Everglades Agricultural Area Regional Feasibility Study

Deliverable 1.4.2 – Methodology for Development of Daily Total Phosphorus Concentrations (Final Report)

(Contract No. CN040912-WO04 Phase 2)

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South Florida Water Management District
EAA Regional Feasibility Study
ADA Contract No. CN040912-WO04 Phase 2
Methodology for Development of Daily Total Phosphorus Concentrations
B&McD Project No. 38318

Dear Mr. Vazquez:

Burns & McDonnell is pleased to submit this Final report on the "Methodology for Development of Daily Total Phosphorus Concentrations". This document constitutes Deliverable 1.4.2 under ADA Engineering, Inc. Task Order No. BM-05WO04-02 dated April 27, 2005.

We gratefully acknowledge the valuable contributions of both your staff and that of the South Florida Water Management District in the development of the information presented herein.

Certification

I hereby certify, as a professional engineer in the State of Florida, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse without specific verification or adaptation by the Engineer. This certification is provided in accordance with the provisions of the Laws and Rules of the Florida Board of Professional Engineers under Chapter 61G15-29, Florida Administrative Code.

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1. GENERAL

This report documents the work completed to assess the sensitivity of the DMSTA analysis to use 31-yr average monthly concentrations in lieu of daily, flow-dependent concentrations. This report is the principal deliverable under Task 1.4 in Phase 2 of the Everglades Agricultural Area (EAA) Regional Feasibility Study (RFS).

1.1. Background

Under the Everglades Construction Project (ECP), the South Florida Water Management District (District) and the U.S. Army Corps of Engineers have constructed several Stormwater Treatment Areas (STAs) to help improve the quality of waters released to the Everglades Protection Area (EPA). In addition to the existing STAs, the District is planning certain STA expansions and enhancements, EAA canal improvements, construction of the EAA Storage Reservoir Project, and other EAA improvements. With recognition of these planned improvements, the EAA RFS will evaluate alternatives for redistributing inflow volumes and phosphorus loads to the various STAs to optimize phosphorus removal performance. This study is not intended to define the final arrangement, location or character of these proposed projects but is a fact-finding exercise to develop the information necessary for the subsequent planning, design and construction of these future projects.

1.2. Scope of Work

The EAA RFS, Phase 2 is being performed under Contract CN040912, Work Order No. 4 (CN040912-WO04) between the District and ADA Engineering Inc (ADA). ADA has subcontracted portions of the work under this Phase 2 study, including the current Task 1.4, to Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell).

The work for Phase 2 is segregated into eight primary tasks. The first of these tasks, Task 1, involves the collection of baseline data for the principal drainage basins of the EAA. Task 1 is further divided into five subtasks, which are outlined below:

- Task 1.1 – Evaluate 2006 hydrologic simulation results
- Task 1.2 – Evaluate 2010 and 2015 hydrologic simulation results
- Task 1.3 – Develop inflow volumes, and total phosphorus concentrations and loads

- Task 1.4 – Define methodology to develop STA inflow datasets
- Task 1.5 – Develop inflow datasets for STAs

For development of the May 2001 *Baseline Data*, the District estimated daily variations in total phosphorus concentrations as a function of discharge through development of a series of regression analyses. The District approach was in response to feedback on an earlier version of the *Baseline Data* in which it was suggested that capturing the variability of inflow phosphorus concentrations was of higher priority than preserving long-term flow-weighted mean total phosphorus concentrations. The resultant standard errors of estimate resulting from the regression analyses were relatively high, and the overall estimates of inflow loads varied from the historic data.

Thus, for Task 1.4, Burns & McDonnell assessed the proposed phosphorus concentration methodology for one of the STAs, STA-1W, using the original inflow series for the 31-year period January 1, 1965, through December 31, 1995 as presented in the May 2001 *Baseline Data* through the DMSTA Versions 1 & 2. The analysis was conducted to assess the suitability for use of a time-period-average monthly TP concentration in subsequent tasks.

1.3. Key Parameters

The DMSTA (Version 1 and 2) model utilizes many temporal, hydraulic, seepage, vegetation-type and other parameters to assess STA outflows. As this analysis is focused strictly on the sensitivity of the results to the method employed in assessing inflow TP concentrations, the parameters as presented in the Basin-Specific Feasibility Studies were not modified, with the single exception of the vegetation calibration employed in DMSTA2. Background information for all three STA-1W alternatives necessary to simulate outflow concentrations is presented in Appendix A.

2. COMPARATIVE ANALYSIS

The original analysis for STA-1W included three alternatives as shown in Table 2.1. These three alternatives are used to compare the following scenarios:

1. Daily phosphorus concentration vs. 31-yr average monthly phosphorus concentration using the April 12, 2002 version of DMSTA.
2. Same as above except using DMSTA2 (version dated June 2, 2005)

Table 2.1 Summary of STA-1W Alternatives

Alt.	BMP Source Controls	Regional Treatment	Sequencing over 50 years
Baseline	50% for S-5A	STA-1W (existing)	just STA 1W between 2006 and 2056 with no retrofits
1	50% for S-5A	Optimize STA-1W by 2006	STA 1W retrofit with emer/SAV between 2006 and 2056
2*	50% for S-5A	Further Optimize STA-1W by 2006 to achieve LSC	STA 1W between 2006 and 2056 with additional retrofits to achieve LSC

*Alternative which achieved phosphorus outflow concentration goal.
In the above tabulation, "LSC" refers to the Lowest Sustainable Concentration, which in the 2002 analyses were taken as 14 ppb for flow-weighted means and 10 ppb for geometric means.

These twelve DMSTA runs are compared in terms of the outflow flow-weighted and geometric mean TP concentrations.

2.1. TP Concentrations

The original input TP flow concentrations as presented in the 2002 analyses are daily concentrations as calculated through regression as a function of discharge. The minimum, maximum and flow-weighted mean TP concentrations of this daily-variable data set are 106 ppb, 240 ppb, and 139 ppb, respectively. All three STA-1W alternatives used the same baseline flow and concentration data; thus the 31-yr monthly average TP concentration is calculated is the same for all alternatives as shown in Table 2.2.

Table 2.2 31-yr Monthly Flow-weighted Mean TP Concentration

31-yr Monthly Average	January	February	March	April	May	June	July	August	September	October	November	December
TP FWM Conc (ppb)	162	160	169	165	134	130	129	129	131	134	152	152

2.2. DMSTA 04/12/2002 Results

The input and output file names for all three STA-1W alternatives simulated with the April 12, 2002 version of DMSTA using the original and modified TP concentrations are shown in Table 2.3. The detailed listing of input variables employed in the analyses of these alternatives together with a detailed listing of computer output variables resulting from those analyses are presented in Appendix B (which consists of screen information taken directly from the DMSTA output files).

Table 2.3 STA-1W Input and Output Files for DMSTA 2002 Runs

		STA-1W Alternative Scenario		
	TP Concentration Parameter	Baseline	Alternative 1	Alternative 2
Daily TP Concentration				
	Input	1W_baseline_Data.xls	1W_Alt1_Data.xls	1W_Alt2_Data.xls
	Output	1W_baseline_Out.xls	1W_Alt1_Out.xls	1W_Alt2_Out.xls
31-yr Average Monthly TP Concentration				
	Input	1W_baseline_AMC_Data.xls	1W_Alt1_AMC_Data.xls	1W_Alt2_AMC_Data.xls
	Output	1W_baseline_AMC_Data.xls	1W_Alt1_AMC_Out.xls	1W_Alt2_AMC_Out.xls

The geometric and flow-weighted mean TP concentration results for all three STA-1W alternatives using the original and modified TP concentrations are shown in Table 2.4. The resultant differences between the two methods of assigning inflow concentrations are 0.1 ppb or less.

Table 2.4 STA-1W Outflow TP Concentration from DMSTA 2002 Runs

		STA-1W Alternative Scenario		
	TP Concentration Parameter	Baseline	Alternative 1	Alternative 2
Daily TP Concentration				
	Flow Weighted Mean TP Concentration (ppb)	24.3	18.7	13.3*
	Geometric Mean TP Concentration (ppb)	24.1	13.6	9.3**
31-yr Average Monthly TP Concentration				
	Flow Weighted Mean TP Concentration (ppb)	24.2	18.6	13.2*
	Geometric Mean TP Concentration (ppb)	24.0	13.5	9.3**

*Computed Flow-weighted Mean Conc. less than 2002 LSC assigned as 14 ppb.
**Computed Geo.Mean Conc. less than 2002 LSC assigned as 10 ppb.

2.3. DMSTA 2 Results

The input case names (both the input flow and load time series and input parameter worksheets) of the 1W_Data2.xls file and output folders (containing the individually saved DMSTA2 runs) simulated with DMSTA2 using the original and modified TP concentrations are shown in Table 2.5.

Table 2.5 STA-1W Input Cases and Output Folders for DMSTA2 Runs

		STA-1W Alternative Scenario		
	TP Concentration Parameter	Baseline	Alternative 1	Alternative 2
Daily TP Concentration				
	Input (TS_STA)	1W_baseline	1W_Alt1	1W_Alt2
	Output	STA1W_Baseline	1W_Alt1	1W_Alt2
31-yr Average Monthly TP Concentration				
	Input (TS_STA_Mod)	1W_baseline	1W_Alt1	1W_Alt2
	Output	1W_Baseline_AMC	1W_Alt1_AMC	1W_Alt2_AMC

The geometric and flow-weighted mean TP concentration results for all three STA-1W alternatives using the original and modified TP concentrations are shown in Table 2.6. The resultant differences between the two concentration types are 0.2 ppb or less.

Table 2.6 STA-1W Outflow TP Concentration from DMSTA2 Runs

		STA-1W Alternative Scenario		
	TP Concentration Parameter	Baseline	Alternative 1	Alternative 2
Daily TP Concentration				
	Flow Weighted Mean TP Concentration (ppb)	27.1	22.6	16.1
	Geometric Mean TP Concentration (ppb)	24.6	16.5	12.2
31-yr Average Monthly TP Concentration				
	Flow Weighted Mean TP Concentration (ppb)	26.9	22.4	16.0
	Geometric Mean TP Concentration (ppb)	24.5	16.4	12.1

It should here be noted that the projected outflow concentrations from STA-1W resulting from this analysis are not representative of those to be developed under subsequent tasks to completed under this contract. These analyses have utilized the inflow time series for STA-1W originally developed for use in the 2002 Basin-Specific Feasibility Studies, which is expected to be substantially modified for the EAA Regional Feasibility Study. The sole purpose in the conduct of the analyses summarized herein is to assess the sensitivity of DMSTA output to the manner in which inflow TP concentrations are assigned.

2.4. Conclusions

Based on the analyses summarized herein, it is concluded that the long-term flow-weighted and geometric mean concentrations computed using either the April, 2002 version of DMSTA or the June 2005 DMSTA2 do not change significantly if monthly flow-weighted mean TP concentrations are substituted for variable daily concentrations estimated on the basis of daily discharge. The differences in computed outflow concentrations are 0.2 ppb or less.

It therefore appears practicable to establish TP concentrations in the inflow time series for DMSTA2 analyses to be conducted under subsequent tasks on the basis of monthly flow-weighted mean TP concentrations, as have been developed under Task 1.3, without significantly biasing the results. The monthly flow-weighted mean TP concentrations developed under Task 1.3 will be coupled with the runoff and Lake Okeechobee release volumes developed under Tasks 1.1 to establish daily time series of inflows for subsequent DMSTA2 analyses. TP concentrations associated with Lake Okeechobee release volumes will vary by point of release consistent with the information presented in the Phase 2, Task 1.3 final report.

Appendix A

Background DMSTA Information for STA-1W

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2. BACKGROUND INFORMATION FOR STA-1W DMSTA MODEL

This appendix presents the necessary STA-1W background information for DMSTA modeling as taken from the Basin-Specific Feasibility Studies for the purposes of this report.

