)	Ammonia	TKN	Nitrate/ Nitrite	TN[a]	Alkalinity	Chloride	TDS	TSS	Fluoride	Sulfate	Color (PCU)	Arsenic	Cadmium	Calcium	Copper	Iron	Lead	Magnesium	Manganese	Potassium	Sodium	Zinc
Inflow	IF-0001 (morning)	Start-up 1	06/26/2002	7.03	NA	363	9	3	0.37	0.69	0.050 U	0.69	210	44	300	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	68	0.020 U	0.37	0.0050 U	6.2	0.010 U	2.6	26	0.020 U
			06/27/2002	7.51	5.9	838	9	2	0.34	0.69	0.050 U	0.69	210	43	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	73	0.020 U	0.3	0.0050 U	5.9	0.010 U	2.5	26	0.020 U
		Supplemental	07/01/2002	6.62	NA	1318	7	2 U	0.33	0.78	0.050 U	0.78	210	50	280	5.0 U	0.20 U	5.0 U	20	NR	NR	76	NR	NR	NR	5.5	NR	2.3	25	NR
		Start-up 2	07/08/2002	6.23	3.4	1553	11	2 U	0.11	0.65	0.050 U	0.65	220	51	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	79	0.020 U	0.30	0.0050 U	5.6	0.010 U	2.6	25	0.020 U
			07/09/2002	NA	NA	NA	11	9	0.12	0.69	0.050	0.74	180	51	290	5.0 U	0.20 U	5.0 U	20	NR	NR	79	NR	NR	NR	5.8	NR	2.8	26	NR
			07/10/2002	NA	5.3	NA	9	2	0.12	0.62	0.050 U	0.62	220	47	280	5.0 U	0.20 U	5.0 U	20	NR	NR	76	NR	NR	NR	5.7	NR	2.7	26	NR
		Start-up 3	07/16/2002	NA	4.7	61	13	2 U	0.10	0.61	0.079	0.69	220	43	300	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	72	0.020 U	0.34	0.0050 U	5.0	0.010 U	2.6	24	0.020 U
			07/17/2002	NA	7.7	NA	8	2	0.075	0.62	0.079	0.70	220	44	300	5.0 U	0.20 U	5.0 U	15	NR	NR	82	NR	NR	NR	5.5	NR	3.1	24	NR
			07/18/2002	NA	4.3	548	8	2	0.087	0.60	0.096	0.70	220	46	290	5.0 U	0.20 U	5.0 U	15	NR	NR	72	NR	NR	NR	5.1	NR	2.9	24	NR
		Start-up 4	07/23/2002	7.88	2.0	539	5	3	0.1	0.68	0.083	0.76	210	41	290	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.6	NR	2.5	25	NR
			07/24/2002	7.2	3.4	557	5	5	0.14	0.93	0.063	0.99	220	40	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	70	0.020 U	0.31	0.0050 U	5.4	0.010 U	2.3	25	0.020 U
			07/25/2002	7.26	3.3	548	8	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	7.54	1.8	514	5	2	0.16	0.86	0.050 U	0.86	210	39	300	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	67	0.020 U	0.43	0.0050 U	6.2	0.010 U	2.2	23	0.020 U
			07/31/2002	7.95	2.0	548	8	4	0.19	0.83	0.073	0.90	200	39	280	5.0 U	0.20 U	5.0 U	30 Q	NR	NR	69	NR	NR	NR	6.2	NR	2.2	24	NR
			08/01/2002	7.92	2.0	597	8	2 U	0.21	0.89	0.050 U	0.89	200	39	290	5.0 U	0.20 U	5.0 U	30	NR	NR	74	NR	NR	NR	6.4	NR	2.3	26	NR
			08/02/2002	7.71	2.6	543	NS	NS	0.20	0.90	0.050 U	0.90	200	38	270	5.0 U	0.20 U	5.0 U	30	NR	NR	70	NR	NR	NR	6.5	NR	2.2	25	NR
	IF-0002 (afternoon)	Start-up 1	06/26/2002	7.5	10.5	375	9	2 U	0.34	0.76	0.050 U	0.76	210	45	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.31	0.0050 U	6.3	0.010 U	2.6	28	0.020 U
			06/27/2002	6.78	6.8	759	6	2	0.34	0.85	0.050 U	0.85	200	44	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	74	0.020 U	0.32	0.0050 U	6.0	0.010 U	2.6	26	0.020 U
		Supplemental	07/01/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Start-up 2	07/08/2002	6.49	3.2	289	19	2 U	0.11	0.71	0.050 U	0.71	220	47	290	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	83	0.020 U	0.32	0.0050 U	5.9	0.010 U	2.7	26	0.020 U
			07/09/2002	NA	NA	NA	8	9	0.14	0.62	0.050 U	0.62	220	49	290	5.0 U	0.20 U	5.0 U	15	NR	NR	76	NR	NR	NR	5.5	NR	2.6	25	NR
			07/10/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Start-up 3	07/16/2002	NA	3.2[d]	NA	10	2 U	0.072	0.80	0.080	0.88	220	43	290	5.0 U	0.20 U	5.0 U	15	0.010 U	0.0050 U	71	0.020 U	0.31	0.0050 U	4.9	0.010 U	2.6	23	0.020 U
			07/17/2002	7.63	7.5	1740	9	2	0.047	0.57	0.084	0.65	220	43	290	5.0 U	0.20 U	5.0 U	15	NR	NR	82	NR	NR	NR	5.7	NR	3.2	24	NR
			07/18/2002	7.72	4.1	548	10	2	0.090	0.53	0.099	0.63	220	44	290	5.0 U	0.20 U	5.0 U	20	NR	NR	73	NR	NR	NR	5.2	NR	2.9	24	NR
		Start-up 4	07/23/2002	7.53	3.1	541	7	3	0.096	0.61	0.070	0.68	210	42	290	5.0 U	0.20 U	5.0 U	25	NR	NR	67	NR	NR	NR	5.6	NR	2.6	25	NR
			07/24/2002	7.54	3.8	546	5	3	0.11	0.86	0.050 U	0.86	210	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.33	0.0050 U	5.7	0.010 U	2.3	25	0.020 U
			07/25/2002	7.61	3.7	549	7	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	7.67	2.7	525	7	2 U	0.16	0.89	0.050 U	0.89	210	41	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	69	0.020 U	0.46	0.0050 U	6.3	0.010 U	2.3	24	0.020 U
			08/01/2002	7.45	2.1	644	10	3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			08/02/2002	7.78	3.3	386	NS	NS	0.21	0.95	0.050 U	0.95	200	39	280	5.0 U	0.20 U	5.0 U	30	NR	NR	67	NR	NR	NR	6.1	NR	2.1	24	NR
Outflow	OF-0001[b] (morning)	Start-up 1	06/26/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			06/27/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Supplemental	07/01/2002	7.24	3.5	1168	23	16	0.03	0.50	0.050 U	0.50	45 *	7.9 *	55 *	5.0 U	0.20 U	5.0 U	10	NR	NR	16 *	NR	NR	NR	0.97 *	NR	2.4	5.2 *	NR
		Start-up 2	07/08/2002	6.91	0.8	821	13	2 U	0.030 U	0.47	0.050 U	0.47	200	50	270	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	71	0.020 U	0.050 U	0.0050 U	5.3	0.010 U	2.5	24	0.020 U
			07/09/2002	NA	NA	NA	9	3	0.030 U	0.49	0.050 U	0.49	220	46	250	5.0 U	0.20 U	5.0 U	15	NR	NR	61	NR	NR	NR	4.7	NR	2.3	23	NR
			07/10/2002	NA	1.7	NA	18	8	0.030 U	0.48	0.050 U	0.48	190	47	260	5.0 U	0.20 U	5.0 U	20	NR	NR	66	NR	NR	NR	5.1	NR	2.5	24	NR
		Start-up 3	07/16/2002	NA	6.2	64	18	3	0.030 U	0.59	0.050 U	0.59	210	43	290	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	68	0.020 U	0.083	0.0050 U	5.1	0.010 U	2.8	24	0.020 U
			07/17/2002	NA	3.3	NA	10	2	0.030 U	0.45	0.050 U	0.45	200	43	280	5.0 U	0.20 U	5.0 U	20	NR	NR	74	NR	NR	NR	5.3	NR	2.7	24	NR
			07/18/2002	8.05	1.6	519	8	2	0.030 U	0.52	0.050 U	0.52	210	44	280	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.2	NR U	2.8	25	NR
		Start-up 4	07/23/2002	7.77	0.9	571	13	3	0.030 U	0.67	0.050 U	0.67	200	42	270	5.0 U	0.20 U	5.0 U	20	NR	NR	66	NR	NR	NR	5.6	NR	2.6	26	NR
			07/24/2002	7.93	2.6	528	8	6	0.030 U	0.66	0.050 U	0.66	200	42	240	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	65	0.020 U	0.050 U	0.0050 U	5.4	0.010 U	2.6	25	0.020 U
			07/25/2002	7.75	1.6	541	7	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	7.81	2.8	501	5	2	0.030 U	0.67	0.050 U	0.67	190	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	63	0.020 U	0.16	0.0050 U	6.1	0.010 U	2.2	24	0.020 U
			07/31/2002	7.94	3.5	529	19	6	0.030 U	0.67	0.050 U	0.67	190	39	250	5.0 U	0.20 U	5.0 U	25 Q	NR	NR	61	NR	NR	NR	5.8	NR	2.1	23	NR
			08/01/2002	7.81	3.7	531	10	3	0.030 U	0.66	0.050 U	0.66	170	35	240	5.0 U	0.20 U	5.0 U	25	NR	NR	60	NR	NR	NR	5.7	NR	2.0	22	NR
			08/02/2002	7.95	7.9	522	NS	NS	0.030 U	0.76	0.050 U	0.76	180	38	250	5.0 U	0.20 U	5.0 U	30	NR	NR	61	NR	NR	NR	6.1	NR	2.1	23	NR
	OF-0002[b] (afternoon)	Start-up 1	06/26/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			06/27/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Supplemental	07/01/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Start-up 2	07/08/2002	6.86	0.7	315	9	3	0.030 U	0.58	0.050 U	0.58	190	49	260	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	69	0.020 U	0.050 U	0.0050 U	5.1	0.010 U	2.5	24	0.020 U
			07/09/2002	NA	NA	NA	9	14	0.030 U	0.48	0.050 U	0.48	180	44	240	5.0 U	0.20 U	5.0 U	20	NR	NR	61	NR	NR	NR	4.8	NR	2.3	23	NR
			07/10/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Start-up 3	07/16/2002	NA	0.96[d]	NA	10	2 U	0.030 U	0.20 U	0.053	0.053	210	45	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	69	0.020 U	0.066	0.0050 U	5.0	0.010 U	2.7	24	0.020 U
			07/17/2002	7.88	1.9	1544	15	4	0.030 U	1.3	0.050 U	1.3	200	44	270	5.0 U	0.20 U	5.0 U	20	NR	NR	79	NR	NR	NR	5.3	NR	2.8	24	NR
			07/18/2002	8.22	7.7	1544	8	2	0.030 U	0.55	0.050 U	0.55	210	44	270	5.0 U	0.20 U	5.0 U	20	NR	NR	69	NR	NR	NR	5.1	NR	2.7	24	NR
		Start-up 4	07/23/2002	7.88	7.1	519	22	3	0.030 U	0.59	0.050 U	0.59	200	42	280	5.0 U	0.20 U	5.0 U	25	NR	NR	65	NR	NR	NR	5.6	NR	2.5	26	NR
			07/24/2002	7.87	3.3	536	5	3	0.030 U	0.68	0.050 U	0.68	200	42	260	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	66	0.020 U	0.050 U	0.0050 U	5.4	0.010 U	2.5	25	0.020 U
			07/25/2002	7.8	2.3	540	7	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	7.96	2.8	530	10	3	0.030 U	0.73	0.050 U	0.73	190	40	270	5.0 U	0.20 U	5.0 U	25	0.010 U	0.0050 U	62	0.020 U	0.13	0.0050 U	6.1	0.010 U	2.4	24	0.020 U
			08/01/2002	7.82	5.6	618	14	2 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			08/02/2002	8.00	4.5	546	NS	NS	0.030 U	0.80	0.050 U	0.80	170	37	250	5.0 U	0.20 U	5.0 U	25	NR	NR	56	NR	NR	NR	5.8	NR	2.0	22	NR
	OF-0003[e] (morning)	Start-up 4	07/25/2002	7.64	6.8	553	10	3	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	7.86	5.7	499	10	2	0.030 U	0.83	0.050 U	0.83	190	40	270	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	63	0.020 U	0.330	0.0050 U	6.2	0.010 U	2.2	24	0.020 U
			07/31/2002	7.88	6.4	542	10	3	0.030 U	0.70	0.050 U	0.70	190	39	280	5.0 U	0.20 U	5.0 U	30 Q	NR	NR	68	NR	NR	NR	6.4	NR	2.2	25	NR
			08/01/2002	7.84	2.0	562	8	3	0.030 U	0.72	0.050 U	0.72	180	37	250	5.0 U	0.20 U	5.0 U	30	NR	NR	61	NR	NR	NR	5.8	NR	2.0	18	NR
			08/02/2002	7.89	9.1	543	NS	NS	0.030 U	0.71	0.050 U	0.71	190	39	260	5.0 U	0.20 U	5.0 U	25	NR	NR	67	NR	NR	NR	6.7	NR	2.2	25	NR
	OF-0004[e] (afternoon)	Start-up 4	07/23/2002	7.99	2.4	519	7	3	0.030 U	0.55	0.078	0.63	200	43	280	5.0 U	0.20 U	5.0 U	20	0.010 U	0.0050 U	65	0.020 U	0.11	0.0050 U	5.6	0.010 U	2.5	25	0.020 U
			07/24/2002	7.6	4.3	554	10	3	0.030 U	0.68	0.050 U	0.68	210	42	270	5.0 U	0.20 U	5.0 U	20	NR	NR	70	NR	0.16	NR	5.5	NR	2.5	25	NR
			07/25/2002	7.91	3.8	547	7	2 U	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
		Start-up 5	07/30/2002	8.04	5.1	528	8	5	0.030 U	0.83	0.050 U	0.83	190	39	280	5.0 U	0.20 U	5.0 U	30	0.010 U	0.0050 U	63	0.020 U	0.340	0.0050 U	6.1	0.010 U	2.1	23	0.020 U
			08/01/2002	7.76	6.1	625	18	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
			08/02/2002	8.08	8.7	302	NS	NS	0.030 U	0.78	0.050 U	0.78	180	39	260	5.0 U	0.20 U	5.0 U	25	NR	NR	62	NR	NR	NR	6.5	NR	2.2	25	NR

Notes:

[a] Total nitrogen is the sum of TKN plus nitrate/nitrite.

