

Appendix 5B-2: Methodology for Calculating Performance for the STAs

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METHODOLOGY USED TO CALCULATE WATER YEAR 2015 PERFORMANCE

The inflow and outflow flow volumes and total phosphorus (TP) concentrations for the Everglades Stormwater Treatment Areas (STAs) [STA-1 East (STA-1E), STA-1 West (STA-1W), STA-2, STA-3/4, and STA-5/6] were obtained from the South Florida Water Management District's (SFWMD's or District's) hydrologic, water quality, and hydrogeologic data storage and retrieval system (DBHYDRO) using the flow records (DB Keys) and water quality stations listed in **Table 1** (for the permit mandated inflow and outflow stations) and **Table 2** (for the individual STA flow-ways). Unless specifically designated, both positive and negative flows were used. The mass TP loads were calculated from concentration data and the daily flow measurements using the District's web-based Nutrient Load Program.

ADJUSTMENT OF THE EFFECTIVE TREATMENT AREA VALUES

Effective treatment area values were used to calculate the treatment performance data, specifically for the following parameters that are reported in this chapter:

- Hydraulic loading rate (HLR)
- Phosphorus loading rate (PLR)

For Water Year 2015 (WY2015) (May 1, 2014–April 30, 2015), effective treatment areas were adjusted using the following equation based on the operational period of each flow-way (see the individual STA Performance sections in Chapter 5B of this volume for details):

$$\text{Adjusted Effective Treatment Area} = \text{Total Area} \times \frac{\sum_1^{365} \text{Daily Online Percentage}}{365} \quad (1)$$

Effective treatment areas were adjusted for STA-1E (Eastern Flow-way was online 54.5 percent of the water year), STA-1W (Eastern and Western flow-ways were online 83.8 percent of the water year), and STA-2 (Flow-way 5 was online 73.4 percent of the water year).

CALCULATION OF ANNUAL LOADS AND FLOW-WEIGHTED MEAN CONCENTRATIONS

TP loads and flow-weighted mean (FWM) TP concentrations were calculated based on surface water inflow to and outflow from the STAs over the entire water year as follows:

$$\text{Load} = \sum_1^n (C_i V_i + C_{i+1} V_{i+1} + \dots C_{i+n} V_{i+n}) \quad (2)$$

$$FWM \text{ Concentration} = Load / \sum_1^n (V_i + V_{i+1} + \dots + V_{i+n}) \quad (3)$$

where:

C_i = TP concentration for the i^{th} sampling interval during the water year in micrograms per liter ($\mu\text{g/L}$)

V_i = Water volume for the i^{th} sampling interval during the water year liter (L)

n = number of samples

Table 1. The calculations and specific flow records and water quality (WQ) stations used to estimate flow volume, TP loads, and TP concentrations for the STA permit compliance inflows and outflows during WY2015.

STA-1E

Inflow = S319_P(positive) + G311_S + S361_P+S319siphon

Outflow = S362

| Flow Station ^a | DB KEYs (Preferred) ^b | DB KEYs (Source) ^b | WQ Station ^c | Mode ^d |
|----------------------------------|-------------------------------------|----------------------------------|-------------------------|-------------------|
| Inflow | | | | |
| S319_P(when positive) | TP366 | SD029 | S319 | 2 |
| S319_P(when negative for siphon) | TP366 | 63888 | S319 | 0 |
| S361_P | TP368 | WN254 | S361 | 2 |
| G311_S (when positive) | TP367 | TA933 | G311 | 2 |
| G311_S (when negative) | TP367 | TA933 | Grab samples @ S319 | 0 |
| Outflow | | | | |
| S362_P | TP369 | T0897 | S362 | 2 |

STA-1W

Inflow = G302

Outflow = G310(positive) + G251 + G310siphon

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | WQ Station | Mode |
|-----------------------------------|------------------------|---------------------|------------|------|
| Inflow | | | | |
| G302_P | JW221 | JJ806 | G302 | 2 |
| Outflow | | | | |
| G310_P (when positive) | M2901 | PK919 | G310 | 2 |
| G310_P (when negative for siphon) | M2901 | 64016 | G310 | 0 |
| G251_P | JW222 | 15848 | ENR012 | 2 |

Table 1. Continued.**STA-2**

Inflow Calculation = S6_P + G434_P + G435_P + G328_P – G328I_P – G328I_C – G338_C – G339_S