2.5. STA-1W Baseline Conditions

STA-1W provides a total effective treatment area of 6,670 acres, generally bounded by the Ocean Canal (on the north) and Water Conservation Area 1 (on the east and south). Those inflows are comprised of contributions from a number of sources, including:

- Agricultural runoff and discharges from the S-5A Basin
- WPB Canal BMP Makeup Water (MUW)
- Supplemental (irrigation) water necessary to prevent dryout of the STA from Lake Okeechobee

STA-1W has three flow paths, each developed with cells in series. The northern path flows in a westerly direction and the eastern and western path flows in a southerly direction. Cells 1 through 4 comprise the original Everglades Nutrient Removal (ENR) project. All cells have emergent macrophytic vegetative communities except Cells 4 and 5B which have SAV.

A schematic of the current design of STA-1W is presented in Figure A.1.

An analysis of Existing Conditions was prepared to assess the probable performance of STA-1W under regional conditions existing upon completion of the Everglades Construction Project, but prior to completion of other major initiatives (such as the Comprehensive Everglades Restoration Plan, or CERP). That analysis was prepared for a thirty-one year period, extending from 1965 through 1995, using simulated inflow volumes from the District's South Florida Water Management Model (SFWMM) and inflow total phosphorus (TP) loads developed as defined in the District's May, 2001 *Baseline Data for the Basin-Specific Feasibility Studies*.

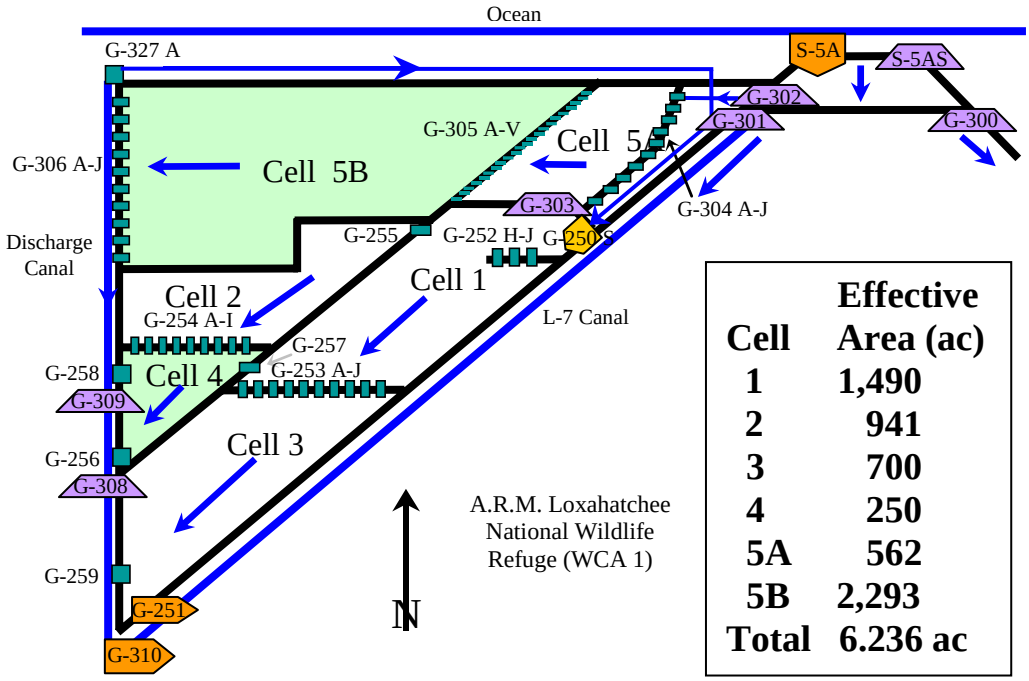

Figure A.1. Schematic of STA-1W

2.5.1. Model Configuration

STA-1W is the most hydrologically complex of the various STAs. It encompasses a number of unique features that directly impact its modeled configuration.

Cells 1 through 4 consist of the original Everglades Nutrient Removal (ENR) Project. The ENR Project was constructed on available lands, with the result that the overall footprint of the project was triangular in nature. The net effect of that overall configuration is that the hydraulic capacities of Cells 3 and 4 are limited to peak rates of flow well below the rates intended upon completion of STA-1W. Structure G-308 (on the west side of Cell 3) and Structure G-309 (on the west side of Cell 4) were added during construction of STA-1W to permit discharge of peak rates of flow in advance of the "funnels" at the lower ends of the treatment cells. Those structures are each fed by an east-west canals extending across the cell served by the structure.

The model of STA-1W is structured on the assumption that the bulk of discharges from Cells 3 and 4 are passed through G-308 and G-309, respectively, rendering the bulk of the treatment cells' areas downstream of those structures as largely ineffective for treatment. In this analysis, the effective treatment area in Cell 3 is reduced from 1,026 to 700 acres; the effective treatment area in Cell 4 is reduced from 358 to 250 acres.

Cells 1 and 3 immediately abut the Loxahatchee National Wildlife Refuge (WCA-1), with the result that significant seepage from the Refuge to those cells can be anticipated. While that alone is not unusual (other STAs also experience seepage inflows from adjacent water bodies), an unusual feature in STA-1W is the presence of the seepage collection canal extending north from Pumping Station G-250. That seepage collection canal lies between the STA-1W Inflow Canal across the east end of Cell 5A and the Refuge. As a result, seepage is induced to that canal from both the Refuge and Cell 5A. That induced seepage is included in the model as upwelling seepage in Cell 1 of STA-1W. The model also was structured to incorporate estimated seepage inflows from the Refuge directly to Cells 1 and 3, and seepage from Cells 1 and 3 to Cells 2 and 4.

Each of Cells 1 through 4 has been documented as having relatively poor flow distribution characteristics. In Cells 1 and 3, the poor flow distribution is considered to result from a combination of "side-tipping" (e.g., the cell floor topography slopes down from east to west), and the presence of remnant agricultural canals, particularly those oriented in the north-south direction.

In Cells 2 and 4, a significant short circuit remains along the east perimeter, consisting of the remnants of a borrow canal excavated to facilitate construction of the FPL access roadway forming the east levee of those cells. In addition, flows are distributed across the north end of Cell 2 by simple overflow of the south bank of a Distribution Canal along the north levee of Cell 2. The shorter flow path (and slightly lower ground surface elevations) in the westerly part of Cell 2 results, during significant inflow events, in a flow imbalance favoring the westerly part of the cell, resulting in higher-than-desirable

flow velocities in the marsh. Those elevated velocities tend to "clear a path" through the marsh, which further compounds the flow imbalance in the cell.

A further complicating factor in the operation of STA-1W is the limited capability to effectively control the distribution of inflows between Cells 1 and 2. Structure G-255, which controls inflows to Cell 2, is controlled by stop logs and cannot be readily adjusted to maintain desirable flow distributions between the two flow paths. In addition, the headwater elevation at G-225 is driven by stages in the Cell 1 and 3 marshes, which are not subject to precise estimation. While in the remainder of the STAs the distribution of inflows is generally based on a uniform aerial loading, the inflow fractions assigned to the various flow paths of STA-1W have been imbalanced in this analysis, with roughly 50% assigned to Cells 5A and 5B, and the remainder evenly divided between Cells 1/3 and 2/4.

2.5.2. Input Data Summary

The following paragraphs summarize basic data employed in the analysis of Existing Conditions for STA-1W. Daily inflow rates, TP concentrations, rainfall and evapotranspiration employed in the original 2002 DMSTA analysis of Existing Conditions are included in an Excel file "1W_baseline_Data.xls".

Inflow Volumes and TP Loads: As presented in the District's May, 2001 *Baseline Data for the Basin-Specific Feasibility Studies*, the estimated average annual inflows to STA-1W over the 31-year period are 160,334 acre-feet per year at a flow-weighted mean inflow concentration of 139 ppb (27.40 metric tons inflow TP per year).

Daily estimates of inflow by source were taken from an Excel spreadsheet prepared by the District in connection with preparation of the *Baseline Data* (file name "sta1w inflow tp.xls" dated May 10, 2001). Table A.1 summarizes the estimated average annual inflow volumes and total phosphorus (TP) loads and concentrations to STA-1W represented in those daily estimates.

Table A.1 Estimated Inflows, STA-1W Existing Analysis, 1965-1995

Inflow Source and Description	Average Annual Inflow		Flow-Weighted Mean TP Conc.
	Volume (ac-ft)	TP Load (1,000 kg)	(ppb)
S-5A Basin	139,891	23.86	138
WPB Canal BMP MUW	20,149	3.49	140
Lake Okeechobee			
Water Supply	294	0.05	141
Total Average Annual Inflows	**160,334**	**27.40**	**139**

Rainfall: For the 31-year period, daily estimates of rainfall over the surface of STA-1W were taken from the SFWMM simulation; the daily values were taken from a District-furnished Excel workbook (file name "2050wPROJ_rfet.xls" dated March 11, 2002; worksheet identification "RF-STAs(inches)"). The average annual rainfall over the surface of STA-1W as reflected in that data file is estimated to be 56.24".

Evapotranspiration: Daily estimates of evapotranspiration over the surface of STA-1W were also taken from the SFWMM simulation; the daily values were taken from a District-furnished Excel workbook (file name "2050wPROJ_rfet.xls" dated March 11, 2002; worksheet identification "ET-STAs(inches)"). The average annual evapotranspiration over the surface of STA-1W as reflected in that data file is estimated to be 55.45". It should here be noted that the daily ET values were estimated as specific to the operation of STA-1W under the 2050 "with-CERP" simulation, and may not be fully representative of ET for the baseline condition. However, the analysis is not sensitive to minor variations in ET, and further refinement of those daily estimates is considered unnecessary for feasibility-level analyses.

2.5.3. Summary of Input Variables

The following paragraphs summarize input variables employed in the analysis of Existing Conditions for STA-1W. Those input variables are defined in an Excel worksheet entitled "Baseline" included in the original 2002 workbook "1W_baseline_Data.xls".

Hydraulic Properties: Depth-discharge relationships specified in the DMSTA input file for each cell of STA-1W were based on analysis of detailed information presented in the

Operation Plan Stormwater Treatment Area 1 West, January 2001. A summary of that analysis is presented in Table A.2. The outlet control depth in each cell was established at 40 cm (approx. 15") and 60 cm for emergent and SAV communities, respectively, consistent with the current design basis of STA-1W.

Table A.2 STA-1W Hydraulic Properties, Existing Design (Baseline 2007-2056)

Cell	Area (Acre)	Mean Ground Elev.(ft. NGVD)	Discharge (cfs)	Discharge (hm*3/d)	Ave. Cell Width (km)	Mean Stage (ft. NGVD)	Mean Depth (ft)	Depth (m)	Coeff. A (m)	Exp. B	Computed Discharge (hm*3/d)	Ratio, Comp. Q/Target
1	1490	10.10	34	0.084	1.1	11.10	1.00	0.305	1.24	2.35	0.084	1.00
1	1490	10.10	930	2.275	1.1	14.18	4.08	1.244	1.24	2.35	2.275	1.00
2	941	9.50	50	0.121	1.74	10.50	1.00	0.305	1.38	2.51	0.121	1.00
2	941	9.50	850	2.080	1.74	12.60	3.10	0.945	1.38	2.51	2.080	1.00
3	676	10.40	53	0.131	2.48	11.40	1.00	0.305	1.03	2.50	0.131	1.00
3	676	10.40	930	2.275	2.48	13.53	3.13	0.954	1.03	2.50	2.275	1.00
4	307.7	9.70	49	0.119	1.83	10.70	1.00	0.305	1.28	2.50	0.119	1.00
4	307.7	9.70	850	2.080	1.83	12.83	3.13	0.954	1.28	2.50	2.080	1.00
5A	562	9.50	104	0.253	1.78	10.50	1.00	0.305	2.75	2.49	0.253	1.00
5A	562	9.50	1,470	3.597	1.78	12.40	2.90	0.884	2.75	2.49	3.597	1.00
5B	2293	9.50	249	0.610	2.34	10.50	1.00	0.305	3.78	2.25	0.610	1.00
5B	2293	9.50	1,470	3.597	2.34	11.70	2.20	0.671	3.78	2.25	3.597	1.00

Seepage: A summary of the seepage inflows and losses (and estimated recoveries) from the various cells of STA-1W, based on the information presented in the January 2001 *Operation Plan Stormwater Treatment Area 1 West,* is presented in Table A.3.