[b] Sample collected at the outflow weir of Cell 2.

[c] Laboratory verification requested for reported results where Ortho-P higher than TP.

[d] Turbidity analyzed at lab instead of field due to malfunctioning field turbidity meter.

[e] Sample collected at earth berm at outflow of Cell 1.

-- = No data

SL = Sample lost in transport due to FedEx plane crash.

U = Undetected

NA = Not available due to meter malfunction.

NS = No sample collected.

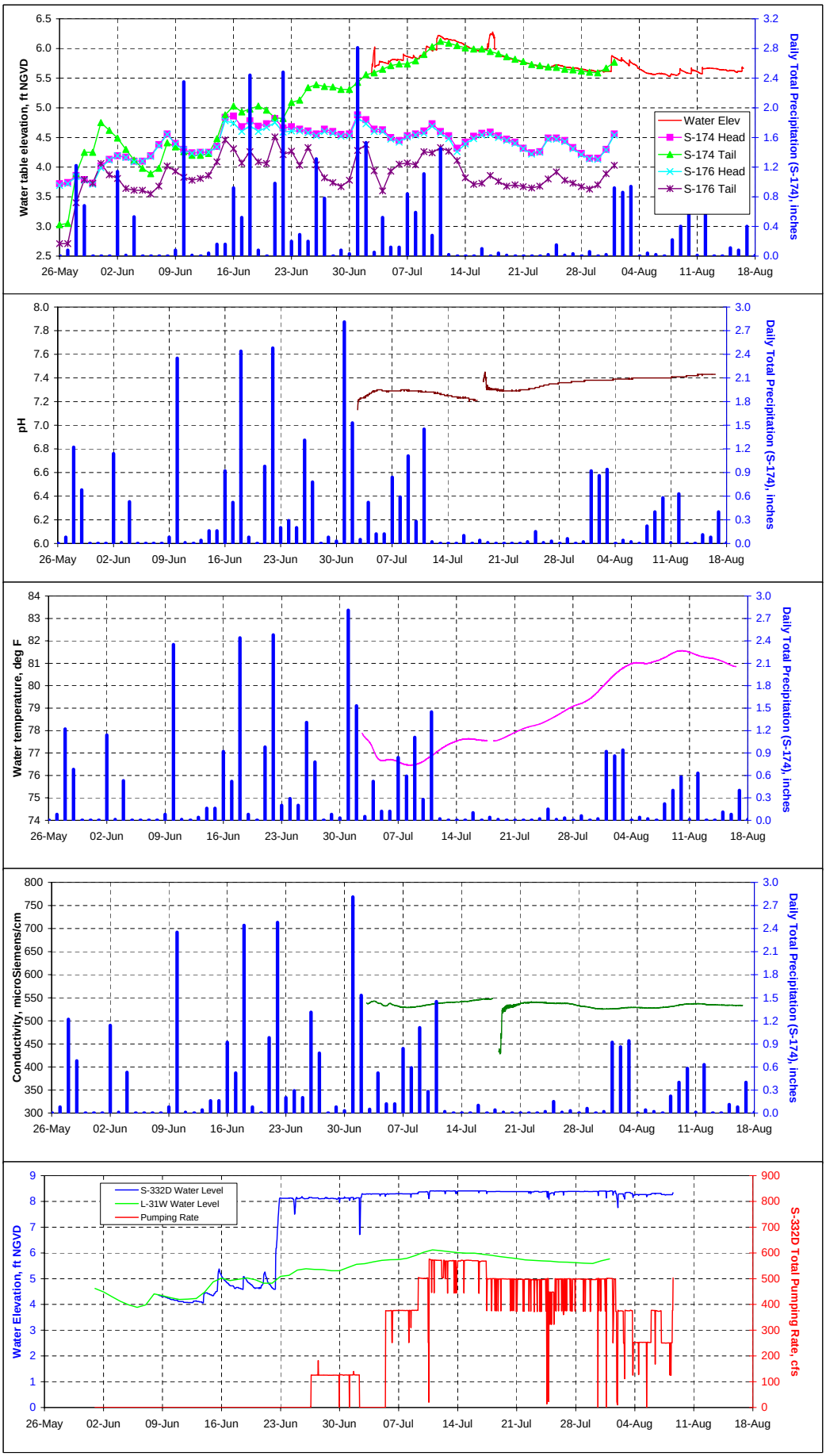
NR = Sample not required, a full set of metals collected only one time per week for Inflow/Outflow samples.

* = potential outlier pending verification.