As presented in the January, 2001 *Operation Plan Stormwater Treatment Area 1 West,* Cells 1, 3, & 5A receive seepage inflows from the WCA1 Area. The design of STA-1W is developed to return all recovered seepage from the north lines of the treatment area to the upstream end of Cell 1. That condition cannot be represented in the DMSTA analysis.

Treatment Parameters: As presented in the January, 2001 *Operation Plan Stormwater Treatment Area 1 West,* Cells 1 and 3 of STA-1W are composed of 67% emergent macrophytic marsh and 33% SAV. Cells 2 and 4 have 33% emergent and 67% SAV vegetation, respectively. The composition of STA-1W is assigned as emergent for Cells 1-3, and SAV_C4 for Cell 4. Cell 5A is emergent vegetation while its downstream cell, 5B is presently developed in SAV. Default values in the DMSTA model for Emergent and SAV_C4 communities were employed in the analysis of existing conditions.

Table A.3 Estimated Seepage Loss Rates and Recovery from STA-1W

Cell	Location	Length (ft)	Rate (cf/d/ft/ft))	Total Seepage (cf/day/ft)	Cell Area (ac)	Loss Rate (ft/d/ft)	Loss Rate (m/yr/m)	% Recovery
1	East Line	14,000	16.5	231,000	1,490	0.00356	1.299	**Inflow**
Seep Canal	WCA-1	6,700	33.0	221,100	1,490	0.00341	1.243	**Inflow**
Seep Canal	5A	6,700	33.0	221,100	1,490	0.00341	1.243	**Inflow**
1	Seep In				1,490	0.01038	3.789	**Inflow**
1	West Line	13,600	16.5	224,400	1,490	0.00346	1.262	**0**
2	East Line	13,600	16.5	224,400	941	0.00547	1.998	**Inflow**
3	East Line	12,500	16.5	206,250	700	0.00676	2.469	**Inflow**
3	West Line	3,200	16.5	52,800	700	0.00173	0.632	**0**
4	East Line	3,200	16.5	52,800	250	0.00485	1.770	**Inflow**
5A	North Line	5,000	33.0	165,000	562	0.00674	2.460	**80**
	East Line	6,700	33.0	221,100	562	0.00903	3.297	**100**
	Total	(Similar control elevation both locations)				0.01577	5.757	**91**
5B	North Line	15,000	33.0	495,000	2,293	0.00496	1.809	**80**

Cell	Location	Ave. Grade (ft. NGVD) *	Control Elev. (ft. NGVD)	Relative to Ave. Grade (ft)	Relative to Ave. Grade (cm)	Remarks
1	East Line	10.10	**15.75**	5.65		Mean Stage in WCA-1
1	Seep. Canal	8.00	**15.75**	7.75		Head Diff., WCA-1 to Seep Canal
1	Seep. Canal	8.00	**11.5**	3.5		Head Diff., Cell 5A to Seep Canal
1	Total In	10.10	**16.1**	6	183	Weighted Ave. for Net Inflows
1	West (Out)	10.10	**11.5**	1.4	43	Assumed mean stage in Cell 2
2	East (In)	9.50	**12.8**	3.3	101	Assumed mean stage in Cell 1
3	East Line	10.40	**15.75**	5.35	163	Mean Stage in WCA-1
3	West Line	10.40	**11.7**	1.3	40	Assumed mean stage in Cell 4
4	East Line	9.70	**12.4**	2.7	82	Assumed mean stage in Cell 3
5A	North Line	9.50	**8**	-1.5	-46	Seepage Canal Control Elevation
	East Line	9.50	**8**	-1.5	-46	Seepage Canal Control Elevation
5B	North Line	9.50	**8**	-1.5	-46	Seepage Canal Control Elevation

No. of CSTRs in Series: For analysis of existing conditions, Cells 1, 2, 3, and 4 are described as 2 CSTRs in series to account for documented short-circuiting. The short-circuiting results from both remnant agricultural canals generally parallel to flow paths, and from side-tipped topography in Cells 1 and 3. Cell 5A is described with 2 CSTRs in series due to the short flow path. Cell 5B is input as 2.5 CSTRs in series due to the presence of remnant agricultural canals, while recognizing its larger area and much longer flow path.

2.6. STA-1W Alternative 1

Under Alternative No. 1, STA-1W would be modified to improve its performance, with completion of all modifications and placement into service of the modified treatment area occurring prior to 2007. For this analysis, that improvement is considered to consist of the

conversion of Cell 3 from emergent vegetation to Submerged Aquatic Vegetation (SAV_C4).

A schematic of STA-1W under Alternative 1, is presented in Figure A.2.

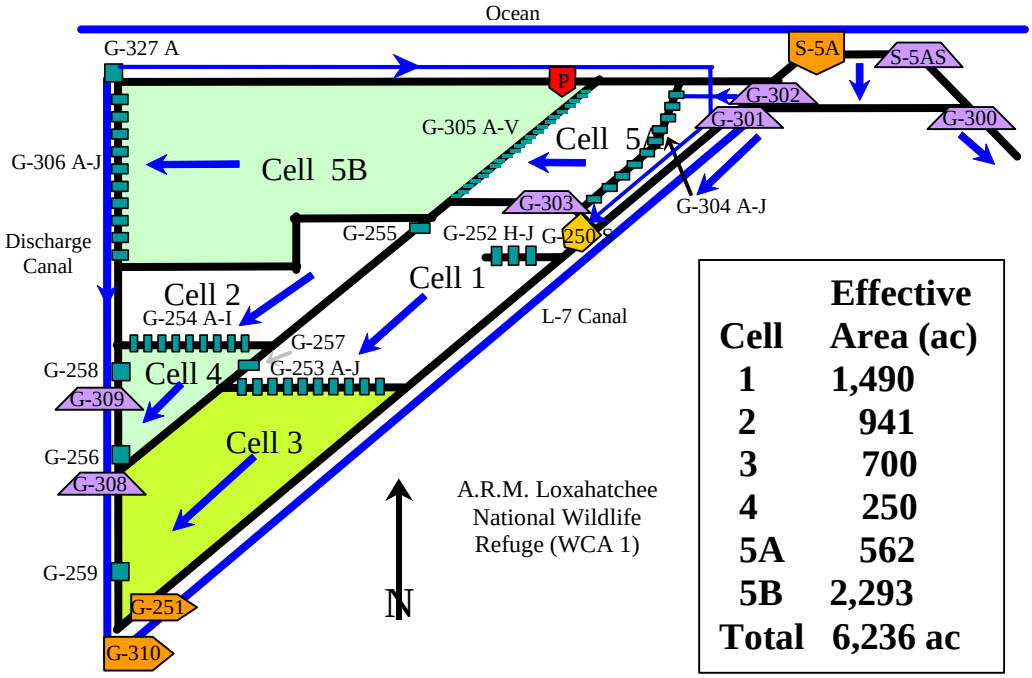

Figure A.2. Schematic of STA-1W under Alternative 1

2.6.1. Treatment Analysis Input Data Summary

Inflow rates, TP concentrations, rainfall and evapotranspiration employed in the DMSTA analysis of Alternative 1 are taken from the "sta1w inflow tp.xls" Excel file. Inflow volumes and TP loads are identical to those summarized in Table A.1. Estimated Inflows, STA-1W Existing Analysis, 1965-1995. Inflow rates, TP concentrations, rainfall, and evapotranspiration employed in the DMSTA analysis of Alternative 1 were taken from this file and these input variables are defined in the Excel worksheet "1W Alternative 1" included in the original 2002 workbook "1W_Alt1_Data.xls".

2.6.2. Summary of Input Variables for Treatment Analysis

Other than as discussed below, input variables employed in the analysis of Alternative 1 for STA-1W are identical to those included in the Baseline 2007-2056 Condition analysis.

- The Outflow Control Depth in Cell 3 was modified from 40 cm to 60 cm.
- The vegetation type in Cell 3 was revised from "Emergent" to "SAV_C4", and the associated default treatment parameters of DMSTA were employed in the analysis.

2.7. STA-1W Alternative 2

Under Alternative No. 2, STA-1W would be further optimized through:

- Conversion of a part of both Cell 1 and Cell 2 to SAV
- Increased compartmentalization
- Improved flow distribution

A schematic of STA-1W under Alternative 2, is presented in Figure A.3.

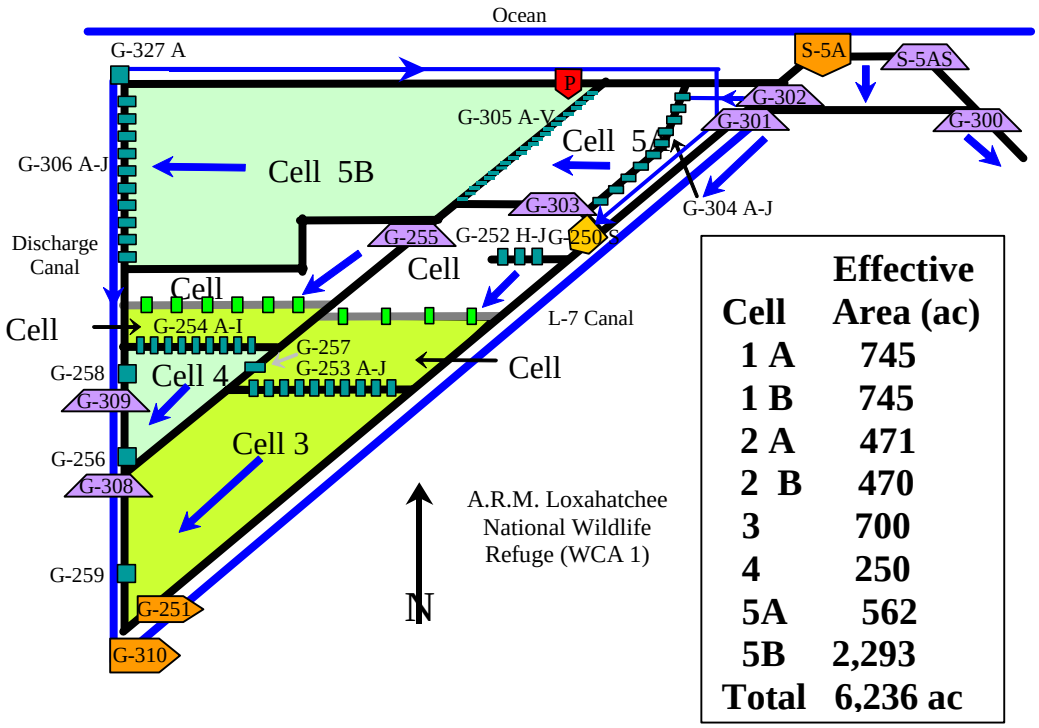

Figure A.3. Schematic of STA-1W under Alternative 2

2.7.1. Treatment Analysis Input Data Summary

Inflow rates, TP concentrations, rainfall and evapotranspiration employed in the DMSTA analysis of Alternative 2 are taken from the "sta1w inflow tp.xls" Excel file. TP loads are identical to those summarized in Table 2.24 Estimated Inflows, STA-1W Existing Analysis, 1965-1995. Inflow fractions were redistributed according to outflow TP concentrations in each parallel flow path until a geometric mean of 10 ppb for the STA was reached. Inflow rates, TP concentrations, rainfall, and evapotranspiration employed in the DMSTA analysis of Alternative 2 are defined in the Excel worksheet "1W Alternative 2" included in the original 2002 workbook "1W_Alt2_Data.xls".

2.7.2. Summary of Input Variables for Treatment Analysis

The following additional modifications were made in the input parameters for Alternative 2 (Cell 3 was considered as converted to SAV_C4 as was done for Alternative 1):

- Cell 1 was split into Cell 1A and 1B. It was considered that a new transverse levee and control structures would be constructed separating the two cells.
    - The split reduced the effective treatment area of emergent vegetation in Cell 1 from 1,490 acres to 745 acres (Cell 1A).
    - Likewise, the effective treatment area of SAV vegetation was increased with the addition of Cell 1B (745 acres).
- Cell 2 was split into Cell 2A and 2B. It was considered that a new transverse levee and control structures would be constructed in connection with that conversion.
    - The split reduced the effective treatment area of emergent vegetation in Cell 2 from 941 acres to 471 acres (Cell 2A).
    - Likewise, the effective treatment area of SAV vegetation was increased with the addition of Cell 2B (470 acres).
- The number of CSTRs increased in the cells with SAV increased due to additional compartmentalization.

- The distribution of inflows from G-302 was modified.
    - The inflow fraction to Cell 5A was reduced from 0.50 to 0.41.
    - The inflow fraction to Cell 1 was increased from 0.25 to 0.39.
    - The inflow fraction to Cell 2 was reduced from 0.25 to 0.20.

Appendix B

DMSTA 04/12/2002 Runs

List of Tables

Table B.1 Results of DMSTA 2002 Analysis, STA-1W Existing Design (Baseline 2007-2056)

Input Variable	Units	Value
Design Case Name	-	Baseline
Starting Date for Simulation	-	01/01/65
Ending Date for Simulation	-	12/31/95
Starting Date for Output	-	01/01/65
Steps Per Day	-	3
Number of Iterations	-	2
Output Averaging Interval	days	7
Reservoir H2O Residence Time	days	0
Max Inflow / Mean Inflow	-	0
Max Reservoir Storage	hm3	0
Reservoir P Decay Rate	1/yr/ppb	0
Rainfall P Conc	ppb	10
Atmospheric P Load (Dry)	mg/m2-yr	20

Case Description: Existing, Cells 1-3 & 5A--Emergent & Cell 4 & 5B--SAV_C4

Filename: 1W_baseline_Data.xls

Output Variable	Units	Value
Water Balance Error	%	0.0%
Mass Balance Error	%	0.1%
Flow-Wtd Conc - With Bypass	ppb	24.3
Flow-Wtd Conc - Without Bypass	ppb	24.3
Geometric Mean Conc	ppb	24.1
95th Percentile Conc	ppb	30.5
Freq Cell Outflow > 10 ppb	%	45%
Bypass Load	%	0.0%

Cell Number -->		1	2	3	4	5	6
Cell Label	-	1	2	3	4	5A	5B
Vegetation Type	------->	EMERG	EMERG	EMERG	SAV_C4	EMERG	SAV_C4
Inflow Fraction	-	0.25	0.25	0	0	0.5	0
Downstream Cell Number	-	3	4	0	0	6	0
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34
Number of Tanks in Series	-	2	2	2	2	2	3
Outflow Control Depth	cm	55	67	46	60	60	60
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78
Bypass Depth	cm	0	0	0	0	0	0
Maximum Inflow	hm3/day	0	0	0	0	0	0
Maximum Outflow	hm3/day	0	0	0	0	0	0
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0
Inflow Seepage Control Elev	cm	183	101	163	82	0	0
Inflow Seepage Conc	ppb	20	20	20	20	20	20
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8
Seepage Discharge Fraction	-	0	0	0	0	0	0
Initial Water Column Conc	ppb	30	30	30	30	30	30
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500
Initial Water Column Depth	cm	50	50	50	50	50	50
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*15.66*	*80.10*	*15.66*	*80.10*
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*

Output Variables	Units	1	2	3	4	5	6	Overall
Execution Time	seconds/yr	0.74	1.61	2.71	3.36	3.97	4.94	4.94
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279	25.2
Mean Water Load	cm/d	2.2	3.6	7.4	14.1	11.9	2.9	2.1
Max Water Load	cm/d	12.9	20.5	31.5	89.5	68.6	17.8	12.4
Inflow Volume	hm3/yr	49.5	49.5	77.1	52.2	99.0	97.8	197.9
Inflow Load	kg/yr	6854.8	6854.8	3322.8	3258.3	13709.6	9597.4	27419.3
Inflow Conc	ppb	138.5	138.5	43.1	62.4	138.5	98.1	138.5
Treated Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Treated Outflow Load	kg/yr	3322.8	3258.3	2626.0	1599.5	9597.4	1428.0	5653.5
Treated FWM Outflow Conc	ppb	43.1	62.4	30.9	30.4	98.1	15.1	24.3
Total Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Total Outflow Load	kg/yr	3322.8	3258.3	2626.0	1599.5	9597.4	1428.0	5653.5
Total FWM Outflow Conc	ppb	43.1	62.4	30.9	30.4	98.1	15.1	24.3
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	51.5%	52.5%	21.0%	50.9%	30.0%	85.1%	79.4%
Outflow Geometric Mean - Daily	ppb	39.3	55.6	29.1	21.8	89.4	8.8	25.0
Outflow Geo Mean - Composites	ppb	39.7	56.2	29.2	22.8	91.4	9.3	24.1
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	100%	100%

Table B.2 Results of DMSTA 2002 Analysis, STA-1W, Alternative 1

Input Variable	Units	Value	Case Description:	Filename: 1W_Alt1_Data.xls
Design Case Name	-	Alt 1	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_C4	
Starting Date for Simulation	-	01/01/65	Alternative 1	
Ending Date for Simulation	-	12/31/95		
Starting Date for Output	-	01/01/65		
Steps Per Day	-	3	**Output Variable**	**Units** / **Value**
Number of Iterations	-	2	Water Balance Error	% / 0.0%
Output Averaging Interval	days	7	Mass Balance Error	% / 0.1%
Reservoir H2O Residence Time	days	0	Flow-Wtd Conc - With Bypass	ppb / 18.7
Max Inflow / Mean Inflow	-	0	Flow-Wtd Conc - Without Bypass	ppb / 18.7
Max Reservoir Storage	hm3	0	Geometric Mean Conc	ppb / 13.6
Reservoir P Decay Rate	1/yr/ppb	0	95th Percentile Conc	ppb / 22.6
Rainfall P Conc	ppb	10	Freq Cell Outflow > 10 ppb	% / 45%
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load	% / 0.0%

Cell Number -->		**1**	**2**	**3**	**4**	**5**	**6**
Cell Label	-	1	2	3	4	5A	5B
Vegetation Type	------->	EMERG	EMERG	SAV_C4	SAV_C4	EMERG	SAV_C4
Inflow Fraction	-	0.25	0.25	0	0	0.5	0
Downstream Cell Number	-	3	4	0	0	6	0
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34
Number of Tanks in Series	-	2	2	2	2	2	3
Outflow Control Depth	cm	55	67	46	60	60	60
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78
Bypass Depth	cm	0	0	0	0	0	0
Maximum Inflow	hm3/day	0	0	0	0	0	0
Maximum Outflow	hm3/day	0	0	0	0	0	0
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0
Inflow Seepage Control Elev	cm	183	101	163	82	0	0
Inflow Seepage Conc	ppb	20	20	20	20	20	20
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8
Seepage Discharge Fraction	-	0	0	0	0	0	0
Initial Water Column Conc	ppb	30	30	30	30	30	30
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500
Initial Water Column Depth	cm	50	50	50	50	50	50
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*80.10*	*80.10*	*15.66*	*80.10*
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*

Output Variables	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**Overall**
Execution Time	seconds/yr	0.77	1.39	2.16	2.87	3.52	4.39	4.39
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279	25.2
Mean Water Load	cm/d	2.2	3.6	7.4	14.1	11.9	2.9	2.1
Max Water Load	cm/d	12.9	20.5	31.5	89.5	68.6	17.8	12.4
Inflow Volume	hm3/yr	49.5	49.5	77.1	52.2	99.0	97.8	197.9
Inflow Load	kg/yr	6854.8	6854.8	3322.8	3258.3	13709.6	9597.4	27419.3
Inflow Conc	ppb	138.5	138.5	43.1	62.4	138.5	98.1	138.5
Treated Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Treated Outflow Load	kg/yr	3322.8	3258.3	1324.8	1599.5	9597.4	1428.0	4352.3
Treated FWM Outflow Conc	ppb	43.1	62.4	15.6	30.4	98.1	15.1	18.7
Total Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Total Outflow Load	kg/yr	3322.8	3258.3	1324.8	1599.5	9597.4	1428.0	4352.3
Total FWM Outflow Conc	ppb	43.1	62.4	15.6	30.4	98.1	15.1	18.7
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	51.5%	52.5%	60.1%	50.9%	30.0%	85.1%	84.1%
Outflow Geometric Mean - Daily	ppb	39.3	55.6	12.8	21.8	89.4	8.8	13.0
Outflow Geo Mean - Composites	ppb	39.7	56.2	13.1	22.8	91.4	9.3	13.6
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	100%	86%

Table B.3 Results of DMSTA 2002 Analysis, STA-1W Existing Design, Alternative 2

Input Variable	Units	Value	Case Description:	Filename: 1W_Alt2_Data.xls				
Design Case Name	-	Alt 2	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_C4					
Starting Date for Simulation	-	01/01/65	Alternative 2					
Ending Date for Simulation	-	12/31/95	Redistributed inflows -- Balanced Outflow Concentrations					
Starting Date for Output	-	01/01/65	Reduction of Cell 1 Area, Increase Cell 3 Area					
Steps Per Day	-	3	**Output Variable**			**Units**	**Value**	
Number of Iterations	-	2	Water Balance Error			%	0.0%	
Output Averaging Interval	days	7	Mass Balance Error			%	0.1%	
Reservoir H2O Residence Time	days	0	Flow-Wtd Conc - With Bypass			ppb	13.3	
Max Inflow / Mean Inflow	-	0	Flow-Wtd Conc - Without Bypass			ppb	13.3	
Max Reservoir Storage	hm3	0	Geometric Mean Conc			ppb	9.3	
Reservoir P Decay Rate	1/yr/ppb	0	95th Percentile Conc			ppb	16.9	
Rainfall P Conc	ppb	10	Freq Cell Outflow > 10 ppb			%	41%	
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load			%	0.0%	
Cell Number -->		**1**	**2**	**3**	**4**	**5**	**6**	
Cell Label	-	1	2	3	4	5A	5B	
Vegetation Type	------->	EMERG	EMERG	SAV_C4	SAV_C4	EMERG	SAV_C4	
Inflow Fraction	-	0.39	0.2	0	0	0.41	0	
Downstream Cell Number	-	3	4	0	0	6	0	
Surface Area	km2	3.015	1.906	5.850	2.914	2.274	9.279	
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34	
Number of Tanks in Series	-	2	2	4	6	2	3	
Outflow Control Depth	cm	55	67	46	60	60	60	
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25	
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78	
Bypass Depth	cm	0	0	0	0	0	0	
Maximum Inflow	hm3/day	0	0	0	0	0	0	
Maximum Outflow	hm3/day	0	0	0	0	0	0	
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0	
Inflow Seepage Control Elev	cm	183	101	163	82	0	0	
Inflow Seepage Conc	ppb	20	20	20	20	20	20	
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496	
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46	
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20	
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8	
Seepage Discharge Fraction	-	0	0	0	0	0	0	
Initial Water Column Conc	ppb	30	30	30	30	30	30	
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500	
Initial Water Column Depth	cm	50	50	50	50	50	50	
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*	
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*	
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*80.10*	*80.10*	*15.66*	*80.10*	
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*	
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*	
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*	
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*	
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*	
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*	