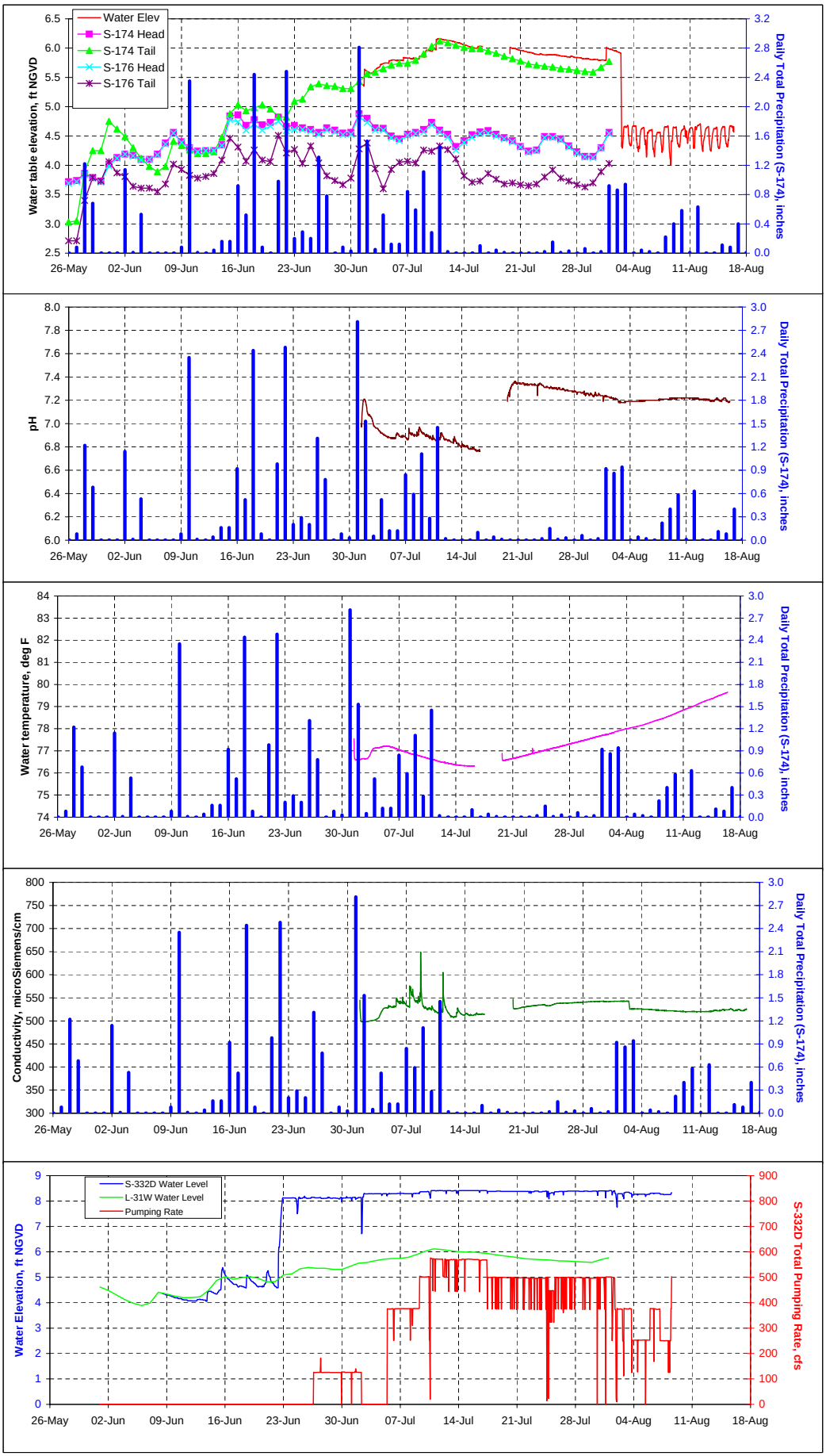
APPENDIX C

Graphical Summaries of Instrumented Groundwater Monitoring Well Data

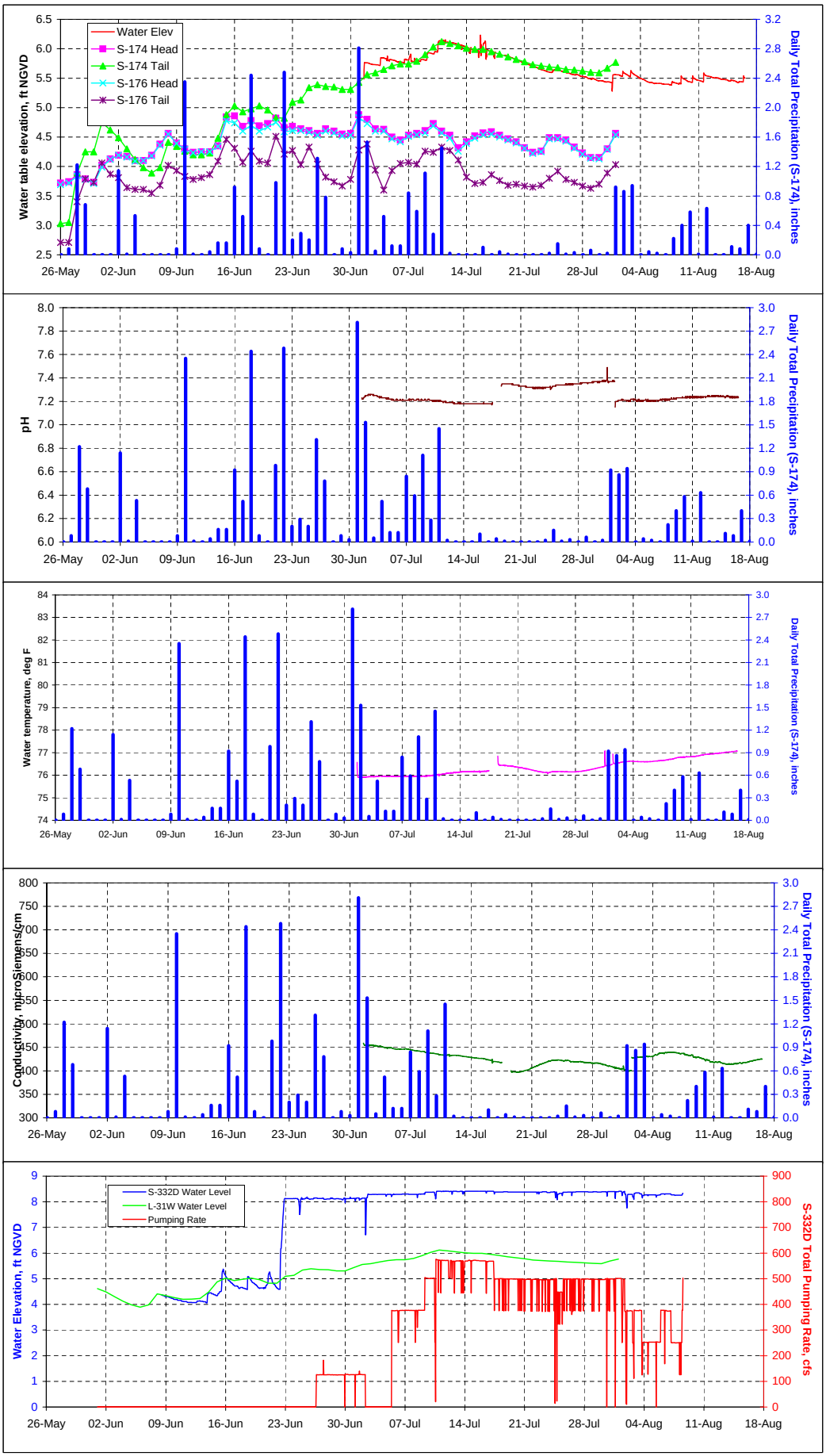
S-332D Detention Area
MW-0003



S-332D Detention Area
MW-0023



S-332D Detention Area
MW-0028



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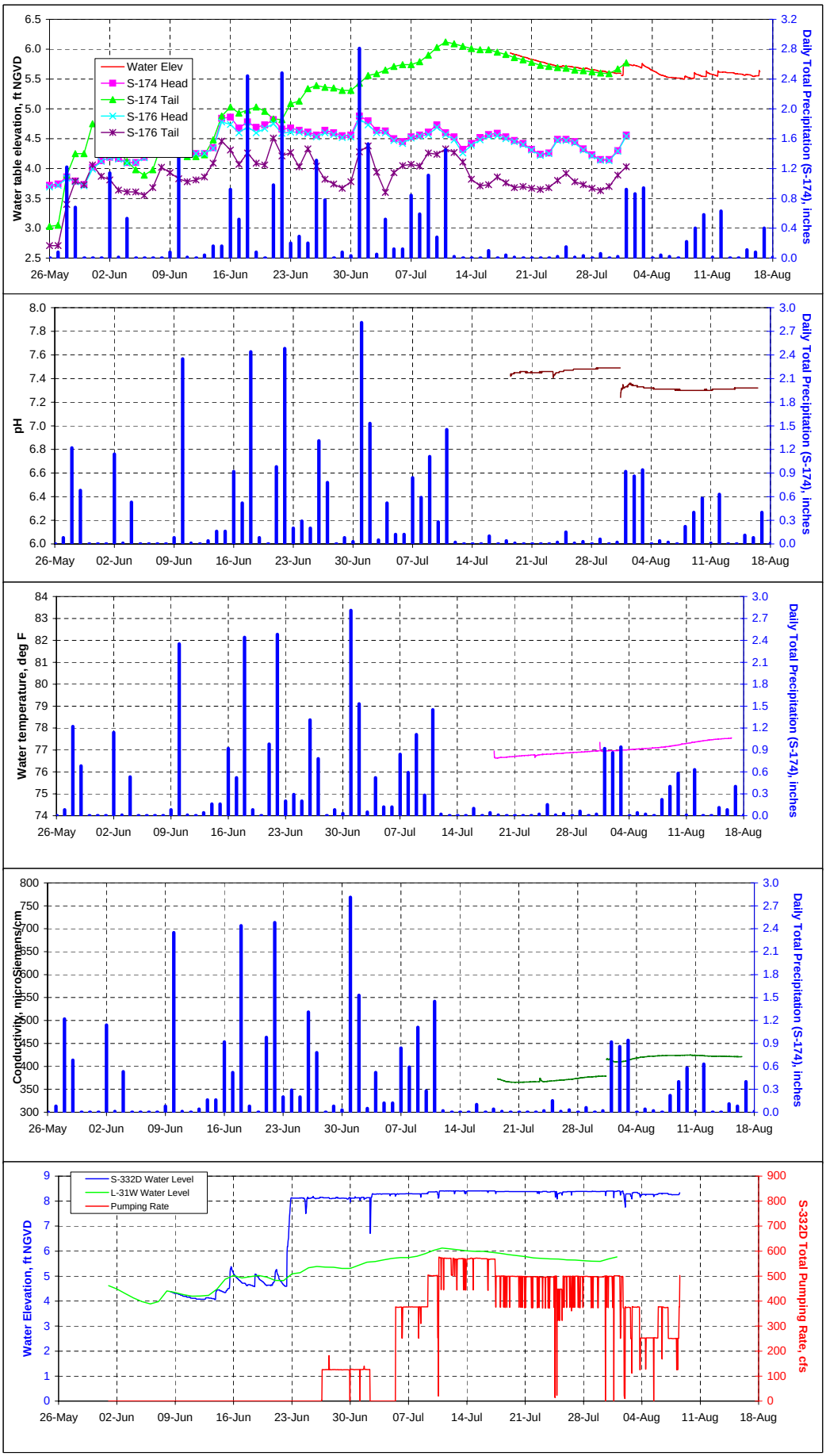
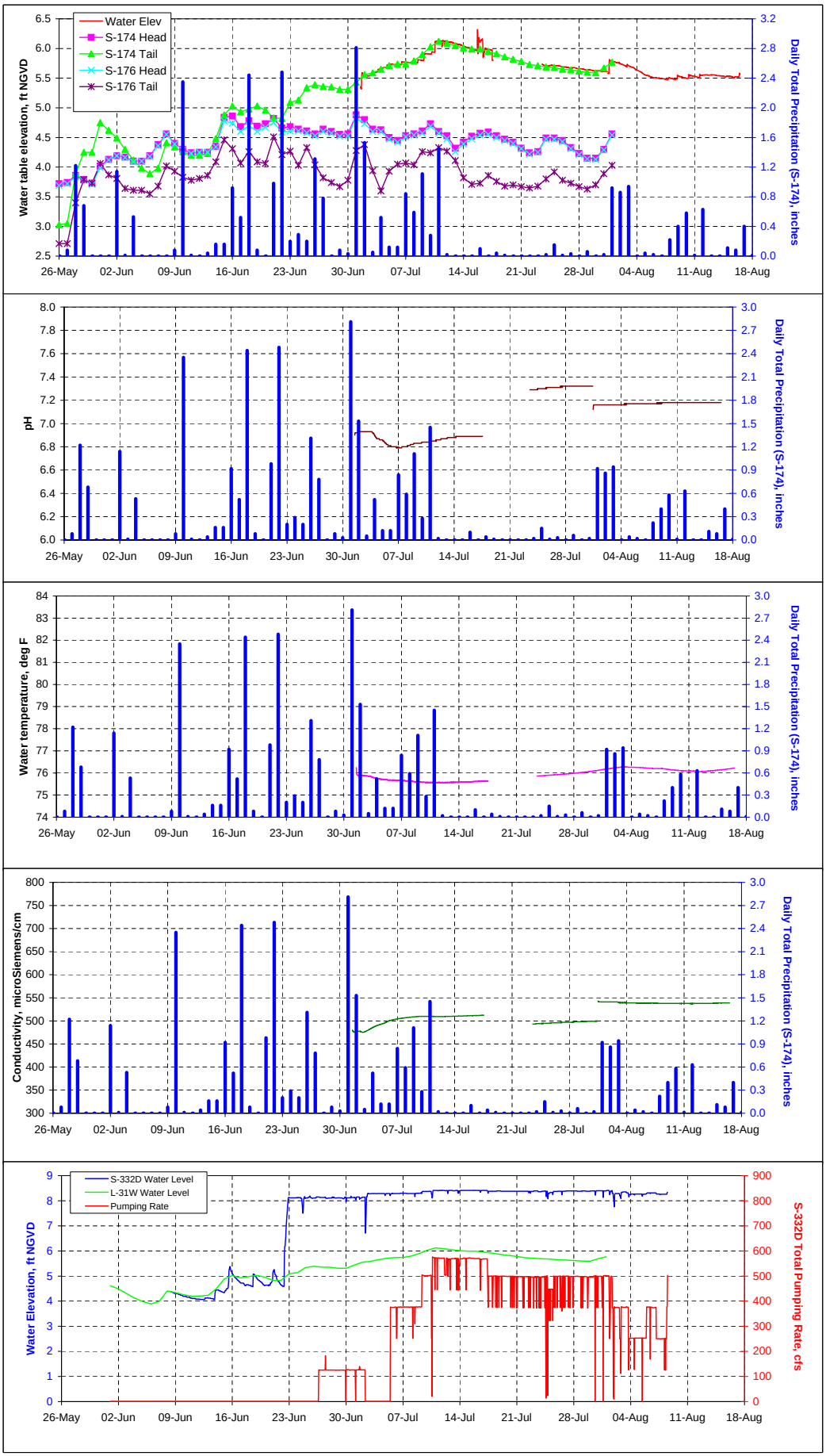
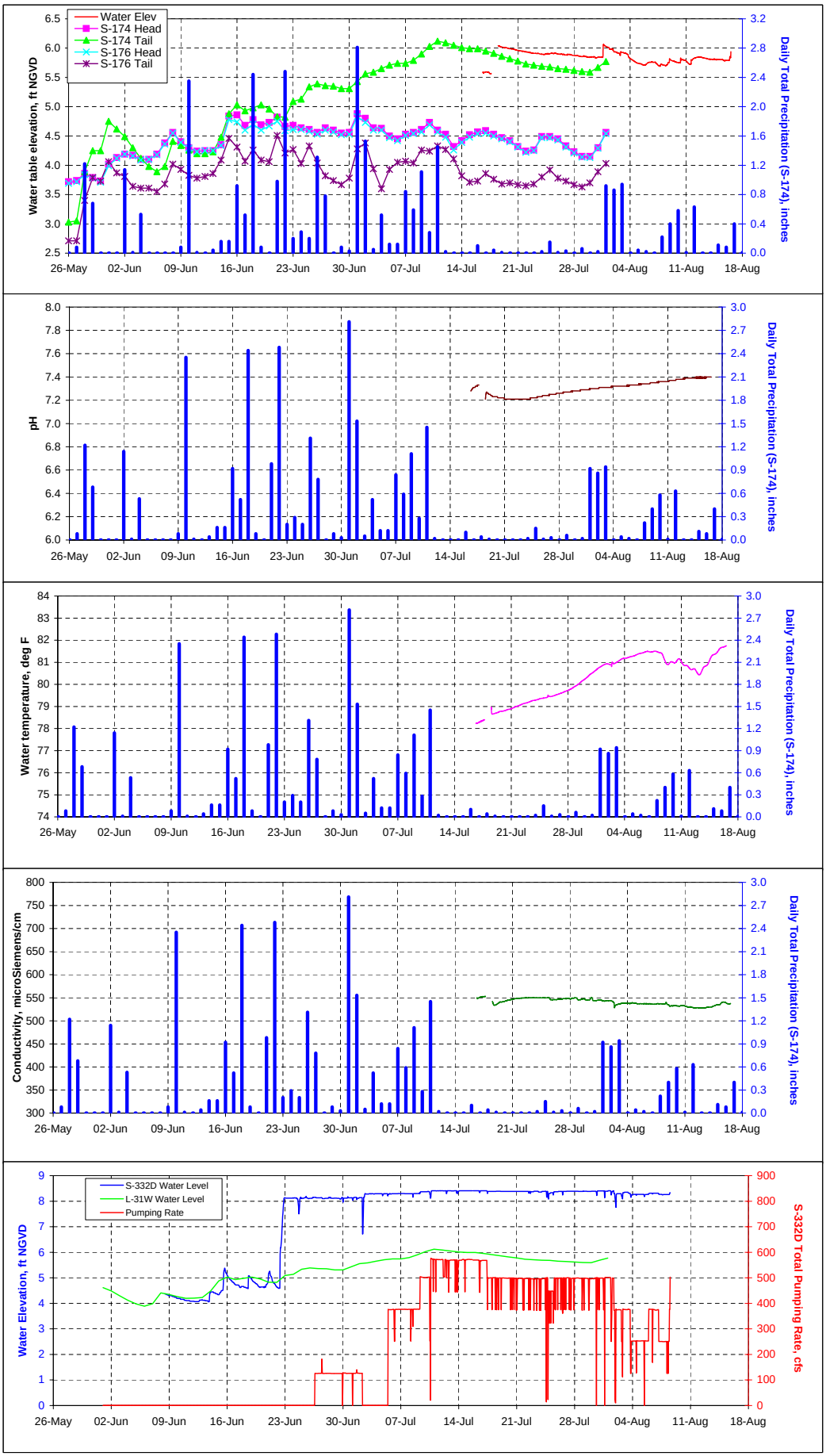
MW-0029



S-332D Detention Area
MW-0031



S-332D Detention Area
MW-0039



APPENDIX D

Pre-Operations and Start-up Ecological Reconnaissance Surveys

Baseline Ecological Characterization of the S-332D Detention Area and Adjacent Wetlands in Everglades National Park, June and July 2002

PREPARED FOR: U.S. Army Corps of Engineers - Jacksonville District

PREPARED BY: CH2M HILL

DATE: September 30, 2002

Introduction

On June 22-23 and July 26-27, 2002, ecological surveys were conducted in the newly constructed S-332D Detention Area and in Everglades National Park (ENP) directly adjacent to the first 410-acre cell (Cell 1) of the impoundment system. The vegetation communities present within the Detention Area included natural emergent macrophyte marshes and remnant tree islands surrounded by open areas of bare rock created by scraping surficial rock-plowed soils to the underlying rock surface. This ecological restoration technique is similar to that employed at the restoration areas within the Hole-In-The-Donut (HID) in ENP, and is intended to allow natural plant succession and periphyton mat development to take place. In this case, the scraped materials were used to form the surrounding berms and allow for inundation to a depth of several feet within the head cell and subsequent cells.

The purpose of the reconnaissance-level study was to record existing ecological and vegetative conditions prior to and during the initial inundation of the site. This memorandum provides a brief overview of the ecological characteristics of natural sawgrass marsh communities adjacent to the project area within ENP, the remnant wetlands within the S-332D Detention Area, and the sampling approach, station locations, and data summaries used to describe these characteristics. Previous data transmittal reports summarized methodologies employed in the analysis; these are briefly restated here. The results of this study characterize the composition and relative abundance of emergent macrophyte and periphyton communities occurring within the S-332D at the onset of flooding of the Detention Area. Future determinations of the effects of water storage on the ecosystem adjacent to and within the Detention Area could be supported by revisiting and repeating the measurements at each quadrat.

Methods

CH2MHILL staff installed permanent one-meter-square quadrats in both ENP and in the S-332D Detention Area. One half-inch rebar wrapped with orange flagging tape was used to permanently mark opposite corners of each quadrat to aid in their future relocation. GPS readings were also taken at each quadrat location to aid in their future relocation. Locations of all quadrats were surveyed in by licensed land surveyors, and ground elevations were measured relative to National Geodetic Vertical Datum (NGVD) at each quadrat post and in the center of each quadrat.

Plant species composition and percent coverage were measured at each quadrat during the initial June sampling, and follow-up measurements were made in July for all quadrats set in

newly scraped areas. Photographs were taken of each quadrat at both sampling times. When present, samples of periphyton mats were collected from all quadrats during each sampling event.

Each of the remnant wetlands in the S-332D Detention Area were visited. The perimeter of each wetland was traversed and delineated using a handheld global positioning system. Dominant vegetative species and the water depth present at the time of sampling at the wetland edge were recorded.

For both sampling events, grab samples of the periphyton mat were collected, preserved, and provided to Dr. Michael Hein of Water & Air Research, Inc. of Gainesville Florida. Dr. Hein identified and estimated the relative abundance of the algal taxa present.

Macrophyte Survey

A total of 20 vegetative quadrats were established during the baseline survey. Of these, seven quadrats were established in ENP adjacent to monitor well and surface water stations CPO2-PSTAT-SW-0006 through CPO2-PSTAT-SW-0010 (see Exhibit D-1). All quadrats were placed at a random location to the south of the existing monitor well. Within the detention area, six quadrats were established in representative habitats in remnant wetlands. An additional seven quadrats were established in open water areas of the three constructed cells to document establishment and growth of periphyton and submerged aquatic vegetation (SAV) in these locations.

Exhibit D-2 provides ground elevations at each of the permanent quadrats. Exhibit D-3 summarizes the total percent coverage by herbaceous and canopy species at each quadrat. Attachment D-1 provides photographs of the different quadrat stations taken during the June 2002 sampling.

ENP Quadrats

Wetlands included for this study within Everglades National Park were dominated in all quadrats by native grass and grass-like species. Sawgrass (*Cladium jamaicense*) ranged in cover from 10 to 80 percent in all quadrats. Saltgrass (*Distichlis spicata*) covered 60 percent of quadrat CPO2-PSTAT-SW-0010. Sand cordgrass (*Spartina bakeri*) covered 45 percent and 65 percent of quadrats CPO2-PSTAT-SW-0009 and -0006, respectively. A total of 26 vascular plant species were recorded in the ENP quadrats. Total cover by vascular plants was relatively sparse, ranging from 68 percent to 117 percent. Common genera of beak-rush (*Rhynchospora* sp.), vines (*Mikania scandens*), and herbaceous marsh plants comprised a relatively minor diverse percentage of total plant cover. Non-native species were not observed in the ENP quadrats. The substrate in almost all of the ENP quadrats was comprised of an uneven and deeply fissured limestone rock outcrop and a variable layer of marl soil and periphyton.

The overall visual aspect of these quadrats and their environs indicate a grassy wet prairie typical of shallowly flooded Everglades habitats on native rock substrate. Future changes in vegetation possibly attributable to changes in water elevation or water nutrient content may be assessed through periodic analysis of vegetative cover and hydroperiod at these quadrats.