Output Variables	Units	1	2	3	4	5	6	Overall
Execution Time	seconds/yr	0.77	1.45	2.61	4.29	4.97	5.94	5.94
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	3.015	1.906	5.85	2.914	2.274	9.279	25.2
Mean Water Load	cm/d	7.0	5.7	4.2	3.8	9.8	2.4	2.1
Max Water Load	cm/d	40.4	32.8	22.4	23.3	56.3	14.5	12.4
Inflow Volume	hm3/yr	77.2	39.6	90.6	41.0	81.2	80.0	197.9
Inflow Load	kg/yr	10693.5	5483.9	7379.5	3254.4	11241.9	7379.8	27419.3
Inflow Conc	ppb	138.5	138.5	81.4	79.5	138.5	92.3	138.5
Treated Outflow Volume	hm3/yr	90.6	41.0	106.7	42.2	80.0	76.8	225.7
Treated Outflow Load	kg/yr	7379.5	3254.4	1410.3	554.0	7379.8	1027.2	2991.5
Treated FWM Outflow Conc	ppb	81.4	79.5	13.2	13.1	92.3	13.4	13.3
Total Outflow Volume	hm3/yr	90.6	41.0	106.7	42.2	80.0	76.8	225.7
Total Outflow Load	kg/yr	7379.5	3254.4	1410.3	554.0	7379.8	1027.2	2991.5
Total FWM Outflow Conc	ppb	81.4	79.5	13.2	13.1	92.3	13.4	13.3
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	31.0%	40.7%	80.9%	83.0%	34.4%	86.1%	89.1%
Outflow Geometric Mean - Daily	ppb	75.2	71.9	9.8	7.3	83.7	7.7	9.2
Outflow Geo Mean - Composites	ppb	76.1	72.7	10.1	7.5	85.6	8.0	9.3
Frequency Outflow Conc > 10 ppb	%	100%	100%	40%	0%	100%	0%	33%

Table B.4 Results of DMSTA 2002 Analysis, STA-1W Existing Design (Baseline 2007-2056) – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value	Case Description:	Filename: 1W_baseline_AMC_Data.xls
Design Case Name	-	Baseline	Existing, Cells 1-3 & 5A--Emergent & Cell 4 & 5B--SAV_C4	
Starting Date for Simulation	-	01/01/65	Monthly Inflow Data	
Ending Date for Simulation	-	12/31/95		
Starting Date for Output	-	01/01/65		
Steps Per Day	-	3	**Output Variable**	**Units** **Value**
Number of Iterations	-	2	Water Balance Error	% 0.0%
Output Averaging Interval	days	7	Mass Balance Error	% 0.1%
Reservoir H2O Residence Time	days	0	Flow-Wtd Conc - With Bypass	ppb 24.2
Max Inflow / Mean Inflow	-	0	Flow-Wtd Conc - Without Bypass	ppb 24.2
Max Reservoir Storage	hm3	0	Geometric Mean Conc	ppb 24.0
Reservoir P Decay Rate	1/yr/ppb	0	95th Percentile Conc	ppb 30.4
Rainfall P Conc	ppb	10	Freq Cell Outflow > 10 ppb	% 45%
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load	% 0.0%

Cell Number -->		**1**	**2**	**3**	**4**	**5**	**6**
Cell Label	-	1	2	3	4	5A	5B
Vegetation Type	------->	EMERG	EMERG	EMERG	SAV_C4	EMERG	SAV_C4
Inflow Fraction	-	0.25	0.25	0	0	0.5	0
Downstream Cell Number	-	3	4	0	0	6	0
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34
Number of Tanks in Series	-	2	2	2	2	2	3
Outflow Control Depth	cm	55	67	46	60	60	60
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78
Bypass Depth	cm	0	0	0	0	0	0
Maximum Inflow	hm3/day	0	0	0	0	0	0
Maximum Outflow	hm3/day	0	0	0	0	0	0
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0
Inflow Seepage Control Elev	cm	183	101	163	82	0	0
Inflow Seepage Conc	ppb	20	20	20	20	20	20
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8
Seepage Discharge Fraction	-	0	0	0	0	0	0
Initial Water Column Conc	ppb	30	30	30	30	30	30
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500
Initial Water Column Depth	cm	50	50	50	50	50	50
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*15.66*	*80.10*	*15.66*	*80.10*
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*

Output Variables	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**Overall**
Execution Time	seconds/yr	0.90	1.58	2.26	2.94	3.61	4.52	4.52
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279	25.2
Mean Water Load	cm/d	2.2	3.6	7.4	14.1	11.9	2.9	2.1
Max Water Load	cm/d	12.9	20.5	31.5	89.5	68.6	17.8	12.4
Inflow Volume	hm3/yr	49.5	49.5	77.1	52.2	99.0	97.8	197.9
Inflow Load	kg/yr	6854.8	6854.8	3309.9	3239.5	13709.6	9538.4	27419.3
Inflow Conc	ppb	138.5	138.5	43.0	62.0	138.5	97.5	138.5
Treated Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Treated Outflow Load	kg/yr	3309.9	3239.5	2616.2	1590.6	9538.4	1417.2	5624.0
Treated FWM Outflow Conc	ppb	43.0	62.0	30.8	30.2	97.5	15.0	24.2
Total Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Total Outflow Load	kg/yr	3309.9	3239.5	2616.2	1590.6	9538.4	1417.2	5624.0
Total FWM Outflow Conc	ppb	43.0	62.0	30.8	30.2	97.5	15.0	24.2
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	51.7%	52.7%	21.0%	50.9%	30.4%	85.1%	79.5%
Outflow Geometric Mean - Daily	ppb	39.2	55.6	29.0	21.7	90.0	8.8	24.9
Outflow Geo Mean - Composites	ppb	39.6	56.1	29.1	22.7	91.8	9.3	24.0
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	100%	100%

Table B.5 Results of DMSTA 2002 Analysis, STA-1W, Alternative 1 – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value
Design Case Name	-	Alt 1
Starting Date for Simulation	-	01/01/65
Ending Date for Simulation	-	12/31/95
Starting Date for Output	-	01/01/65
Steps Per Day	-	3
Number of Iterations	-	2
Output Averaging Interval	days	7
Reservoir H2O Residence Time	days	0
Max Inflow / Mean Inflow	-	0
Max Reservoir Storage	hm3	0
Reservoir P Decay Rate	1/yr/ppb	0
Rainfall P Conc	ppb	10
Atmospheric P Load (Dry)	mg/m2-yr	20

Case Description: Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_C4
Alternative 1
Monthly Inflow Data

Filename: 1W_Alt1_AMC_Data.xls

Output Variable	Units	Value
Water Balance Error	%	0.0%
Mass Balance Error	%	0.1%
Flow-Wtd Conc - With Bypass	ppb	18.6
Flow-Wtd Conc - Without Bypass	ppb	18.6
Geometric Mean Conc	ppb	13.5
95th Percentile Conc	ppb	22.5
Freq Cell Outflow > 10 ppb	%	45%
Bypass Load	%	0.0%

Cell Number -->		1	2	3	4	5	6
Cell Label	-	1	2	3	4	5A	5B
Vegetation Type	------->	EMERG	EMERG	SAV_C4	SAV_C4	EMERG	SAV_C4
Inflow Fraction	-	0.25	0.25	0	0	0.5	0
Downstream Cell Number	-	3	4	0	0	6	0
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34
Number of Tanks in Series	-	2	2	2	2	2	3
Outflow Control Depth	cm	55	67	46	60	60	60
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78
Bypass Depth	cm	0	0	0	0	0	0
Maximum Inflow	hm3/day	0	0	0	0	0	0
Maximum Outflow	hm3/day	0	0	0	0	0	0
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0
Inflow Seepage Control Elev	cm	183	101	163	82	0	0
Inflow Seepage Conc	ppb	20	20	20	20	20	20
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8
Seepage Discharge Fraction	-	0	0	0	0	0	0
Initial Water Column Conc	ppb	30	30	30	30	30	30
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500
Initial Water Column Depth	cm	50	50	50	50	50	50
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*80.10*	*80.10*	*15.66*	*80.10*
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*

Output Variables	Units	1	2	3	4	5	6	Overall
Execution Time	seconds/yr	0.81	1.45	2.13	2.77	3.48	4.39	4.39
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	6.030	3.808	2.833	1.012	2.274	9.279	25.2
Mean Water Load	cm/d	2.2	3.6	7.4	14.1	11.9	2.9	2.1
Max Water Load	cm/d	12.9	20.5	31.5	89.5	68.6	17.8	12.4
Inflow Volume	hm3/yr	49.5	49.5	77.1	52.2	99.0	97.8	197.9
Inflow Load	kg/yr	6854.8	6854.8	3309.9	3239.5	13709.6	9538.4	27419.3
Inflow Conc	ppb	138.5	138.5	43.0	62.0	138.5	97.5	138.5
Treated Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Treated Outflow Load	kg/yr	3309.9	3239.5	1320.6	1590.6	9538.4	1417.2	4328.4
Treated FWM Outflow Conc	ppb	43.0	62.0	15.5	30.2	97.5	15.0	18.6
Total Outflow Volume	hm3/yr	77.1	52.2	85.0	52.6	97.8	94.6	232.2
Total Outflow Load	kg/yr	3309.9	3239.5	1320.6	1590.6	9538.4	1417.2	4328.4
Total FWM Outflow Conc	ppb	43.0	62.0	15.5	30.2	97.5	15.0	18.6
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	51.7%	52.7%	60.1%	50.9%	30.4%	85.1%	84.2%
Outflow Geometric Mean - Daily	ppb	39.2	55.6	12.8	21.7	90.0	8.8	12.9
Outflow Geo Mean - Composites	ppb	39.6	56.1	13.1	22.7	91.8	9.3	13.5
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	100%	86%

Table B.6 Results of DMSTA 2002 Analysis, STA-1W Existing Design, Alternative 2 – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value	Case Description:	Filename: 1W_Alt2_AMC_Data.xls			
Design Case Name	-	Alt 2	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_C4				
Starting Date for Simulation	-	01/01/65	Alternative 2	Monthly Inflow Data			
Ending Date for Simulation	-	12/31/95	Redistributed inflows -- Balanced Outflow Concentrations				
Starting Date for Output	-	01/01/65	Reduction of Cell 1 Area, Increase Cell 3 Area				
Steps Per Day	-	3	Output Variable			Units	Value
Number of Iterations	-	2	Water Balance Error			%	0.0%
Output Averaging Interval	days	7	Mass Balance Error			%	0.1%
Reservoir H2O Residence Time	days	0	Flow-Wtd Conc - With Bypass			ppb	13.2
Max Inflow / Mean Inflow	-	0	Flow-Wtd Conc - Without Bypass			ppb	13.2
Max Reservoir Storage	hm3	0	Geometric Mean Conc			ppb	9.3
Reservoir P Decay Rate	1/yr/ppb	0	95th Percentile Conc			ppb	16.8
Rainfall P Conc	ppb	10	Freq Cell Outflow > 10 ppb			%	40%
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load			%	0.0%

Cell Number -->		**1**	**2**	**3**	**4**	**5**	**6**
Cell Label	-	1	2	3	4	5A	5B
Vegetation Type	------->	EMERG	EMERG	SAV_C4	SAV_C4	EMERG	SAV_C4
Inflow Fraction	-	0.39	0.2	0	0	0.41	0
Downstream Cell Number	-	3	4	0	0	6	0
Surface Area	km2	3.015	1.906	5.850	2.914	2.274	9.279
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34
Number of Tanks in Series	-	2	2	4	6	2	3
Outflow Control Depth	cm	55	67	46	60	60	60
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78
Bypass Depth	cm	0	0	0	0	0	0
Maximum Inflow	hm3/day	0	0	0	0	0	0
Maximum Outflow	hm3/day	0	0	0	0	0	0
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485	0	0
Inflow Seepage Control Elev	cm	183	101	163	82	0	0
Inflow Seepage Conc	ppb	20	20	20	20	20	20
Outflow Seepage Rate	(cm/d) / cm	0.00346	0	0.00173	0	0.01577	0.00496
Outflow Seepage Control Elev	cm	43	0	40	0	-46	-46
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20
Seepage Recycle Fraction	-	0	0	0	0	0.91	0.8
Seepage Discharge Fraction	-	0	0	0	0	0	0
Initial Water Column Conc	ppb	30	30	30	30	30	30
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500
Initial Water Column Depth	cm	50	50	50	50	50	50
C0 = WC Conc at 0 g/m2 P Storage	ppb	*4*	*4*	*4*	*4*	*4*	*4*
C1 = WC Conc at 1 g/m2 P storage	ppb	*22*	*22*	*22*	*22*	*22*	*22*
K = Net Settling Rate at Steady State	m/yr	*16*	*16*	*80.10*	*80.10*	*15.66*	*80.10*
Zx = Depth Scale Factor	cm	*60*	*60*	*60*	*60*	*60*	*60*
C0 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
C1 - Periphyton	ppb	*0*	*0*	*0*	*0*	*0*	*0*
K - Periphyton	1/yr	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Zx - Periphyton	cm	*0*	*0*	*0*	*0*	*0*	*0*
Sm = Transition Storage Midpoint	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*
Sb = Transition Storage Bandwidth	mg/m2	*0*	*0*	*0*	*0*	*0*	*0*

Output Variables	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**Overall**
Execution Time	seconds/yr	0.71	1.35	2.61	4.39	5.06	5.97	5.97
Run Date	-	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322	11322
Cell Label		1	2	3	4	5A	5B	Total Outflow
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow	-
Surface Area	km2	3.015	1.906	5.85	2.914	2.274	9.279	25.2
Mean Water Load	cm/d	7.0	5.7	4.2	3.8	9.8	2.4	2.1
Max Water Load	cm/d	40.4	32.8	22.4	23.3	56.3	14.5	12.4
Inflow Volume	hm3/yr	77.2	39.6	90.6	41.0	81.2	80.0	197.9
Inflow Load	kg/yr	10693.5	5483.9	7351.5	3237.8	11241.9	7331.7	27419.3
Inflow Conc	ppb	138.5	138.5	81.1	79.1	138.5	91.7	138.5
Treated Outflow Volume	hm3/yr	90.6	41.0	106.7	42.2	80.0	76.8	225.7
Treated Outflow Load	kg/yr	7351.5	3237.8	1406.2	551.7	7331.7	1019.9	2977.8
Treated FWM Outflow Conc	ppb	81.1	79.1	13.2	13.1	91.7	13.3	13.2
Total Outflow Volume	hm3/yr	90.6	41.0	106.7	42.2	80.0	76.8	225.7
Total Outflow Load	kg/yr	7351.5	3237.8	1406.2	551.7	7331.7	1019.9	2977.8
Total FWM Outflow Conc	ppb	81.1	79.1	13.2	13.1	91.7	13.3	13.2
Bypass Volume	hm3/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Load	kg/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bypass Conc	ppb	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bypass Load	%	0%	0%	0%	0%	0%	0.0	0%
Surface Outflow Load Reduc	%	31.3%	41.0%	80.9%	83.0%	34.8%	86.1%	89.1%
Outflow Geometric Mean - Daily	ppb	75.4	72.0	9.8	7.3	84.1	7.7	9.1
Outflow Geo Mean - Composites	ppb	76.2	72.7	10.1	7.5	85.9	8.0	9.3
Frequency Outflow Conc > 10 ppb	%	100%	100%	40%	0%	100%	0%	33%

Appendix C
DMSTA2 Runs

List of Tables

Table C.1 Results of DMSTA2 Analysis, STA-1W Existing Design (Baseline 2007-2056)

Input Variable	Units	Value	Case Description:											
Design Case Name	-	Baseline	Existing, Cells 1-3 & 5A--Emergent & Cell4 & 5B--SAV_3											
Input Series Name		TS_STA												
Starting Date for Simulation	-	01/01/65												
Ending Date for Simulation	-	12/31/95												
Starting Date for Output	-	01/01/65												
Integration Steps Per Day	-	3	Simulation Type:		Base									
Number of Iterations	-	3	Output Variable		Mean	Lower CL	Upper CL		Diagnostics					
Output Averaging Interval	days	7	FWM Outflow C (ppb)		27.1	#N/A	#N/A		H20 Balance Error Mean & Max				0.0%	0.0%
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb)		24.6	#N/A	#N/A		Mass Balance Error Mean & Max				0.3%	0.5%
Rainfall P Conc	ppb	10	Load Reduction %		77%	#N/A	#N/A		Iterations & Convergence				3	0.0%
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%)		0.0%				Warning/Error Messages				4	
Cell Number -->		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Cell Label	-	1	2	3	4	5A	5B							
Vegetation Type	-->	EMG_3	EMG_3	EMG_3	SAV_3	EMG_3	SAV_3							
Inflow Fraction	-	0.25	0.25			0.5								
Downstream Cell Number	-	3	4			6								
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28							
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34							
Number of Tanks in Series	-	2.0	2.0	2.0	2.0	2.0	3.0							
Minimum Depth for Releases	cm													
Release 1 Series Name														
Release 2 Series Name														
Outflow Series Name														
Depth Series Name														
Outflow Control Depth	cm	55	67	46	60	60	60							
Outflow Weir Depth	cm													
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25							
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78							
Bypass Depth	cm													
Maximum Inflow	hm3/day													
Maximum Outflow	hm3/day													
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485									
Inflow Seepage Control Elev	cm	183	101	163	82									
Inflow Seepage Conc	ppb	20	20	20	20	20	20							
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496							
Outflow Seepage Control Elev	cm	43		40		-46	-46							
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20							
Seepage Recycle to Cell Number	-													
Seepage Recycle Fraction	-					0.91	0.8							
Seepage Discharge Fraction	-													
Initial Water Column Conc	ppb	30	30	30	30	30	30							
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500							
Initial Water Column Depth	cm	50	50	50	50	50	50							
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3							
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22							
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300							
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	16.8	52.5	16.8	52.5							
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40							
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100							
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200							

Output Variables	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Overall**
Execution Time	sec/yr	12.81	13.55	14.55	15.84	16.94	18.13							18.13
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	49.5	49.5	77.0	52.2	99.0	97.8							197.9
Cell Inflow Load	kg/yr	6855	6855	3424	3548	13710	10114							27419
Cell Inflow Conc	ppb	138.5	138.5	44.5	68.0	138.5	103.4							138.5
Treated Outflow Volume	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Treated Outflow Load	kg/yr	3424	3548	2534	2079	10114	1677							6290
Treated FWM Outflow Conc	ppb	44.5	68.0	29.8	39.5	103.4	17.7							27.1
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Total Outflow Load + Bypass	kg/yr	3424	3548	2534	2079	10114	1677							28597.4
Total FWM Outflow Conc	ppb	44.5	68.0	29.8	39.5	103.4	17.7							123.2
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	0.78	0.78	0.90	0.89	1.56	1.64							3.12
Maximum Outflow	hm3/d	0.90	0.89	0.93	0.92	1.64	1.82							3.67
Surface Load Reduction	kg/yr	3431	3307	890	1468	3595	8438							21130
Load Trapped in Sediments	kg/yr	4145	3485	1143	1493	2592	8559							21417
Overall Load Reduction	%	50%	48%	26%	41%	26%	83%							77%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	39.2	57.9	26.8	28.4	90.7	9.8							#N/A
Outflow Geo Mean - Composites	ppb	39.8	61.1	27.0	32.2	94.6	12.7							24.6
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	68%							100%
Frequency Outflow Conc > 20 ppb	%	100%	100%	100%	96%	100%	16%							100%
Frequency Outflow Conc > 50 ppb	%	9%	92%	0%	2%	100%	0%							91%
Freq Outflow Volume > 10 ppb	%	100%	100%	100%	100%	100%	90%							100%
Warning or Error Messages		Cell# 4 4 Depth out of calib. range for SAV_3: 60 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 78 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 114 vs. 162 - 374 m2/day												4

Table C.2 Results of DMSTA2 Analysis, STA-1W, Alternative 1

Input Variable	Units	Value	Case Description:
Design Case Name	-	Alt1	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_3
Input Series Name		TS_STA	Alternative 1
Starting Date for Simulation	-	01/01/65	
Ending Date for Simulation	-	12/31/95	
Starting Date for Output	-	01/01/65	
Integration Steps Per Day	-	3	Simulation Type: Base
Number of Iterations	-	3	Output Variable / Mean / Lower CL / Upper CL
Output Averaging Interval	days	7	FWM Outflow C (ppb) 22.6 #N/A #N/A
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb) 16.5 #N/A #N/A
Rainfall P Conc	ppb	10	Load Reduction % 81% #N/A #N/A
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%) 0.0%

Diagnostics		
H20 Balance Error Mean & Max	0.0%	0.0%
Mass Balance Error Mean & Max	0.3%	0.5%
Iterations & Convergence	3	0.0%
Warning/Error Messages	6	

Cell Number -->		1	2	3	4	5	6	7	8	9	10	11	12
Cell Label	-	1	2	3	4	5A	5B						
Vegetation Type	-->	EMG_3	EMG_3	SAV_3	SAV_3	EMG_3	SAV_3						
Inflow Fraction	-	0.25	0.25			0.5							
Downstream Cell Number	-	3	4			6							
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28						
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34						
Number of Tanks in Series	-	2.0	2.0	2.0	2.0	2.0	3.0						
Minimum Depth for Releases	cm												
Release 1 Series Name													
Release 2 Series Name													
Outflow Series Name													
Depth Series Name													
Outflow Control Depth	cm	55	67	46	60	60	60						
Outflow Weir Depth	cm												
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25						
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78						
Bypass Depth	cm												
Maximum Inflow	hm3/day												
Maximum Outflow	hm3/day												
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485								
Inflow Seepage Control Elev	cm	183	101	163	82								
Inflow Seepage Conc	ppb	20	20	20	20	20	20						
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496						
Outflow Seepage Control Elev	cm	43		40		-46	-46						
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20						
Seepage Recycle to Cell Number	-												
Seepage Recycle Fraction	-					0.91	0.8						
Seepage Discharge Fraction	-												
Initial Water Column Conc	ppb	30	30	30	30	30	30						
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500						
Initial Water Column Depth	cm	50	50	50	50	50	50						
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3						
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22						
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300						
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	52.5	52.5	16.8	52.5						
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40						
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100						
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200						

Output Variables	Units	1	2	3	4	5	6	7	8	9	10	11	12	Overall
Execution Time	sec/yr	11.13	11.97	12.71	13.52	14.29	15.36							15.36
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	49.5	49.5	77.0	52.2	99.0	97.8							197.9
Cell Inflow Load	kg/yr	6855	6855	3424	3548	13710	10114							27419
Cell Inflow Conc	ppb	138.5	138.5	44.5	68.0	138.5	103.4							138.5
Treated Outflow Volume	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Treated Outflow Load	kg/yr	3424	3548	1482	2079	10114	1677							5238
Treated FWM Outflow Conc	ppb	44.5	68.0	17.4	39.5	103.4	17.7							22.6
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Total Outflow Load + Bypass	kg/yr	3424	3548	1482	2079	10114	1677							28596.2
Total FWM Outflow Conc	ppb	44.5	68.0	17.4	39.5	103.4	17.7							123.2
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	0.78	0.78	0.90	0.89	1.56	1.64							3.12
Maximum Outflow	hm3/d	0.90	0.89	0.93	0.92	1.64	1.82							3.67
Surface Load Reduction	kg/yr	3431	3307	1942	1468	3595	8438							22181
Load Trapped in Sediments	kg/yr	4145	3485	2196	1493	2592	8559							22470
Overall Load Reduction	%	50%	48%	57%	41%	26%	83%							81%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	39.2	57.9	14.3	28.4	90.7	9.8							#N/A
Outflow Geo Mean - Composites	ppb	39.8	61.1	14.6	32.2	94.6	12.7							16.5
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	97%	100%	100%	68%							97%
Frequency Outflow Conc > 20 ppb	%	100%	100%	12%	96%	100%	16%							57%
Frequency Outflow Conc > 50 ppb	%	9%	92%	0%	2%	100%	0%							29%
Freq Outflow Volume > 10 ppb	%	100%	100%	98%	100%	100%	90%							100%
Warning or Error Messages		Cell# 3 3 Depth out of calib. range for SAV_3: 48 vs. 62 - 87 cm Cell# 3 3 Flow/Width out of calib. range for SAV_3: 85 vs. 162 - 374 m2/day Cell# 4 4 Depth out of calib. range for SAV_3: 60 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 78 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 114 vs. 162 - 374 m2/day												6