EXHIBIT D-1
Quadrat Locations and Remnant Wetlands

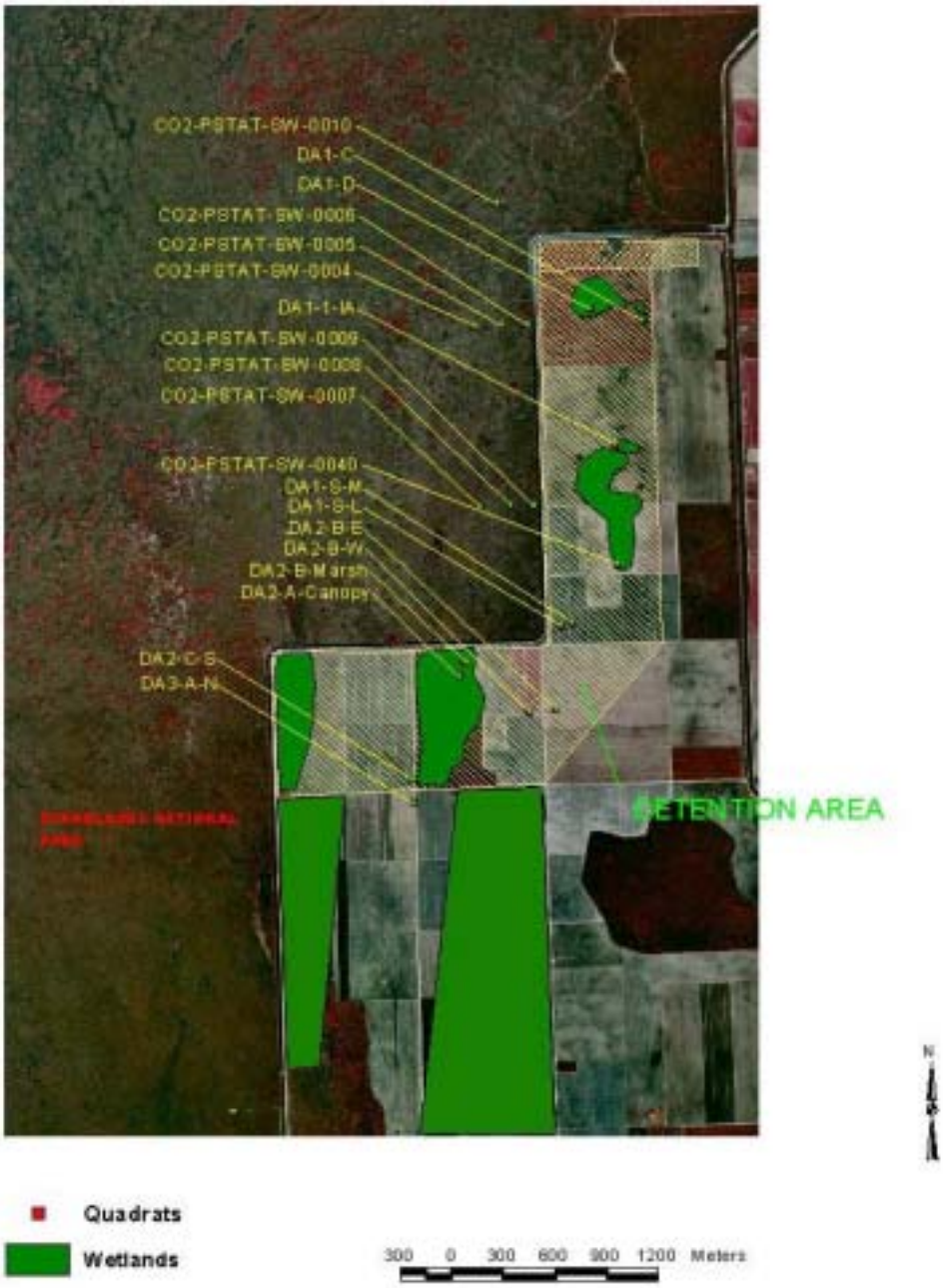


EXHIBIT D-2
Quadrat Elevations

Location	Elevation (Ft NGVD)	Survey Location
DA1-040	4.99	Quadrat Center
DA1-040	5.04	North Rebar
DA1-040	5.42	South Rebar
DA1-1-C	3.83	Quadrat Center
DA1-1-C	6.37	High Water Mark
DA1-1-C	6.00	Low Water Mark
DA1-1-D	5.52	Quadrat Center
DA1-1-D	5.44	Quadrat Corner
DA1-1-D	5.46	Quadrat Corner
DA1-1-IA	5.07	Quadrat Center
DA1-1-IA	5.04	Quadrat Corner
DA1-1-IA	5.11	Quadrat Corner
DA1-1-IB	6.36	Quadrat Center
DA1-1-IB	5.71	North Rebar
DA1-1-IB	5.95	South Rebar
DA1-S-L	5.14	Quadrat Center
DA1-S-L	5.09	East Rebar
DA1-S-L	5.17	West Rebar
DA1-S-M	4.92	Quadrat Center
DA1-S-M	4.90	East Rebar
DA1-S-M	4.97	West Rebar
DA2-A-CANOPY	6.47	Quadrat Center
DA2-A-CANOPY	6.37	North Rebar
DA2-A-CANOPY	6.47	South Rebar
DA2-B-E	4.37	Quadrat Center
DA2-B-E	4.42	East Rebar
DA2-B-E	4.29	West Rebar
DA2-B-MARSH	5.05	Quadrat Center
DA2-B-MARSH	5.05	North Rebar
DA2-B-MARSH	4.97	South Rebar
DA2-B-W	5.23	Quadrat Center
DA2-B-W	5.20	East Rebar
DA2-B-W	5.24	West Rebar
DA2-C-S	4.28	Quadrat Center
DA2-C-S	4.35	North Rebar
DA2-C-S	4.28	South Rebar
DA3-A-N	4.08	Quadrat Center
DA3-A-N	4.34	North Rebar
DA3-A-N	4.17	South Rebar
SW004	6.07	Quadrat Center
SW004	6.14	North Rebar
SW004	6.02	South Rebar
SW005	6.06	Quadrat Center
SW005	5.99	South Rebar
SW005	5.81	North Rebar
SW006	5.11	Quadrat Center
SW006	5.08	South Rebar
SW006	5.14	North Rebar
SW007	5.00	Quadrat Center
SW007	5.02	North Rebar

EXHIBIT D-3

Percent Coverage of Plant Species in 1-Square-Meter Quadrats

Vegetation	Location	CPO2-PSTAT-0004	CPO2-PSTAT-0005	CPO2-PSTAT-0006	CPO2-PSTAT-0007	CPO2-PSTAT-0008	CPO2-PSTAT-0009	CPO2-PSTAT-0010	CPO2-PSTAT-0040	DA1-1-IA	DA1-C	DA1-D	DA1-I	DA1-S-L	DA1-S-M	DA2-A-Canopy	DA2-B-E	DA2-B-Marsh	DA2-B-W	DA2-C-S	DA3-A-N
Baccharis halimifolia	Canopy								90												
Ficus sp.	Canopy											15									
Lygodium japonica	Canopy											2									
Metopium toxiferum	Canopy								1												
Mikania scandens	Canopy								1												
Myrica cerifera	Canopy								20				5			5					
Myrsine floridana	Canopy											3	10			15					
Persea borbonia	Canopy								1				80			50					
Salix caroliniana	Canopy								5												
Tetrazygia bicolor	Canopy															1					
Toxicodendron radicans	Canopy											10				5					
Vitis sp.	Canopy								1			30				50					
	Total								119			60	95			126					
Viola lanceolota	Quadrat			1																	
Ambrosia artemisiifolia	Quadrat									1											
Aster subulatus	Quadrat	1	1	3																	
Baccharis halimifolia	Quadrat								35												
Blechnum serrulatum	Quadrat											18									
Carex sp.	Quadrat										18										
Chara zeylanica	Quadrat									40				8	20					5	3
Chiococca sp.	Quadrat							8													
Cladium jamaicense	Quadrat	19	18	22	70	10	60	14	40												
Desmodium sp.	Quadrat										3										
Ludwigia microcarpa	Quadrat																	12			
Dicanthelium aristatum	Quadrat				1																
Distichlis spicata	Quadrat		2					60													
Eleocharis interstincta	Quadrat				0.5																
Erigeron vernus	Quadrat	1	1			0.5	1	1													
Eupatorium mikanioides	Quadrat										7										
Flaveria linearis	Quadrat					1															
Heliotropium angiospermum	Quadrat																	1			
Iva microcephala	Quadrat					1															
Ludwigia microcarpa	Quadrat										1										
Lycopus rubellus	Quadrat	1					1														
Metopium toxiferum	Quadrat															1					
Mikania scandens	Quadrat	2		1	2				2		6							1			
Muhlenbergia filipes	Quadrat																	1			
Panicum hemitomon	Quadrat									5									1		
Panicum sp.	Quadrat	1	1			2															
Panicum virgatum	Quadrat									5	7								5		
Parthenocissus quinquefolia	Quadrat											5	16			1					
Paspalum sp.	Quadrat							20													
Persea borbonia	Quadrat								1				2								
Pluchea sp.	Quadrat			2					7									5			
Polygala sp.	Quadrat		18			8	8														
Pontedaria cordata	Quadrat										4										
Psychotria nervosa	Quadrat											15	4			5					
Rhynchospora sp. A	Quadrat				0.5																
Rhynchospora sp. B	Quadrat																	5			
Rhynchospora sp. C	Quadrat	33	30	1		35	1	5													
Rhynchospora microcarpa	Quadrat			1																	
Sabatia grandiflora	Quadrat										+							2			
Sagittaria lancifolia	Quadrat										7										
Setaria sp.	Quadrat									1								1			
Solidago sp.	Quadrat				2																
Spartina bakeri	Quadrat		2	65	6	7	45	9													
Spilanthes americanum	Quadrat										1										
Teucrium canadense	Quadrat										+										
Thalia geniculata	Quadrat										3										
Thelypteris sp.	Quadrat								4			5	35			10					
Toxicodendron radicans	Quadrat											5	5			10					
Trachelospermum sp.	Quadrat	9	9	1																	
Unid composite sp. 1	Quadrat																	1			
Unid forb sp 1	Quadrat				0.5																
Unid herb sp. 5	Quadrat				0.5																
Unid herb sp.4	Quadrat								1												
Unid. herb sp 2	Quadrat								2												
Unid. herb sp. 3	Quadrat			1																	
Unid.herb sp.1	Quadrat	1	1		1																
Ptilimnium capillaceum	Quadrat												+								
Panicum rigidulum	Quadrat										+										
Acalypha sp.	Quadrat												+								
Lespedeza hirta	Quadrat												+								
Polygonum sp.A	Quadrat												+								
Vitis sp.	Quadrat											1	3								
	Total	68	83	98	84	64.5	116	117	92	52	57	49	65	8	20	27		29	6	5	3
Periphyton Mat	Quadrat	20	80		80	85	5	80						85	85		80	95			75
Marl (in)	Quadrat					3	1	2.5													
Rock Outcrop	Quadrat	25	100		100		100		10												
Water Depth (ft)	Quadrat			0.54	0.19	0.35	0.29		2.44	2.7	3.05	1.71	1.38	2.23	2.48		2.37		1.55	1.89	1.98

S-332D Detention Area Quadrats

Six quadrats were established on the remnant wetlands in the S-332D Detention Area. Four of the six quadrats were established in tree islands while the other two were established in open marsh areas. Ground cover and canopy cover overlying the quadrats were estimated for each quadrat in each tree island.

A broad assemblage of wetland plants was recorded within the quadrats, with no single species dominant. The types of communities present varied from dense tree and shrub islands within the wetland interior, shallow grass-dominated marshes on exposed rock substrate, willow-head islands, and emergent marshes. A total of 12 species were recorded in the canopy within the tree islands or wetland interiors. A total of 38 species of grasses, shrubs, and herbaceous plant species were identified in or adjacent to the quadrats.

Sawgrass was dominant in only one quadrat (CO2-PSTAT-0040) in contrast to the majority of those established in ENP. Swamp fern (*Thelypteris* sp.) was dominant in two other quadrats (DA1-I and DA2-A) with coverage of 35 percent and 10 percent, respectively. Poison ivy (*Toxicodendron radicans*) exhibited a coverage of 10 percent in DA2-A. The dominant species in the remaining quadrats were the sedge *Carex*, the fern *Blechnum serrulatum*, and other species. Quadrats in open, scraped areas showed little vascular plant growth, but relatively consistent development of periphyton mats in water ranging from a few inches to over 1.5 feet in depth.

Two of the four quadrats with canopy coverage were dominated by red bay (*Persea borbonia*), with 80 percent and 50 percent coverage in quadrats established in DA1-I and DA2-A, respectively. DA2-A also exhibited 50 percent coverage in the canopy layer of the native grape vine *Vitis* sp. *Vitis* sp. was also the dominant canopy species (30 percent) in the quadrat established in DA1-D. Quadrat CPO2-PSTAT-0040 had 90 percent canopy coverage of saltbush (*Baccharis halimifolia*).

When present, standing water depths ranged from 1.5 to 3.0 feet deep in quadrats within the interior of the Detention Area. This range appeared consistent with the natural ranges of water depths for the wetland types present. Tree islands were not flooded at the time of sampling, and are normally expected to have saturated conditions for about one month in a year. The average depth and duration of hydroperiods within the wetland of the Detention Area can be estimated in the future as the difference between the average water elevation and the measured ground elevation, reported in Exhibit D-2. Future water elevation analyses and a review of corresponding changes in quadrat vegetative cover will provide a means of quantifying the potential benefits of rehydration to the historically wetlands within the Detention Area.

Periphyton

Exhibits D-4 and D-5 list the taxa and relative abundance of periphyton found in samples collected during the two sampling visits. Exhibits D-6 and D-7 provide summary statistics of the periphyton communities sampled.

Periphyton is a typical component of “sparse” saw grass communities found in the Everglades. Sparse saw grass communities occur at lower elevations on a substrate typically consisting of shallow peat or marl. Marl and limerock outcrops were noted at all ENP

EXHIBIT D-4

Relative Abundance (Percent) of Periphyton Taxa, June 22-23, 2002

ORGCODE	DIVCODE	ORGNAM	0004 062202 1430	0005 062202 1445	0006 062202 1500	0007 062202 1245	0008 062202 1300	0009 062202 1320	0010 062202 1550	0040 062202 1640	1-D 062302 1045	1-I 062302 1235	2-A 062302 1550	2-BE 062302 1700
ANA AMB	01	ANABAENA AMBIGUA	--	--	--	--	--	--	--	--	--	--	--	88.3
G ANA	01	ANABAENA SP	--	4.9	14.8	--	--	--	4.2	1.2	--	--	--	--
APHN FLO	01	APHANIZOMENON FLOS-AQUAE	--	--	--	1.1	2.6	--	--	--	--	--	--	--
APHN ISS	01	APHANIZOMENON ISSATSCHENKOI	--	--	--	4.1	--	--	--	--	--	--	--	--
APH DEL	01	APHANOCAPSA DELICATISSIMA	--	--	--	1.0	2.7	--	--	2.9	--	4.7	2.9	--
APH GRE	01	APHANOCAPSA GREVILLEI	--	0.2	--	--	--	--	--	--	--	--	--	--
APH HOL	01	APHANOCAPSA HOLSATICA	1.7	--	1.5	--	2.6	4.9	--	--	--	10.1	1.2	--
APH INC	01	APHANOCAPSA INCERTA	--	--	--	--	--	--	2.3	--	--	--	--	--
APH PLA	01	APHANOCAPSA PLANCTONICA?	--	--	--	4.1	14.4	--	5.5	10.1	--	--	1.9	--
G APH	01	APHANOCAPSA SP	--	2.0	--	--	--	--	--	--	--	--	--	--
APHA BUL	01	APHANOTHECA BULLOSA?	--	--	--	12.1	--	--	--	--	--	--	--	--
APHA CLA	01	APHANOTHECE CLATHRATA	--	4.0	--	--	4.4	5.1	--	--	--	--	--	--
APHA MIC	01	APHANOTHECE MICROSCOPICA	--	--	1.7	--	--	--	--	--	--	--	--	--
APHA SMI	01	APHANOTHECE SMITHII	4.8	--	--	--	--	--	--	1.3	1.7	4.3	6.3	--
APHA STA	01	APHANOTHECE STAGNINA	0.4	1.3	0.4	1.5	2.4	1.1	1.7	12.9	8.6	--	--	--
G CALO	01	CALOTHRIX SP	8.2	--	--	--	--	--	1.5	--	--	3.1	--	--
CHR LIM	01	CHROOCOCCUS LIMNETICUS	0.2	--	--	--	--	--	--	--	--	--	--	--
CHR MINI	01	CHROOCOCCUS MINIMUS	--	3.9	0.9	0.5	--	--	--	1.3	4.1	3.4	2.2	--
CHR MIN	01	CHROOCOCCUS MINUTUS	0.2	--	0.8	0.1	--	4.5	--	1.5	0.7	--	--	--
CHR PRE	01	CHROOCOCCUS PRESCOTTII	--	--	--	--	--	--	--	--	0.4	--	--	--
CHR RUP	01	CHROOCOCCUS RUPESTRIS	--	--	--	--	--	--	--	--	--	0.5	7.7	--
G CHR	01	CHROOCOCCUS SP	0.6	0.4	--	--	--	--	--	--	--	--	--	--
CHR TUR	01	CHROOCOCCUS TURGIDUS	--	--	--	0.8	--	--	--	0.2	--	--	--	--
CHR VAR	01	CHROOCOCCUS VARIUS?	--	--	--	--	--	6.6	--	2.6	6.0	1.9	--	--
G CYL	01	CYLINDROSPERMUM SP	--	--	11.2	--	--	--	--	--	--	--	--	--
G FRE	01	FREMYELLA SP	0.2	--	13.8	2.1	--	--	1.5	--	--	--	--	--
GLO GRA	01	GLOEOCAPSA GRANOSA	--	--	--	--	--	--	--	--	--	0.5	--	--
G GLO	01	GLOEOCAPSA SP	4.1	0.7	5.9	2.2	7.7	2.3	--	0.7	0.2	3.9	--	--
JAA ANG	01	JAAGINEMA ANGUSTISSIMUM	2.3	--	24.2	--	--	--	3.8	5.0	15.7	2.4	24.6	--
JAA MIN	01	JAAGINEMA MINIMA	--	--	--	--	--	5.3	--	--	--	5.1	--	--
LEI EPI	01	LEIBLEINIA EPIPHYTICA	--	--	--	1.8	--	--	--	--	--	--	--	--
LEP LAG	01	LEPTOLYNGBYA LAGERHEIMII	1.9	--	--	--	--	3.1	--	--	2.6	--	3.5	--
LEP PER	01	LEPTOLYNGBYA PERELEGANS?	--	--	--	--	--	--	--	--	--	--	8.5	--
LIM AMP	01	LIMNOTHRIX AMPHIGRANULATA	0.6	--	--	3.9	--	--	--	--	3.9	4.3	--	--
MER PUN	01	MERISMOPEDIA PUNCTATA	--	--	--	0.2	--	--	--	--	--	--	--	--
MIC LAC	01	MICROCOLEUS LACUSTRIS	--	--	--	17.4	--	--	--	--	--	--	--	--
MIC SOC	01	MICROCOLEUS SOCIATUS?	15.9	--	--	--	--	--	--	--	--	--	--	--
MIC NAT	01	MICROCYSTIS NATANS	--	11.5	8.0	--	--	--	--	--	--	--	--	--
MIC SMI	01	MICROCYSTIS SMITHII	1.7	--	--	--	--	--	--	--	--	--	--	--
NOD SPU	01	NODULARIA SPUMIGENA	--	--	--	--	1.4	--	2.2	--	--	--	--	--
NOS COM	01	NOSTOC COMMUNE	--	0.7	--	--	--	--	--	--	--	--	--	--
OSC LIMO	01	OSCILLATORIA LIMOSA	3.7	--	--	4.2	--	--	--	--	--	--	--	--
PHO AER	01	PHORMIDIUM AERUGINEO-CAERULEUM	--	--	--	--	--	--	12.5	6.5	1.5	8.2	--	--
PHO DIG	01	PHORMIDIUM DIGUETII	--	--	--	--	--	--	--	3.3	--	--	--	--
PHO FOR	01	PHORMIDIUM FORMOSUM	16.4	--	--	--	--	0.5	--	3.1	--	7.5	1.8	--
PHO WIL	01	PHORMIDIUM WILLEI?	--	--	--	--	--	--	--	--	--	4.8	--	--
PLA SUB	01	PLANKTOLYNGBYA SUBTILIS	2.5	--	12.9	2.8	13.9	8.6	8.0	15.3	25.1	19.1	18.9	--
PLE TOM	01	PLECTONEMA TOMASINIANA?	--	5.0	--	--	--	--	--	--	--	--	--	--
PSE LIM	01	PSEUDANABAENA LIMNETICA	6.7	3.5	3.2	6.6	--	--	15.6	--	2.8	1.6	13.3	3.0
PSE MON	01	PSEUDANABAENA MONILIFORMIS	--	--	--	--	--	--	--	0.5	--	--	--	5.0
SCH ARE	01	SCHIZOTHRIX ARENARIA?	8.4	19.0	--	11.2	13.9	5.1	2.2	--	--	--	--	--
SCH CAL	01	SCHIZOTHRIX CALCICOLA	4.2	1.1	--	--	4.0	11.3	4.4	--	--	2.4	3.6	--
SCH FRI	01	SCHIZOTHRIX FRIESII?	--	--	--	--	--	17.0	--	--	--	--	--	--
SCY HOF	01	SCYTONEMA HOFMANII?	3.0	10.3	--	4.8	13.2	1.5	11.5	17.1	10.9	11.2	3.4	3.0
SCY MYO	01	SCYTONEMA MYOCHROUS?	0.2	12.0	--	--	--	6.2	12.5	7.0	2.6	--	--	--
G SCY	01	SCYTONEMA SP?	--	--	--	11.3	--	--	--	--	6.8	--	--	--
SCY TOL	01	SCYTONEMA TOLYPOTHRICHOIDES?	3.0	2.0	--	--	--	--	7.1	4.6	0.7	--	--	--
STI PAN	01	STIGONEMA PANNIFORME?	1.8	--	--	1.2	2.5	13.9	3.5	1.6	1.6	--	--	--
G STIG	01	STIGONEMA SP	--	3.3	--	--	3.6	--	--	--	2.5	--	--	--
G SYNE	01	SYNECHOCCOCCUS SP	--	--	--	--	--	2.7	--	0.3	0.9	0.5	0.1	--

EXHIBIT D-4

Relative Abundance (Percent) of Periphyton Taxa, June 22-23, 2002

ORGCODE	DIVCODE	ORGNAM	0004 062202 1430	0005 062202 1445	0006 062202 1500	0007 062202 1245	0008 062202 1300	0009 062202 1320	0010 062202 1550	0040 062202 1640	1-D 062302 1045	1-I 062302 1235	2-A 062302 1550	2-BE 062302 1700
TOL FRA	01	TOLYPOTHRIX FRAGILIS?	7.0	2.6	--	--	--	--	--	--	--	--	--	--
G TOL	01	TOLYPOTHRIX SP	--	0.5	--	--	--	--	--	--	--	--	--	--
HYA DIS	03	HYALOTHECA DISSILIENS	--	--	--	--	--	--	--	0.6	--	--	--	--
G OED	03	OEDOGONIUM SP	--	--	--	--	--	--	--	0.3	--	--	--	--
SCE QUA	03	SCENEDESMUS QUADRICAUDA	--	--	--	--	--	--	--	0.2	--	--	--	--
SCE SUB	03	SCENEDESMUS SUBSPICATUS	--	--	--	--	--	--	--	--	--	--	--	0.3
G SCH	03	SCHIZOMERIS SP	--	--	--	--	10.8	--	--	--	--	--	--	--
G SCHI	03	SCHIZOTHRIX SP	--	11.1	--	4.8	--	--	--	--	--	--	--	--
G STAU	03	STAURASTRUM SP	--	--	--	--	--	0.1	--	--	--	--	--	--
ACHN MIN	04	ACHNANTHIDIUM MINUTISSIMUM	--	--	--	--	--	0.1	--	--	0.3	--	--	--
COC PLA LI	04	COCCONEIS PLACENTULA V LINEATA	--	--	0.2	--	--	--	--	--	--	--	--	--
CYM MIC	04	CYMBELLA MICROCEPHALA	--	--	--	--	--	--	--	--	--	0.1	--	--
DIP OVA	04	DIPLONEIS OVALIS	--	--	--	--	--	--	--	--	0.1	--	--	--
ENC EVE	04	ENCYONEMA EVERGLADIANUM	--	--	0.2	--	--	--	--	--	--	--	--	--
MAS SMI LA	04	MASTOGLOIA SMITHII V LACUSTRIS	0.1	--	--	0.1	--	0.1	--	0.1	0.1	0.2	--	--
NAV RAD PA	04	NAVICULA RADIOSA V PARVA	--	--	--	--	--	--	--	--	--	--	--	0.2
NIT SEM	04	NITZSCHIA SEMIROBUSTA	--	--	0.4	--	--	0.1	--	--	--	--	--	--
G NIT SM	04	NITZSCHIA SP (SMALL)	--	--	--	--	--	--	--	--	--	--	--	0.2