Table C.3 Results of DMSTA2 Analysis, STA-1W Existing Design, Alternative 2

Input Variable	Units	Value	Case Description:
Design Case Name	-	Alt2	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_3
Input Series Name		TS_STA	Alternative 2
Starting Date for Simulation	-	01/01/65	Redistributed inflows -- Balanced Outflow Concentrations
Ending Date for Simulation	-	12/31/95	Reuction of Cell 1 Area, Increase Cell 3 Area
Starting Date for Output	-	01/01/65	
Integration Steps Per Day	-	3	Simulation Type: Base
Number of Iterations	-	3	Output Variable / Mean / Lower CL / Upper CL
Output Averaging Interval	days	7	FWM Outflow C (ppb) 16.1 #N/A #N/A
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb) 12.2 #N/A #N/A
Rainfall P Conc	ppb	10	Load Reduction % 87% #N/A #N/A
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%) 0.0%

Diagnostics		
H20 Balance Error Mean & Max	0.0%	0.0%
Mass Balance Error Mean & Max	0.3%	0.9%
Iterations & Convergence	3	0.0%
Warning/Error Messages	7	

Cell Number -->		1	2	3	4	5	6	7	8	9	10	11	12
Cell Label	-	1	2	3	4	5A	5B						
Vegetation Type	-->	EMG_3	EMG_3	SAV_3	SAV_3	EMG_3	SAV_3						
Inflow Fraction	-	0.39	0.2			0.41							
Downstream Cell Number	-	3	4			6							
Surface Area	km2	3.02	1.91	5.85	2.91	2.27	9.28						
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34						
Number of Tanks in Series	-	2.0	2.0	4.0	6.0	2.0	3.0						
Minimum Depth for Releases	cm												
Release 1 Series Name													
Release 2 Series Name													
Outflow Series Name													
Depth Series Name													
Outflow Control Depth	cm	55	67	46	60	60	60						
Outflow Weir Depth	cm												
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25						
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78						
Bypass Depth	cm												
Maximum Inflow	hm3/day												
Maximum Outflow	hm3/day												
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485								
Inflow Seepage Control Elev	cm	183	101	163	82								
Inflow Seepage Conc	ppb	20	20	20	20	20	20						
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496						
Outflow Seepage Control Elev	cm	43		40		-46	-46						
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20						
Seepage Recycle to Cell Number	-												
Seepage Recycle Fraction	-					0.91	0.8						
Seepage Discharge Fraction	-												
Initial Water Column Conc	ppb	30	30	30	30	30	30						
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500						
Initial Water Column Depth	cm	50	50	50	50	50	50						
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3						
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22						
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300						
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	52.5	52.5	16.8	52.5						
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40						
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100						
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200						

Output Variables	Units	1	2	3	4	5	6	7	8	9	10	11	12	Overall
Execution Time	sec/yr	18.00	18.94	20.29	22.00	23.00	24.55							24.55
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	3.02	1.91	5.85	2.91	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	77.2	39.6	90.6	40.9	81.2	80.0							197.9
Cell Inflow Load	kg/yr	10694	5484	7825	3532	11242	7820							27419
Cell Inflow Conc	ppb	138.5	138.5	86.4	86.3	138.5	97.8							138.5
Treated Outflow Volume	hm3/yr	90.6	40.9	106.7	42.2	80.0	76.8							225.6
Treated Outflow Load	kg/yr	7825	3532	1816	688	7820	1127							3632
Treated FWM Outflow Conc	ppb	86.4	86.3	17.0	16.3	97.8	14.7							16.1
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	90.6	40.9	106.7	42.2	80.0	76.8							225.6
Total Outflow Load + Bypass	kg/yr	7825	3532	1816	688	7820	1127							28500.3
Total FWM Outflow Conc	ppb	86.4	86.3	17.0	16.3	97.8	14.7							126.3
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	1.22	0.62	1.31	0.68	1.28	1.34							1.34
Maximum Outflow	hm3/d	1.31	0.68	1.34	0.77	1.34	1.50							3.61
Surface Load Reduction	kg/yr	2869	1952	6008	2844	3422	6692							23787
Load Trapped in Sediments	kg/yr	3188	2036	6519	2933	2493	6870							24039
Overall Load Reduction	%	27%	36%	77%	81%	30%	86%							87%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	74.8	74.8	12.7	9.2	85.5	7.7							#N/A
Outflow Geo Mean - Composites	ppb	76.4	78.4	13.2	10.9	89.3	10.1							12.2
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	81%	54%	100%	48%							70%
Frequency Outflow Conc > 20 ppb	%	100%	100%	10%	9%	100%	2%							25%
Frequency Outflow Conc > 50 ppb	%	100%	100%	0%	0%	100%	0%							5%
Freq Outflow Volume > 10 ppb	%	100%	100%	93%	83%	100%	78%							88%
Warning or Error Messages		Cell# 3 3 Depth out of calib. range for SAV_3: 50 vs. 62 - 87 cm Cell# 3 3 Flow/Width out of calib. range for SAV_3: 100 vs. 162 - 374 m2/day Cell# 4 4 Depth out of calib. range for SAV_3: 59 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 61 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 94 vs. 162 - 374 m2/day Cell# 6 5B Outflow Conc out of calib. range for SAV_3: 15 vs. 15 - 153 ppb													7

Table C.4 Results of DMSTA2 Analysis, STA-1W Existing Design (Baseline 2007-2056) – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value	Case Description:
Design Case Name	-	Baseline	Existing, Cells 1-3 & 5A--Emergent & Cell4 & 5B--SAV_3
Input Series Name		TS_STA_Mod	Monthly Inflow Data
Starting Date for Simulation	-	01/01/65	
Ending Date for Simulation	-	12/31/95	
Starting Date for Output	-	01/01/65	
Integration Steps Per Day	-	3	Simulation Type: Base
Number of Iterations	-	3	Output Variable / Mean / Lower CL / Upper CL
Output Averaging Interval	days	7	FWM Outflow C (ppb) 26.9 #N/A #N/A
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb) 24.5 #N/A #N/A
Rainfall P Conc	ppb	10	Load Reduction % 77% #N/A #N/A
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%) 0.0%

Diagnostics		
H20 Balance Error Mean & Max	0.0%	0.0%
Mass Balance Error Mean & Max	0.3%	0.5%
Iterations & Convergence	3	0.0%
Warning/Error Messages	4	

Cell Number -->		1	2	3	4	5	6	7	8	9	10	11	12
Cell Label	-	1	2	3	4	5A	5B						
Vegetation Type	-->	EMG_3	EMG_3	EMG_3	SAV_3	EMG_3	SAV_3						
Inflow Fraction	-	0.25	0.25			0.5							
Downstream Cell Number	-	3	4			6							
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28						
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34						
Number of Tanks in Series	-	2.0	2.0	2.0	2.0	2.0	3.0						
Minimum Depth for Releases	cm												
Release 1 Series Name													
Release 2 Series Name													
Outflow Series Name													
Depth Series Name													
Outflow Control Depth	cm	55	67	46	60	60	60						
Outflow Weir Depth	cm												
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25						
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78						
Bypass Depth	cm												
Maximum Inflow	hm3/day												
Maximum Outflow	hm3/day												
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485								
Inflow Seepage Control Elev	cm	183	101	163	82								
Inflow Seepage Conc	ppb	20	20	20	20	20	20						
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496						
Outflow Seepage Control Elev	cm	43		40		-46	-46						
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20						
Seepage Recycle to Cell Number	-												
Seepage Recycle Fraction	-					0.91	0.8						
Seepage Discharge Fraction	-												
Initial Water Column Conc	ppb	30	30	30	30	30	30						
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500						
Initial Water Column Depth	cm	50	50	50	50	50	50						
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3						
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22						
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300						
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	16.8	52.5	16.8	52.5						
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40						
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100						
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200						

Output Variables	Units	1	2	3	4	5	6	7	8	9	10	11	12	Overall
Execution Time	sec/yr	15.13	16.32	17.55	18.74	19.58	20.49							20.49
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	49.5	49.5	77.0	52.2	99.0	97.8							197.9
Cell Inflow Load	kg/yr	6855	6855	3409	3528	13710	10060							27419
Cell Inflow Conc	ppb	138.5	138.5	44.3	67.6	138.5	102.9							138.5
Treated Outflow Volume	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Treated Outflow Load	kg/yr	3409	3528	2523	2068	10060	1665							6255
Treated FWM Outflow Conc	ppb	44.3	67.6	29.7	39.3	102.9	17.6							26.9
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Total Outflow Load + Bypass	kg/yr	3409	3528	2523	2068	10060	1665							28621.0
Total FWM Outflow Conc	ppb	44.3	67.6	29.7	39.3	102.9	17.6							123.3
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	0.78	0.78	0.90	0.89	1.56	1.64							3.12
Maximum Outflow	hm3/d	0.90	0.89	0.93	0.92	1.64	1.82							3.67
Surface Load Reduction	kg/yr	3445	3326	887	1461	3650	8395							21164
Load Trapped in Sediments	kg/yr	4159	3505	1139	1486	2633	8518							21441
Overall Load Reduction	%	50%	49%	26%	41%	27%	83%							77%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	39.2	57.9	26.7	28.2	91.8	9.7							#N/A
Outflow Geo Mean - Composites	ppb	39.7	61.1	26.9	32.0	95.5	12.6							24.5
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	100%	100%	100%	68%							100%
Frequency Outflow Conc > 20 ppb	%	100%	100%	100%	96%	100%	15%							100%
Frequency Outflow Conc > 50 ppb	%	8%	92%	0%	2%	100%	0%							91%
Freq Outflow Volume > 10 ppb	%	100%	100%	100%	100%	100%	90%							100%
Warning or Error Messages		Cell# 4 4 Depth out of calib. range for SAV_3: 60 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 78 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 114 vs. 162 - 374 m2/day												4

Table C.5 Results of DMSTA2 Analysis, STA-1W, Alternative 1 – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value	Case Description:
Design Case Name	-	Alt1	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_3
Input Series Name		TS_STA_Mod	Alternative 1
Starting Date for Simulation	-	01/01/65	Monthly Inflow data
Ending Date for Simulation	-	12/31/95	
Starting Date for Output	-	01/01/65	
Integration Steps Per Day	-	3	Simulation Type: Base
Number of Iterations	-	3	Output Variable / Mean / Lower CL / Upper CL
Output Averaging Interval	days	7	FWM Outflow C (ppb) 22.4 #N/A #N/A
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb) 16.4 #N/A #N/A
Rainfall P Conc	ppb	10	Load Reduction % 81% #N/A #N/A
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%) 0.0%

Diagnostics		
H20 Balance Error Mean & Max	0.0%	0.0%
Mass Balance Error Mean & Max	0.3%	0.5%
Iterations & Convergence	3	0.0%
Warning/Error Messages	6	