EXHIBIT D-5

Relative Abundance (Percent) of Periphyton Taxa, July 26-27, 2002

ORGCODE	DIVCODE	ORGNAM	0004 072602 1145	0005 072602 1150	0006 072602 1200	0007 072602 1230	ENP-FD1 072602 1235	0008 072602 1240	0009 072602 1245	0010 072602 1110	DA1-C 072602 1600	DA1-I 072702 0945	DA1-1-IA 072602 1645	DA1-S-L 072702 0835	DA1-S-M 072702 0840	DA1-I040 072602 0900	DA2AMAR. 072702 1130	DA2-B-E 072702 1100	DA-FD1 072702 1105	DA2-B-W 072702 1110	DA3-A-N 072702 1230
ANA AFF	01	ANABAENA AFFINIS	--	--	--	--	--	--	0.8	0.7	--	--	--	3.1	--	--	--	--	--	--	4.1
ANA AMB	01	ANABAENA AMBIGUA	--	2.4	--	--	--	2.9	--	0.8	1.0	--	--	0.9	3.8	6.1	1.1	--	4.7	2.0	2.9
ANA CUN	01	ANABAENA CUNNINGTONII	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.0	--	4.1
G ANA	01	ANABAENA SP	1.3	0.7	--	--	--	--	--	--	--	--	--	--	3.6	--	--	--	--	--	--
APHN FLO	01	APHANIZOMENON FLOS-AQUAE	--	--	--	--	--	--	--	--	--	--	--	2.8	6.5	--	--	--	--	--	6.7
APH CON	01	APHANOCAPSA CONFERTA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14.6
APH DEL	01	APHANOCAPSA DELICATISSIMA	--	1.3	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--
APH GRE	01	APHANOCAPSA GREVILLEI	5.1	--	1.1	--	--	--	--	5.7	--	--	--	--	--	0.5	--	--	--	--	--
APH HOL	01	APHANOCAPSA HOLSATICA	1.1	1.9	--	1.0	1.5	--	--	--	--	--	--	--	--	--	1.7	--	--	--	--
APH PLA	01	APHANOCAPSA PLANCTONICA?	4.8	3.5	0.4	7.1	3.9	4.0	5.2	2.2	2.6	--	--	--	--	1.0	--	--	--	--	--
APHA CLA	01	APHANOTHECE CLATHRATA	--	3.8	1.1	1.4	--	5.0	4.2	--	2.4	3.2	--	--	--	--	--	--	--	--	--
APHA SMI	01	APHANOTHECE SMITHII	3.7	--	1.1	1.0	--	--	--	5.7	--	1.6	--	--	--	--	2.3	--	--	--	2.0
APHA STA	01	APHANOTHECE STAGNINA	0.4	0.6	0.4	9.5	5.0	1.7	9.3	0.6	0.4	1.4	--	0.6	--	7.5	8.7	--	--	--	2.3
APHA VAR	01	APHANOTHECE VARIABILIS?	--	--	--	--	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G CALO	01	CALOTHRIX SP	--	1.0	0.7	4.2	3.0	5.6	3.2	1.1	--	--	--	--	--	4.6	--	--	--	--	--
CHR LIM	01	CHROOCOCCUS LIMNETICUS	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHR MINI	01	CHROOCOCCUS MINIMUS	0.8	2.5	--	1.2	--	0.2	--	1.1	0.4	0.6	0.9	0.6	2.6	--	0.8	0.4	--	3.8	2.9
CHR MIN	01	CHROOCOCCUS MINUTUS	0.1	--	0.4	0.5	2.8	1.5	1.3	--	--	0.2	0.3	--	--	0.2	0.3	--	--	0.3	--
CHR VAR	01	CHROOCOCCUS VARIUS?	--	6.8	--	--	1.0	--	8.5	7.2	--	--	--	--	--	1.0	--	--	--	--	--
G FRE	01	FREMYELLA SP	--	0.6	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLO GRA	01	GLOEOCAPSA GRANOSA	--	--	--	1.0	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G GLO	01	GLOEOCAPSA SP	4.0	1.3	--	1.0	0.5	8.1	--	--	--	--	--	0.3	0.5	0.5	2.3	--	--	--	2.3
GLO MEM	01	GLOEOTHECE MEMBRANACEAE	--	--	--	4.8	0.3	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--
G GLOT	01	GLOEOTHECE SP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.2	--	--	--	--
JAA ANG	01	JAAGINEMA ANGUSTISSIMUM	6.4	1.2	6.1	8.3	7.6	--	0.8	2.7	10.1	14.2	24.5	15.1	18.1	10.6	8.5	4.0	9.7	34.4	20.5
JAA MIN	01	JAAGINEMA MINIMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.5	6.7	--	--
LEI EPI	01	LEIBLEINIA EPIPHYTICA	--	--	--	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LEP LAG	01	LEPTOLYNGBYA LAGERHEIMII	11.8	--	6.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8
LEP PER	01	LEPTOLYNGBYA PERELEGANS?	--	--	5.7	6.9	9.7	--	--	--	19.9	1.7	--	--	--	3.0	4.9	--	--	--	--
LIM AMP	01	LIMNOTHRIX AMPHIGRANULATA	--	--	2.4	--	--	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--
MER DUP	01	MERISMOPEDIA DUPLEX	--	--	--	--	--	--	--	--	--	3.2	--	1.1	--	--	--	--	--	--	--
MER GLA	01	MERISMOPEDIA GLAUCA	--	--	--	--	--	--	--	--	2.8	--	--	--	--	--	1.1	5.4	0.7	1.1	--
MER TEN	01	MERISMOPEDIA TENUISSIMA	--	--	--	--	--	--	--	--	2.1	--	2.1	0.6	1.6	--	--	2.8	6.7	1.1	--
NOD SPU	01	NODULARIA SPUMIGENA?	--	--	--	8.1	10.6	8.1	10.4	9.2	--	--	--	--	--	--	2.8	--	--	1.6	--
PHO AER	01	PHORMIDIUM AERUGINEO-CAERULEUM	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11.7	--	5.8
PHO AMP	01	PHORMIDIUM AMPHIBIUM	--	--	12.8	2.4	--	15.6	5.5	3.2	1.6	--	3.2	--	3.2	--	3.8	3.7	1.0	--	1.8
PHO FOR	01	PHORMIDIUM FORMOSUM	--	--	2.0	--	--	--	3.8	3.8	--	--	--	--	--	1.5	--	4.9	--	--	4.4
PHO WIL	01	PHORMIDIUM WILLEI?	--	--	3.9	--	--	--	--	5.4	--	--	--	--	--	--	--	--	--	--	4.7
PLAN CON	01	PLANKTOLYNGBYA CONTORTA	--	--	--	--	--	--	--	5.4	--	--	--	--	--	--	--	--	--	--	--
PLA SUB	01	PLANKTOLYNGBYA SUBTILIS	11.0	3.3	3.3	14.0	16.4	3.9	14.8	5.8	8.0	3.0	1.7	1.7	11.1	24.1	11.3	3.5	3.3	14.6	--
PLA MOU	01	PLANKTOTHRIX MOUGEOTII	--	--	4.8	--	--	--	--	--	--	2.9	2.1	0.9	--	--	--	--	--	--	--
PSE LIM	01	PSEUDANABAENA LIMNETICA	--	6.9	25.7	4.4	10.3	2.1	--	2.7	16.1	17.2	8.0	15.9	5.2	3.6	6.9	9.7	8.3	16.4	6.7
PSE MON	01	PSEUDANABAENA MONILIFORMIS	1.1	4.8	10.0	1.4	2.5	1.6	5.5	1.8	1.9	8.4	1.3	5.4	4.0	2.0	3.4	16.5	11.7	12.4	--
PSE PAP	01	PSEUDANABAENA PAPILLATERMINATA?	--	--	--	--	--	--	--	--	--	9.3	4.9	6.0	1.6	--	--	12.7	11.3	2.2	--
G PSE	01	PSEUDANABAENA SP	--	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SCH ARE	01	SCHIZOTHRIX ARENARIA?	5.7	3.5	--	--	5.7	8.9	5.5	13.6	1.6	--	--	--	--	11.2	12.1	--	--	6.2	--
SCH CAL	01	SCHIZOTHRIX CALCICOLA	--	4.3	--	--	--	--	--	7.1	--	--	--	--	--	4.3	--	--	--	--	--
SCH FRI	01	SCHIZOTHRIX FRIESII?	19.0	28.5	4.3	0.6	0.6	13.1	3.6	--	--	--	--	--	--	2.5	2.8	--	--	--	--
SCY CRI	01	SCYTONEMA CRISPUM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5	--	--	--	--
SCY HOF	01	SCYTONEMA HOFMANII?	9.3	19.0	--	10.5	7.8	10.2	12.7	6.8	--	--	--	--	--	13.0	7.0	--	--	--	3.5
SCY MYO	01	SCYTONEMA MYOCHROUS?	10.3	1.6	--	--	--	5.0	--	5.6	--	--	--	--	--	--	--	--	--	--	--
G SCY	01	SCYTONEMA SP?	0.5	--	--	4.5	5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STI PAN	01	STIGONEMA PANNIFORME?	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G SYNE	01	SYNECHOCCOCCUS SP	--	--	0.5	1.4	1.5	0.8	2.2	1.6	--	--	--	--	--	0.7	0.6	--	--	--	--
ANK FAL	03	ANKISTRODESMUS FALCATUS	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--
COE MIC	03	COELASTRUM MICROPORUM	--	--	--	0.7	--	--	--	--	--	1.6	--	--	--	--	1.1	0.7	2.0	--	0.6
COS BOT	03	COSMARIUM BOTRYTIS	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--
COS EXI	03	COSMARIUM EXIGUUM	--	--	0.1	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--
COS GRAN	03	COSMARIUM GRANATUM	--	--	0.1	--	--	--	--	--	0.3	--	0.3	--	--	--	0.1	--	--	--	--
G COS	03	COSMARIUM SP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.2	--	0.1
COS SUBR	03	COSMARIUM SUBRENIFORME	--	--	--	--	--	--	--	--	--	--	--	--	0.3	--	--	0.2	0.2	0.1	--
COS TRI	03	COSMARIUM TRILOBULATUM	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--
DIC PUL	03	DICTYOSPHAERIUM PULCHELLUM	--	--	--	--	--	--	--	--	--	1.6	--	--	--	--	--	0.7	--	--	--
EUD ELE	03	EUDORINA ELEGANS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7	--	--
G MOU	03	MOUGEOTIA SP	--	--	--	--	--	--	--	--	1.1	0.3	0.4	1.0	2.1	--	0.4	0.7	0.7	--	--
G OED	03	OEDOGONIUM SP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--
OOC PAR	03	OOCYSTIS PARVA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	0.2	--	--
PED BOR	03	PEDIASTRUM BORYANUM	--	--	--	--	--	--	--	--	1.7	--	--	--	--	--	--	--	--	--	--
PED DUP	03	PEDIASTRUM DUPLEX	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2
SCE BIJ	03	SCENEDESMUS BIJUGA	--	--	--	--	--	--	--	--	--	--	0.3	--	--	0.2	--	--	--	--	--
SCE GUT	03	SCENEDESMUS GUTWINSKII	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--	0.7	--	--	--
SCE QUA	03	SCENEDESMUS QUADRICAUDA	--	--	--	--	--	--	--	--	--	--	0.3	--	--	--	0.6	0.4	--	--	--
SCE SOL	03	SCENEDESMUS SOLI?	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--
SCE SUB	03	SCENEDESMUS SUBSPICATUS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	--	--	0.6
SEL BIB	03	SELENASTRUM BIBRAIANUM	--	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--	--	--	--
G SPI	03	SPIROGYRA SP	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
STAU HEX	03	STAURASTRUM HEXACERUM	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	0.2	--	--	--
STAU TET	03	STAURASTRUM TETRACERUM	--	0.1	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	0.2	--	--
TET CAU	03	TETRAEDRON CAUDATUM	0.1	--	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TET MIN	03	TETRAEDRON MINIMUM	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--
UN CHL FI	03	UNID CHLOROPHYCEAE FILAMENT BASAL CELLS	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--	--	3.5	1.7	--	--
ACHN MIN	04	ACHNANTHIDIUM MINUTISSIMUM	--	--	0.2	--	--	--	--	--	0.6	0.3	0.1	--	--	--	--	--	--	--	--
BAC PAX	04	BACILLARIA PAXILLIFER	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
BRA VIT	04	BRACHYSIRA VITREA	--	0.4	1.4	0.1	--	--	0.2	0.1	14.9	22.0	39.1	39.3	30.6	0.2	3.2	10.0	7.0	1.5	0.3
CYM MIC	04	CYMBELLA MICROCEPHALA	--	--	1.6	0.4	0.6	--	1.3	--	8.5	4.9	9.1	1.6	0.8	0.5	3.7	0.4	0.5	--	--
ENC EVE	04	ENCYONEMA EVERGLADIANUM	--	--	0.4	0.1	--	0.1	0.3	--	--	--	--	--	0.1	--	0.4	0.2	--	0.1	--
ENC MIN	04	ENCYONEMA MINUTUM	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--
ENC MIN PS	04	ENCYONEMA MINUTUM V PSEUDOGRACILIS	--	--	0.1	--	0.3	--	0.1	--	0.2	0.1	0.1	--	--	--	0.1	--	--	--	--
FRA DEL	04	FRAGILARIA DELICATISSIMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	0.7	0.5	0.1
FRA FAM	04	FRAGILARIA FAMELICA	--	--	--	--	--	--	--	--	0.1	0.1	--	0.1	--	--	--	1.4	1.8	0.4	--
FRA NAN	04	FRAGILARIA NANANA?	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.9	--	--	--

EXHIBIT D-5

Relative Abundance (Percent) of Periphyton Taxa, July 26-27, 2002

ORGCODE	DIVCODE	ORGNAM	0004 072602 1145	0005 072602 1150	0006 072602 1200	0007 072602 1230	ENP-FD1 072602 1235	0008 072602 1240	0009 072602 1245	0010 072602 1110	DA1-C 072602 1600	DA1-I 072702 0945	DA1-1-IA 072602 1645	DA1-S-L 072702 0835	DA1-S-M 072702 0840	DA1-I040 072602 0900	DA2AMAR. 072702 1130	DA2-B-E 072702 1100	DA-FD1 072702 1105	DA2-B-W 072702 1110	DA3-A-N 072702 1230
FRA SYN	04	FRAGILARIA SYNEGROTESCA	--	--	0.3	--	--	--	--	--	0.3	1.3	0.3	0.7	0.5	--	0.1	0.4	0.3	0.1	--
FRA TEN	04	FRAGILARIA TENERA	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--
GOM GRA	04	GOMPHONEMA GRACILE	--	--	0.1	--	--	--	--	--	--	0.1	--	--	--	--	0.1	0.2	--	--	--
GOM PAR	04	GOMPHONEMA PARVULUM	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
GYR SCA	04	GYROSIGMA SCALPROIDES	--	--	--	--	--	--	--	--	--	--	--	0.1	0.3	--	--	--	--	--	--
MAS SMI LA	04	MASTOGLOIA SMITHII V LACUSTRIS	--	--	0.1	0.1	--	--	0.2	--	--	0.2	0.1	--	--	0.1	0.1	--	--	--	--
NAV CRYP	04	NAVICULA CRYPTOTENELLA	--	--	--	--	--	--	--	--	0.1	--	--	--	0.1	0.4	0.1	--	--	--	--
NAV CUS	04	NAVICULA CUSPIDATA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	0.1
NAV LAN	04	NAVICULA LANCEOLATA	--	--	0.4	--	--	--	--	--	--	--	--	0.6	0.1	--	--	0.5	0.3	0.4	0.1
NAV RAD PA	04	NAVICULA RADIOSA V PARVA	--	--	0.4	--	--	--	0.1	--	0.2	0.1	--	0.6	0.3	--	--	0.2	--	--	--
G NAV SM	04	NAVICULA SP (SMALL)	--	--		--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
NIT FON	04	NITZSCHIA FONTICOLA	--	--	--	--	--	--	--	--	--	--	--	--	0.4	--	--	0.5	0.8	0.1	0.1
NIT NAN	04	NITZSCHIA NANA	--	--	0.1	--	--	--	--	--	0.2	0.2	--	0.3	0.4	--	--	0.2	0.5	0.1	0.1
NIT PAL	04	NITZSCHIA PALEA	--	--	--	--	--	--	--	--	--	0.1	--	--	0.1	0.1	--	0.4	0.3	0.1	0.1
NIT PAL DE	04	NITZSCHIA PALEA V DEBILIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8
NIT PALE	04	NITZSCHIA PALEACEA	--	--	0.1	--	0.1	--	--	--	0.2	0.2	0.1	0.1	0.8	0.1	--	--	--	--	0.1
NIT PALF	04	NITZSCHIA PALEAFORMIS	--	--	--	--	--	--	--	--	--	--	--	0.1	0.8	--	--	0.4	0.5	0.3	--
NIT SEM	04	NITZSCHIA SEMIROBUSTA	--	--	--	--	--	--	0.2	--	0.5	--	0.1	--	--	--	--	--	--	--	--
NIT SERP	04	NITZSCHIA SERPENTIRAPHE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--
G NIT SM	04	NITZSCHIA SP (SMALL)	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.4	--	--	0.2	--	--
SEL LAE	04	SELLAPHORA LAEVISSIMA	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--
LAG SCH	05	LAGYNION SCHERFFELII	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--
OPH CAP	07	OPHIOCYTIUM CAPITATUM	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--	--	--	0.1	--
G EUG	10	EUGLENA SP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	--	0.2	--	0.1

EXHIBIT D-6

Summary of Periphyton Community Characteristics, June 22-23, 2002

Station	CPO2-PSTAT-0004	CPO2-PSTAT-0005	CPO2-PSTAT-0006	CPO2-PSTAT-0007	CPO2-PSTAT-0008	CPO2-PSTAT-0009	CPO2-PSTAT-0010	CPO2-PSTAT-0040	DA1-D	DA1-I	DA2-A-Canopy	DA2-B-Marsh	Mean Values
Division Cyanobacteria (Blue-Green)													
Number of Taxa	25	20	13	22	14	17	17	21	20	20	15	4	17
Organisms % All Stations	4	7	2	7	4	11	3	21	9	4	4	22	--
Organisms % this Station	100	89	99	95	89	100	100	99	100	100	100	99	98
Division Chlorophyta (Green Algae)													
Number of Taxa	--	1	--	1	1	1	--	3	--	--	--	1	1
Organisms % All Stations	--	43	--	27	25	0	--	11	--	--	--	3	--
Organisms % this Station	--	11	--	5	11	0	--	1	--	--	--	0	2
Division Chrysophyta													
Class Bacillariophyceae (Diatoms)													
Number of Taxa	1	--	3	1	--	3	--	1	3	2	--	2	1
Organisms % All Stations	2	--	8	2	--	12	--	8	20	6	--	41	--
Organisms % this Station	0	--	1	0	--	0	--	0	0	0	--	0	0
Summary Totals for Stations													
Number of Taxa	26	21	16	24	15	21	17	25	23	22	15	7	19
Organisms % All Stations	4	8	2	7	5	11	3	21	9	4	4	22	--