Cell Number -->		1	2	3	4	5	6	7	8	9	10	11	12
Cell Label	-	1	2	3	4	5A	5B						
Vegetation Type	-->	EMG_3	EMG_3	SAV_3	SAV_3	EMG_3	SAV_3						
Inflow Fraction	-	0.25	0.25			0.5							
Downstream Cell Number	-	3	4			6							
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28						
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34						
Number of Tanks in Series	-	2.0	2.0	2.0	2.0	2.0	3.0						
Minimum Depth for Releases	cm												
Release 1 Series Name													
Release 2 Series Name													
Outflow Series Name													
Depth Series Name													
Outflow Control Depth	cm	55	67	46	60	60	60						
Outflow Weir Depth	cm												
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25						
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78						
Bypass Depth	cm												
Maximum Inflow	hm3/day												
Maximum Outflow	hm3/day												
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485								
Inflow Seepage Control Elev	cm	183	101	163	82								
Inflow Seepage Conc	ppb	20	20	20	20	20	20						
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496						
Outflow Seepage Control Elev	cm	43		40		-46	-46						
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20						
Seepage Recycle to Cell Number	-												
Seepage Recycle Fraction	-					0.91	0.8						
Seepage Discharge Fraction	-												
Initial Water Column Conc	ppb	30	30	30	30	30	30						
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500						
Initial Water Column Depth	cm	50	50	50	50	50	50						
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3						
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22						
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300						
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	52.5	52.5	16.8	52.5						
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40						
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100						
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200						

Output Variables	Units	1	2	3	4	5	6	7	8	9	10	11	12	Overall
Execution Time	sec/yr	16.94	17.94	19.10	20.16	21.45	23.23							23.23
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	6.03	3.81	2.83	1.01	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	49.5	49.5	77.0	52.2	99.0	97.8							197.9
Cell Inflow Load	kg/yr	6855	6855	3409	3528	13710	10060							27419
Cell Inflow Conc	ppb	138.5	138.5	44.3	67.6	138.5	102.9							138.5
Treated Outflow Volume	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Treated Outflow Load	kg/yr	3409	3528	1476	2068	10060	1665							5208
Treated FWM Outflow Conc	ppb	44.3	67.6	17.4	39.3	102.9	17.6							22.4
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	77.0	52.2	85.0	52.6	97.8	94.6							232.1
Total Outflow Load + Bypass	kg/yr	3409	3528	1476	2068	10060	1665							28619.8
Total FWM Outflow Conc	ppb	44.3	67.6	17.4	39.3	102.9	17.6							123.3
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	0.78	0.78	0.90	0.89	1.56	1.64							3.12
Maximum Outflow	hm3/d	0.90	0.89	0.93	0.92	1.64	1.82							3.67
Surface Load Reduction	kg/yr	3445	3326	1934	1461	3650	8395							22211
Load Trapped in Sediments	kg/yr	4159	3505	2188	1486	2633	8518							22489
Overall Load Reduction	%	50%	49%	57%	41%	27%	83%							81%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	39.2	57.9	14.2	28.2	91.8	9.7							#N/A
Outflow Geo Mean - Composites	ppb	39.7	61.1	14.6	32.0	95.5	12.6							16.4
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	96%	100%	100%	68%							97%
Frequency Outflow Conc > 20 ppb	%	100%	100%	11%	96%	100%	15%							56%
Frequency Outflow Conc > 50 ppb	%	8%	92%	0%	2%	100%	0%							28%
Freq Outflow Volume > 10 ppb	%	100%	100%	98%	100%	100%	90%							99%
Warning or Error Messages		Cell# 3 3 Depth out of calib. range for SAV_3: 48 vs. 62 - 87 cm Cell# 3 3 Flow/Width out of calib. range for SAV_3: 85 vs. 162 - 374 m2/day Cell# 4 4 Depth out of calib. range for SAV_3: 60 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 78 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 114 vs. 162 - 374 m2/day												6

Table C.6 Results of DMSTA2 Analysis, STA-1W Existing Design, Alternative 2 – with 31-yr Monthly Average TP Concentrations

Input Variable	Units	Value	Case Description:
Design Case Name	-	Alt2	Existing, Cells 1,2 & 5A--Emergent & Cell 3,4 & 5B--SAV_3
Input Series Name		TS_STA_Mod	Alternative 2
Starting Date for Simulation	-	01/01/65	Redistributed inflows -- Balanced Outflow Concentrations
Ending Date for Simulation	-	12/31/95	Reuction of Cell 1 Area, Increase Cell 3 Area
Starting Date for Output	-	01/01/65	Monthly Inflow Data
Integration Steps Per Day	-	3	Simulation Type: Base
Number of Iterations	-	3	Output Variable / Mean / Lower CL / Upper CL
Output Averaging Interval	days	7	FWM Outflow C (ppb) 16.0 #N/A #N/A
Inflow Conc Scale Factor	-	1	GM Outflow C (ppb) 12.1 #N/A #N/A
Rainfall P Conc	ppb	10	Load Reduction % 87% #N/A #N/A
Atmospheric P Load (Dry)	mg/m2-yr	20	Bypass Load (%) 0.0%

Diagnostics		
H20 Balance Error Mean & Max	0.0%	0.0%
Mass Balance Error Mean & Max	0.3%	0.9%
Iterations & Convergence	3	0.0%
Warning/Error Messages	7	

Cell Number -->		1	2	3	4	5	6	7	8	9	10	11	12
Cell Label	-	1	2	3	4	5A	5B						
Vegetation Type	-->	EMG_3	EMG_3	SAV_3	SAV_3	EMG_3	SAV_3						
Inflow Fraction	-	0.39	0.2			0.41							
Downstream Cell Number	-	3	4			6							
Surface Area	km2	3.02	1.91	5.85	2.91	2.27	9.28						
Mean Width of Flow Path	km	1.10	1.74	2.48	1.83	1.78	2.34						
Number of Tanks in Series	-	2.0	2.0	4.0	6.0	2.0	3.0						
Minimum Depth for Releases	cm												
Release 1 Series Name													
Release 2 Series Name													
Outflow Series Name													
Depth Series Name													
Outflow Control Depth	cm	55	67	46	60	60	60						
Outflow Weir Depth	cm												
Outflow Coefficient - Exponent	-	2.35	2.51	2.5	2.5	2.49	2.25						
Outflow Coefficient - Intercept	-	1.24	1.38	1.03	1.28	2.75	3.78						
Bypass Depth	cm												
Maximum Inflow	hm3/day												
Maximum Outflow	hm3/day												
Inflow Seepage Rate	(cm/d) / cm	0.01038	0.00547	0.00676	0.00485								
Inflow Seepage Control Elev	cm	183	101	163	82								
Inflow Seepage Conc	ppb	20	20	20	20	20	20						
Outflow Seepage Rate	(cm/d) / cm	0.00346		0.00173		0.01577	0.00496						
Outflow Seepage Control Elev	cm	43		40		-46	-46						
Max Outflow Seepage Conc	ppb	20	20	20	20	20	20						
Seepage Recycle to Cell Number	-												
Seepage Recycle Fraction	-					0.91	0.8						
Seepage Discharge Fraction	-												
Initial Water Column Conc	ppb	30	30	30	30	30	30						
Initial P Storage Per Unit Area	mg/m2	500	500	500	500	500	500						
Initial Water Column Depth	cm	50	50	50	50	50	50						
C0 = Conc at 0 g/m2 P Storage	ppb	3	3	3	3	3	3						
C1 = Conc at 1 g/m2 P storage	ppb	22	22	22	22	22	22						
C2 = Conc at Half-Max Uptake	ppb	300	300	300	300	300	300						
K = Net Settling Rate at Steady State	m/yr	16.8	16.8	52.5	52.5	16.8	52.5						
Z1 = Saturated Uptake Depth	cm	40	40	40	40	40	40						
Z2 = Lower Penalty Depth	cm	100	100	100	100	100	100						
Z3 = Upper Penalty Depth	cm	200	200	200	200	200	200						

Output Variables	Units	1	2	3	4	5	6	7	8	9	10	11	12	Overall
Execution Time	sec/yr	17.68	18.74	20.29	22.00	22.94	23.90							23.90
Run Date	-	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05	06/13/05							06/13/05
Starting Date for Simulation	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Starting Date for Output	-	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65	01/01/65							01/01/65
Ending Date	-	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95	12/31/95							12/31/95
Output Duration	days	11322	11322	11322	11322	11322	11322							11322
Cell Label		1	2	3	4	5A	5B							Total
Downstream Cell Label		3	4	Outflow	Outflow	5B	Outflow							-
Network Simulation Name	-	none	none	none	none	none	none							none
Simulation Type	-	Base	Base	Base	Base	Base	Base							Base
Surface Area	km2	3.02	1.91	5.85	2.91	2.27	9.28							25.24
Mean Rainfall	cm/yr	142.9	142.9	142.9	142.9	142.9	142.9							142.9
Mean ET	cm/yr	140.9	140.9	140.9	140.9	140.9	140.9							140.9
Cell Inflow Volume	hm3/yr	77.2	39.6	90.6	40.9	81.2	80.0							197.9
Cell Inflow Load	kg/yr	10694	5484	7793	3516	11242	7774							27419
Cell Inflow Conc	ppb	138.5	138.5	86.0	85.9	138.5	97.2							138.5
Treated Outflow Volume	hm3/yr	90.6	40.9	106.7	42.2	80.0	76.8							225.6
Treated Outflow Load	kg/yr	7793	3516	1809	686	7774	1120							3614
Treated FWM Outflow Conc	ppb	86.0	85.9	17.0	16.3	97.2	14.6							16.0
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Total Outflow Volume + Bypass	hm3/yr	90.6	40.9	106.7	42.2	80.0	76.8							225.6
Total Outflow Load + Bypass	kg/yr	7793	3516	1809	686	7774	1120							28519.6
Total FWM Outflow Conc	ppb	86.0	85.9	17.0	16.3	97.2	14.6							126.4
Bypass Load	kg/yr	0	0	0	0	0	0							0.0
Bypass Load	%	0.0	0.0	0.0	0.0	0.0	0.0							0.0
Maximum Inflow	hm3/d	1.22	0.62	1.31	0.68	1.28	1.34							3.12
Maximum Outflow	hm3/d	1.31	0.68	1.34	0.77	1.34	1.50							3.61
Surface Load Reduction	kg/yr	2900	1967	5985	2831	3468	6654							23805
Load Trapped in Sediments	kg/yr	3220	2053	6495	2921	2527	6833							24050
Overall Load Reduction	%	27%	36%	77%	80%	31%	86%							87%
Lower Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Upper Confidence Limit	%	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Daily Geometric Mean	ppb	75.2	75.0	12.7	9.1	86.3	7.6							#N/A
Outflow Geo Mean - Composites	ppb	76.7	78.6	13.1	10.8	90.0	10.1							12.1
Upper Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Lower Confidence Limit	ppb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A							#N/A
Frequency Outflow Conc > 10 ppb	%	100%	100%	80%	54%	100%	48%							69%
Frequency Outflow Conc > 20 ppb	%	100%	100%	10%	8%	100%	2%							25%
Frequency Outflow Conc > 50 ppb	%	100%	100%	0%	0%	100%	0%							5%
Freq Outflow Volume > 10 ppb	%	100%	100%	93%	82%	100%	78%							87%
Warning or Error Messages		Cell# 3 3 Depth out of calib. range for SAV_3: 50 vs. 62 - 87 cm Cell# 3 3 Flow/Width out of calib. range for SAV_3: 100 vs. 162 - 374 m2/day Cell# 4 4 Depth out of calib. range for SAV_3: 59 vs. 62 - 87 cm Cell# 4 4 Flow/Width out of calib. range for SAV_3: 61 vs. 162 - 374 m2/day Cell# 6 5B Depth out of calib. range for SAV_3: 56 vs. 62 - 87 cm Cell# 6 5B Flow/Width out of calib. range for SAV_3: 94 vs. 162 - 374 m2/day Cell# 6 5B Outflow Conc out of calib. range for SAV_3: 15 vs. 15 - 153 ppb													7