EXHIBIT D-7

Summary of Periphyton Community Characteristics, July 26-27, 2002

Station	0004	0005	0006	0007	ENP-FD1	0008	0009	0010	DA1-C	DA1-I	DA1-1-IA	DA1-S-L	DA1-S-M	DA1-I040	DA2AMAR.	DA2-B-E	DA-FD1	DA2-B-W	DA3-A-N	Mean Values
Division Cyanobacteria (Blue-Green)																				
Number of Taxa	21	21	21	24	21	20	17	23	14	13	10	14	12	19	21	12	12	12	17	17
Organisms % All Stations	5	5	19	6	6	3	3	4	2	5	1	3	3	3	5	3	3	10	9	--
Organisms % this Station	100	100	94	98	99	100	98	100	71	67	49	55	62	98	89	76	79	96	94	88
Division Chlorophyta (Green Algae)																				
Number of Taxa	1	1	4	2	--	--	--	--	3	6	5	4	4	1	6	9	9	1	4	3
Organisms % All Stations	0	0	7	3	--	--	--	--	6	15	2	4	8	0	7	16	19	1	13	--
Organisms % this Station	0	0	1	1	--	--	--	--	3	4	1	1	3	0	3	7	8	0	2	2
Division Chrysophyta																				
Class Bacillariophyceae (Diatoms)																				
Number of Taxa	--	1	12	4	3	1	7	1	12	12	9	11	17	7	9	15	11	10	9	8
Organisms % All Stations	--	0	8	0	0	0	1	0	7	18	11	18	16	0	3	5	5	3	2	--
Organisms % this Station	--	0	5	1	1	0	2	0	26	30	49	44	35	2	8	16	13	4	3	11
Division Chrysophyta																				
Class Chrysophyceae (Golden-Brown)																				
Number of Taxa	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	0
Organisms % All Stations	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	--	--	--	--	--
Organisms % this Station	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--	0
Division Chrysophyta																				
Class Xanthophyceae (Yellow-Green)																				
Number of Taxa	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	1	--	0
Organisms % All Stations	--	--	--	--	--	--	--	--	--	--	20	--	--	--	--	--	--	80	--	--
Organisms % this Station	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--	0	--	0
Division Euglenophyta (Euglenoid)																				
Number of Taxa	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--	1	0
Organisms % All Stations	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25	--	25	--	50	--
Organisms % this Station	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	0	--	0	0
Summary Totals for Stations																				
Number of Taxa	22	23	37	30	24	21	24	24	29	31	25	29	34	27	37	36	33	24	31	28
Organisms % All Stations	5	4	18	5	5	3	3	4	3	6	2	4	5	3	4	4	4	9	9	

sampling stations. Periphyton was more prevalent at sites away from the L-31W canal, and was more sparse at the sampling stations directly adjacent to the canal. Periphyton coverage was estimated to be 80 percent and 85 percent, respectively, at monitoring stations CPO2-PSTAT-0007 and CPO2-PSTAT-0008, or the two locations further away from the L-31W canal, and only 5 percent at CPO2-PSTAT-0009, the location directly adjacent to the canal, on Transect B. The furthest station of Transect A, CPO2-PSTAT-0004, exhibited a periphyton coverage of only 20 percent, and the mid sampling station of Transect A, CPO2-PSTAT-0005, a periphyton coverage of 80 percent. Periphyton coverage was not conspicuous at the station most proximal to the L-31W canal, CPO2-PSTAT -0006. Periphyton coverage at reference station CPO2-PSTAT-0010 exhibited 80 percent periphyton cover.

Stations within the Detention Area showed variability in cover depending upon the extent of canopy present. Periphyton mats were not observed in tree islands, which are subject to less inundation and significantly more shading. Scraped areas showed a developing layer of periphyton, even after only a few days of inundation.

Several algal taxa dominant in the ENP samples are typical components of natural Everglades periphyton communities. Species of the blue-green algal genera *Scytonema*, *Schizothrix*, *Phormidium*, *Microcoleus* and *Planktolyngbya* found here are commonly encountered in native periphyton communities in south Florida and are associated with alkaline and mineral-rich ambient surface waters. These taxa are associated with waters of low intrinsic phosphorus content and have been found to assimilate phosphorus from inflows through biological uptake and co-precipitation with calcium carbonate. Importantly, many of these taxa were present and relatively abundant in the newly flooded waters of the Detention Area at the onset of flooding in June, suggesting that a predominantly natural calcareous periphyton system can be expected to develop over time in the detention area, depending upon the depth and duration of inundation.

Subsequent sampling in July yielded similar results for the ENP stations. Commonly encountered and abundant taxa in the ENP samples were of the genera *Scytonema*, *Schizothrix*, *Phormidium*, and *Planktolyngbya*. Water depths measured in July at the ENP quadrats were but slightly greater than measured at the end of June.

Good agreement in species composition and relative abundance estimates was found in duplicate samples taken from station CPO2-PSTA-0008 on July 26. Similarly, good agreement was found in duplicate samples taken from station DA2-BE within the Detention Area on July 27. These results indicate that the grab sampling and enumeration approaches applied to this reconnaissance survey yielded consistent data on algal species composition.

Some differences in algal composition were notable in samples taken from the Detention Area. While the calcareous blue-green algae genera *Scytonema*, *Schizothrix*, *Phormidium*, and *Planktolyngbya* were present in the samples, other algae not found in the June samples were relatively abundant. These included blue green genera *Pseudanabaena* and *Jaaginema* and the diatoms *Brachysira vitrea* and *Cymbella microcephala*. These taxa are also common components of Everglades periphyton, but their incidence during the month of continued inundation at a depth of one to two feet suggests that the newly created environmental conditions favored the development of a slightly different periphyton community than found in the relatively shallow and vegetated Everglades. Future comparisons of algal community structure in the

Detention Area and the adjacent Everglades should take these important factors into consideration.

Conclusions

Sampling conducted in June and July 2002 provided a current and long-term basis for describing the ecological communities within and adjacent to the S-332D Detention Area during the initial start-up period. Macrophyte communities within ENP are dominated by sparse grasses on natural rocky substrate and appear typical of this type of plant community within ENP. The wetlands and associated tree islands preserved during the construction of the Detention Area are inhabited by plant species typical of emergent wetlands and hardwood hammocks in south Florida, despite the years of modification by agricultural practices within the Frog Pond. Periphyton communities within ENP were dominated by taxa typically encountered in natural hardwaters in south Florida. The periphyton communities within the Detention Area included these same species, plus additional blue-green algae and diatoms seemingly indicative of more open, pond-like conditions. All stations were installed to last for a long time, with the intent of allowing future research to reference the exact locations and compare ground elevation, water depth, macrophyte and canopy cover, and periphyton community composition.

Attachment D-1

Photo looking east at quadrat PSTAT 0004

Photo looking east at quadrat PSTAT 0005

Photo looking east at quadrat PSTAT 0006

Photo looking east at quadrat PSTAT 0007

Photo looking east at quadrat PSTAT 0008

Photo looking east at quadrat PSTAT 0009

Photo looking east at quadrat PSTAT 0010

Photo looking east at quadrat PSTAT-0040

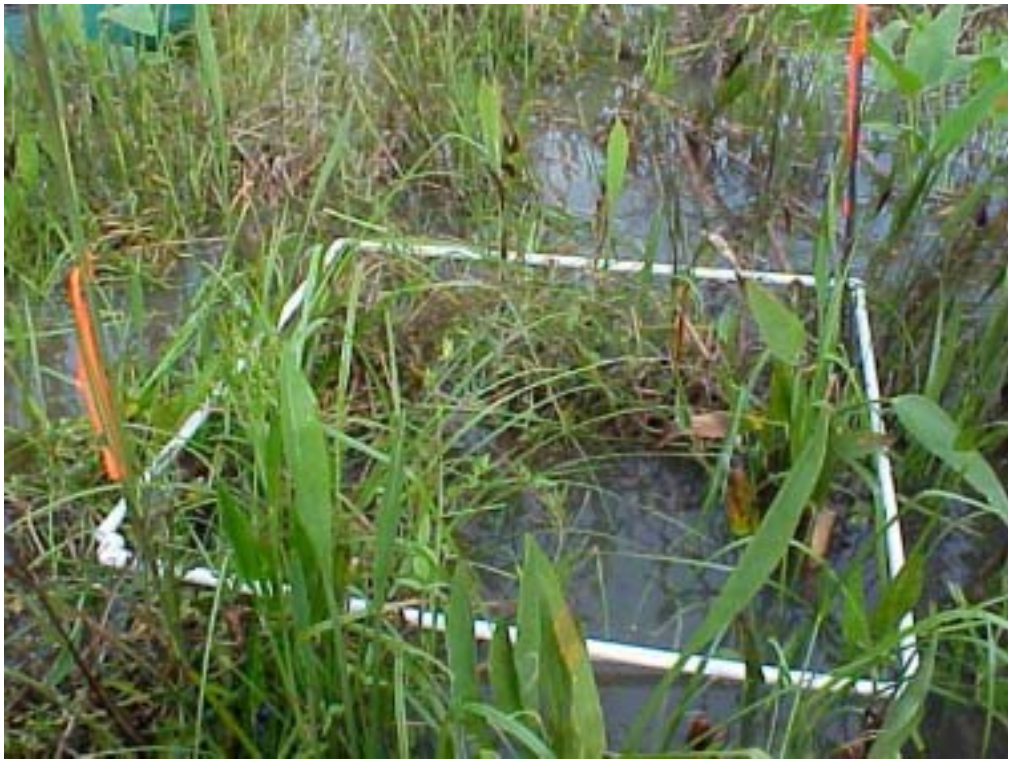


Photo of quadrat on DA1-C

Photo of quadrat on DA1-D

Photo of quadrat on DA1-I

Photo of quadrat DA1-S-L

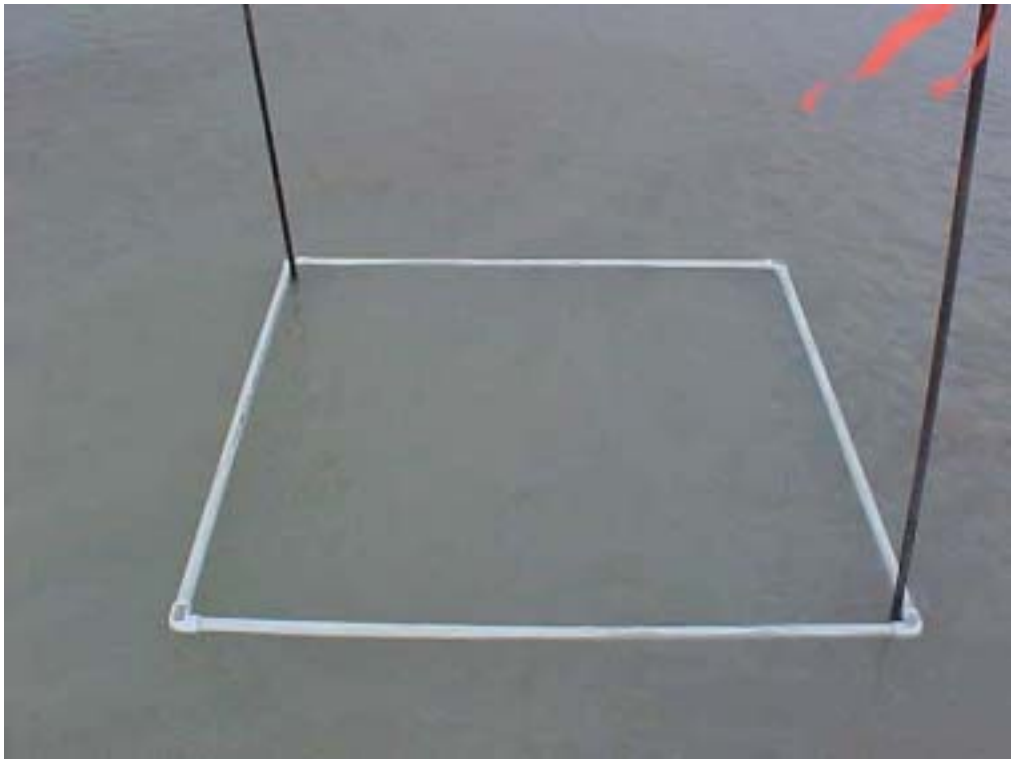


Photo of quadrat DA1-S-M

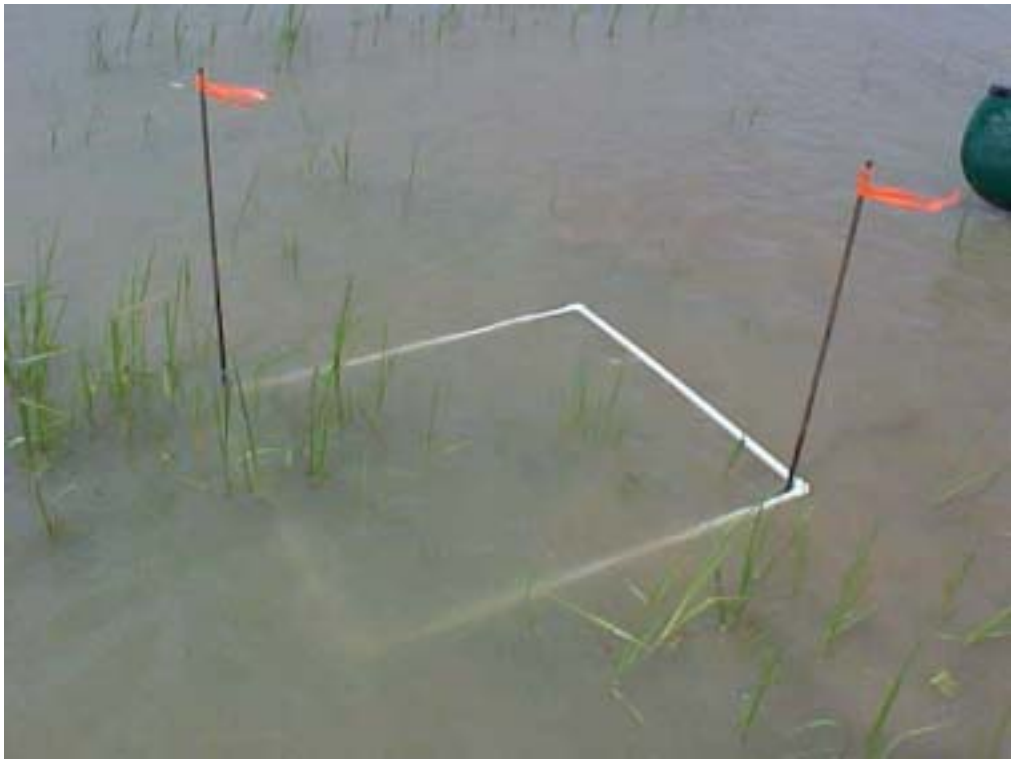


Photo of quadrat DA1-1-IA

Photo of quadrat DA2-A-Canopy

Photo of quadrat DA2-B-Marsh

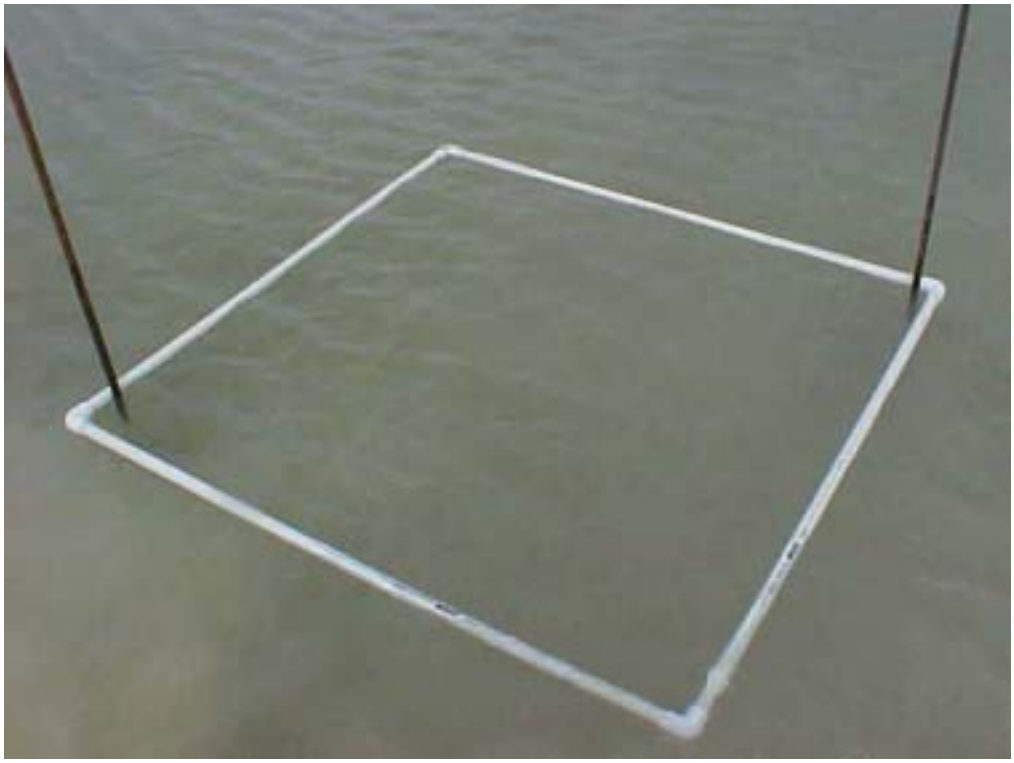


Photo of quadrat DA2-B-E

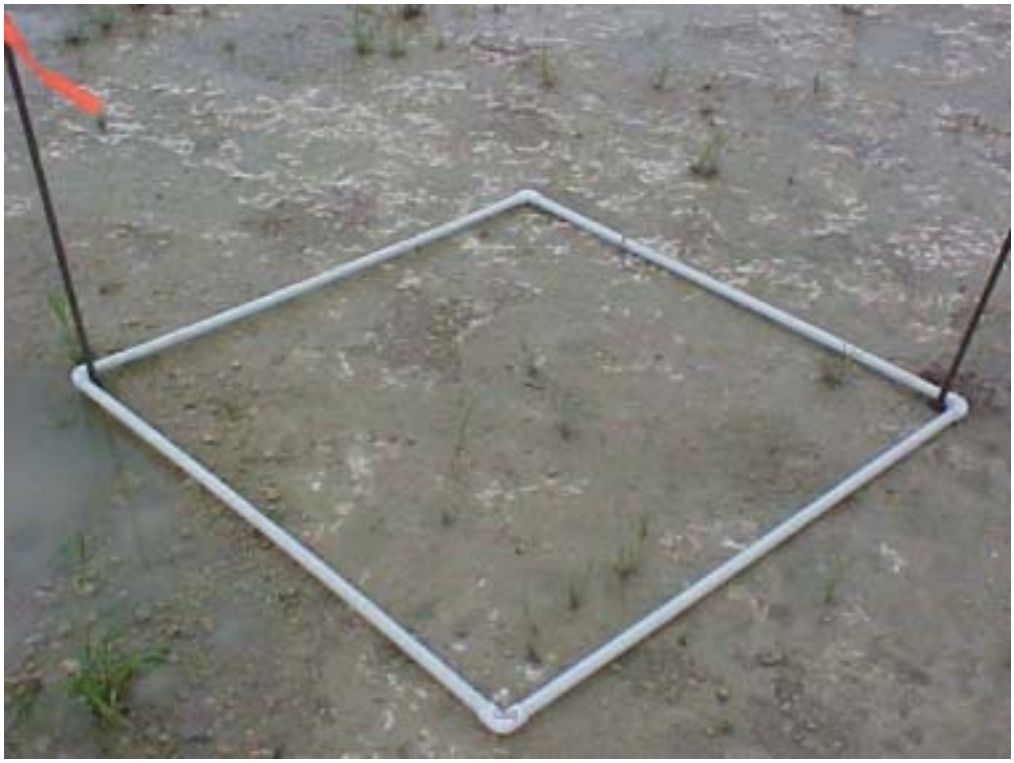


Photo of quadrat DA2-B-W

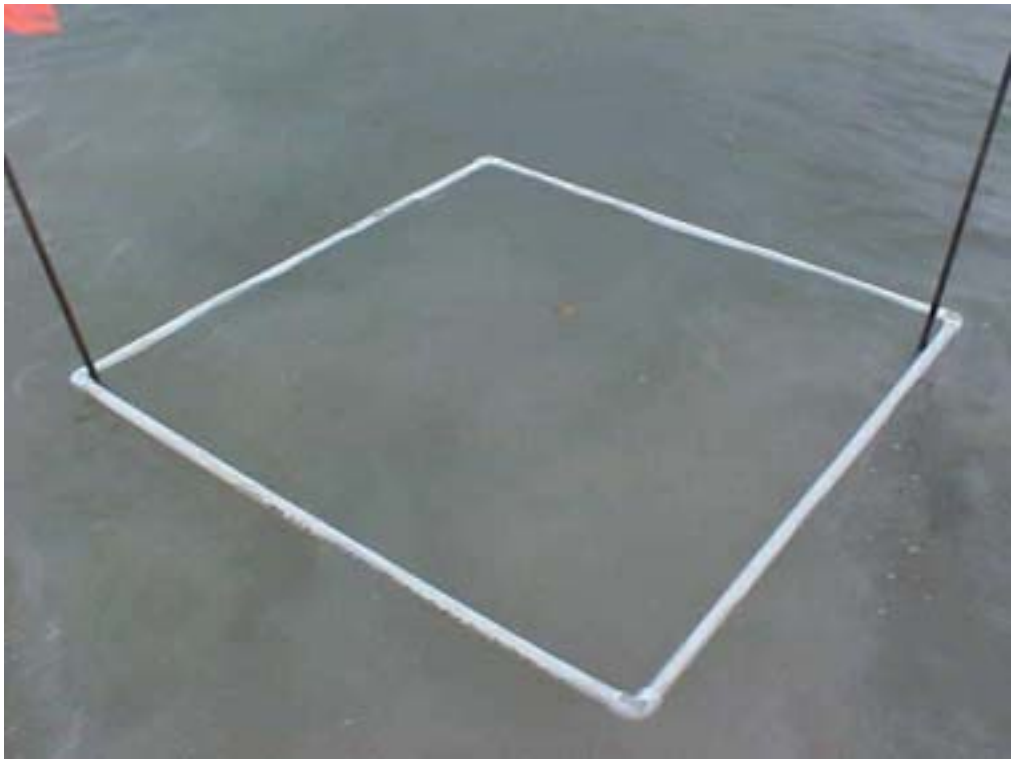


Photo of quadrat DA2-C-S

Photo of quadrat DA3-A-N

APPENDIX E

Groundwater Monitor Well Construction Details

EXHIBIT E-1

Summary of Well Construction Details for S-332D Detention Area Groundwater Monitoring Wells

						State Planar (feet)												
Station ID	**Station Type**	**Drilling Contractor**	**Drilling Method**	**Geologic Sampling**	**Drilling Mud**	**Northing NAD 1983 Datum**	**Easting NAD 1983 Datum**	**Ground Surface Elevation 1929 NGVD (feet)**	**Elevation at TOC 1929 NGVD (feet)**	**Depth of Well from TOC (feet)**	**Screen Length (feet)**	**Elevation at Top of Screen 1929 NGVD (feet)**	**Elevation at Bottom of Screen 1929 NGVD (feet)**	**Well Construction Material**	**Screen Slot Size (inch)**	**Gravel Pack at Screen Interval**	**Centralizer Used**	**Source of Well**
CP02-PSTAT-MW-0001	Well	USACE	Air Rotary	No	No	417482.744	799918.881	6.35	9.00	22.12	5.0	-8.1	-13.1	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0002	Well	USACE	Air Rotary	No	No	417487.777	799918.542	6.37	9.01	42.96	5.0	-28.9	-33.9	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0003[a]	Well	USACE	Air Rotary	No	No	417486.774	798588.971	5.33	7.83	22.74	5.0	-9.9	-14.9	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0004	Well	USACE	Air Rotary	No	No	417478.848	798588.533	5.52	8.08	42.10	5.0	-29.0	-34.0	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0005	Well	USACE	Mud Rotary	No	Yes	414642.606	798475.546	5.47	8.13	22.58	5.0	-9.5	-14.5	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0006	Well	USACE	Air Rotary	No	No	414636.159	798475.095	5.46	8.24	42.86	5.0	-29.6	-34.6	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0007	Well	USACE	Air Rotary	No	No	415174.749	799870.445	6.66	9.40	23.45	5.0	-9.1	-14.1	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0008	Well	USACE	Air Rotary	No	No	415179.918	799869.668	6.59	9.16	42.88	5.0	-28.7	-33.7	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0009	Well	USACE	Mud Rotary	No	Yes	416260.546	798973.500	5.36	8.43	24.94	5.0	-11.5	-16.5	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0010	Well	USACE	Mud Rotary	No	Yes	416263.806	798978.585	5.38	8.73	45.05	5.0	-31.3	-36.3	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0011	Well	USACE	Air Rotary	No	No	416536.646	799575.329	6.11	8.84	21.75	5.0	-7.91	-12.91	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0012	Well	USACE	Air Rotary	No	No	416536.844	799580.979	6.70	8.67	43.0	5.0	-29.33	-34.33	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0013	Well	USACE	Air Rotary	No	No	415579.916	798564.840	4.96	7.61	22.68	5.0	-10.07	-15.07	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0014	Well	USACE	Air Rotary	No	No	415580.408	798570.607	4.94	7.64	43.2	5.0	-30.60	-35.60	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0015	Well	USACE	Air Rotary	No	No	415020.263	798996.315	5.58	8.27	23.1	5.0	-9.83	-14.83	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0016	Well	USACE	Air Rotary	No	No	415026.603	798996.728	5.49	8.15	43.5	5.0	-30.31	-35.31	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0017	Well	USACE	Air Rotary	No	No	415066.959	798171.468	5.58	8.22	22.5	5.0	-9.25	-14.25	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0018	Well	USACE	Air Rotary	No	No	415071.595	798173.148	5.27	7.99	43.4	5.0	-30.36	-35.36	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0019	Well	USACE	Air Rotary	No	No	413048.275	800271.725	5.90	9.65	23.29	2.0	-11.6	-13.6	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0020	Well	USACE	Air Rotary	No	No	413043.484	800271.994	5.90	9.72	43.81	2.0	-32.1	-34.1	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0021	Well	USACE	Air Rotary	No	No	407740.049	797148.607	5.60	9.50	22.03	2.0	-10.5	-12.5	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0022	Well	USACE	Air Rotary	No	No	407740.049	797154.607	5.50	9.45	43.80	2.0	-32.4	-34.4	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0023[a]	Well	USACE	Air Rotary	No	No	416450.166	796668.310	10.40	14.30	24.40	2.0	-8.1	-10.1	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0024	Well	USACE	Air Rotary	No	No	416444.794	796663.287	10.30	14.35	44.50	2.0	-28.2	-30.2	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0026	Well	USACE	Air Rotary	No	No	413026.000	796702.237	10.60	14.45	24.2	2.0	-7.8	-9.8	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0027	Well	USACE	Air Rotary	No	No	413020.863	796702.083	10.50	14.60	44.2	2.0	-27.6	-29.6	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0028[a]	Well	USACE	Driven-Tripod Rig	No	No	418760.885	796016.001	5.80	9.09	20.8	2.0	-9.7	-11.7	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0029[a]	Well	USACE	Driven-Tripod Rig	No	No	416497.500	795534.891	6.00	9.69	19.2	2.0	-7.5	-9.5	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0030	Well	USACE	Driven-Tripod Rig	No	No	416516.084	796075.173	5.90	9.54	16.25	2.0	-4.7	-6.7	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0031[a]	Well	USACE	Driven-Tripod Rig	No	No	416478.515	796541.980	5.00	7.85	22.34	2.0	-12.5	-14.5	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0032	Well	USACE	Driven-Tripod Rig	No	No	413034.773	795599.917	5.80	9.09	17.40	2.0	-6.3	-8.3	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0033	Well	USACE	Driven-Tripod Rig	No	No	413069.927	796130.201	5.70	9.29	22.40	2.0	-11.1	-13.1	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0034	Well	USACE	Driven-Tripod Rig	No	No	413080.416	796577.797	5.80	9.43	21.73	2.0	-10.3	-12.3	2 Inch PVC	0.020	6/20	No	
CP02-PSTAT-MW-0035	Well	USACE	Air Rotary	No	No	416464.637	797754.790	4.80	10.79	16.11	2.0	-3.3	-5.3	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0036	Well	USACE	Air Rotary	No	No	416459.698	797754.777	5.00	10.80	26.08	2.0	-13.3	-15.3	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0037	Well	USACE	Air Rotary	No	No	416455.144	797754.736	4.90	10.84	39.67	2.0	-26.8	-28.8	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0038	Well	USACE	Air Rotary	No	No	416465.566	797785.174	4.80	10.83	16.40	2.0	-3.6	-5.6	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0039[a]	Well	USACE	Air Rotary	No	No	416459.921	797785.875	4.80	10.82	23.40	2.0	-10.6	-12.6	2 Inch PVC	0.010	None	No	
CP02-PSTAT-MW-0040	Well	USACE	Air Rotary	No	No	416454.794	797786.384	4.90	10.77	49.99	2.0	-37.2	-39.2	2 Inch PVC	0.010	None	No	

[a]Instrumented well

CP02-PSTAT-MW-00XX = Included in initial sampling program

CP02-PSTAT-MW-00XX = Installed but not included in initial sampling program

APPENDIX F

Certified Laboratory Reports (see Volume 2)

A CD-based Appendix F will be provided at the time at finalization of this Technical Memorandum.