Outflow = G335_P+G436_P

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | WQ Station | Mode |
|------------------------|------------------------|---------------------|-----------------------|------|
| Inflow | | | | |
| S6_P | 15034 | 06741 | S6 | 2 |
| G434_P | 90327 | AI368 | G434 | 2 |
| G435_P | 90328 | AI386 | G435 | 2 |
| G328_P | J0718 | MQ903 | G328 | 2 |
| G328I_P | TA605 | | G328 | 0 |
| G328I_C | TA607 | | G328 | 0 |
| G338_C (when positive) | MC705 | | Grab samples @ S6 | 5 |
| G338_C (when negative) | MC705 | | Grab sample @ S10D | 5 |
| G339_S (when positive) | 90334 | MC706 | Grab samples @ S6 | 5 |
| G339_S (when negative) | 90334 | MC706 | Grab sample @ G335 | 5 |
| Outflow | | | | |
| G335_P | N0659 | LG726 | G335 | 2 |
| G436_P | 90329 | AI400 | G436 | 2 |

Table 1. Continued.**STA-3/4**

Inflows = G370 + (G372 - G372HL)

Outflows = G376A + G376B + G376C + G376D + G376E + G376F + G379A + G379B + G379C + G379D + G379E + G381A + G381B + G381C + G381D + G381E + G381F + G388

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | WQ Station | Mode |
|--------------|------------------------|---------------------|------------|------|
| Inflow | | | | |
| G370_P | TA438 | T0973 | G370 | 2 |
| G372_P | TA437 | T0975 | G372 | 2 |
| G372HL | TS285 | | G372 | 2 |
| Outflow | | | | |
| G376A | 90348 | T1036 | G376B | 2 |
| G376B | TA582 | T1037 | G376B | 2 |
| G376C | 90349 | T1038 | G376B | 2 |
| G376D | 90359 | T1039 | G376E | 2 |
| G376E | TA583 | T1040 | G376E | 2 |
| G376F | 90360 | T1041 | G376E | 2 |
| G379A | 90361 | TA302 | G379B | 2 |
| G379B | TA584 | TA303 | G379B | 2 |
| G379C | 90362 | TA304 | G379B | 2 |
| G379D | TA585 | TA305 | G379D | 2 |
| G379E | 90363 | UT730 | G379D | 2 |
| G381A | 90364 | TA296 | G381B | 2 |
| G381B | TA586 | TA297 | G381B | 2 |
| G381C | 90365 | TA298 | G381E | 2 |
| G381D | 90366 | TA299 | G381E | 2 |
| G381E | TA587 | TA300 | G381E | 2 |
| G381F | 90367 | TA301 | G381E | 2 |
| G388 | W3981 | V2504 | G379D | 2 |

Table 1. Continued.**STA-5/6**

Inflow = G342A + G342B + G342C + G342D + G508 + G342O + G406 - G407

Outflow = G344A + G344B + G344C + G344D + G344E + G344F + G344G + G344H + G344I + G344J
+ G344K + G352A + G352B + G352C + G354A + G354B + G354C + G393A+ G393B+ G393C

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | WQ Station | Mode |
|--------------|------------------------|---------------------|------------|------|
| Inflow | | | | |
| G342A_C | J6406 | JJ111 | G342A | 2 |
| G342B_C | J6398 | JJ116 | G342B | 2 |
| G342C_C | J6407 | LS293 | G342C | 2 |
| G342D_C | J6405 | JJ126 | G342D | 2 |
| G508_P | 90330 | AI808 | G508 | 2 |
| G342O_C | 90400 | 90378 | G508 | 2 |
| G406_C | JU789 | UD387 | G406 | 2 |
| G407_C | 90326 | VV556 | G407 | 2 |
| Outflow | | | | |
| G344A_C | J0719 | JJ117 | G344A | 2 |
| G344B_C | J0720 | JJ118 | G344B | 2 |
| G344C_C | J0721 | JJ119 | G344C | 2 |
| G344D_C | J0722 | JJ120 | G344D | 2 |
| G344E_C | WH026 | VW787 | G344E | 2 |
| G344F_C | WH027 | VW788 | G344F | 2 |
| G344G_C | 90335 | AI688 | G344G | 2 |
| G344H_C | 90336 | AI694 | G344H | 2 |
| G344I_C | 90337 | AI704 | G344I | 2 |
| G344J_C | 90338 | AI781 | G344J | 2 |
| G344K_C | 90339 | AI783 | G344K | 2 |
| G352A | 90340 | VW786 | G352B | 2 |
| G352B | 90341 | VW775 | G352B | 2 |
| G352C | 90342 | VW774 | G352B | 2 |
| G354A | 90345 | MJ509 | G354C | 2 |
| G354B | 90346 | MJ510 | G354C | 2 |
| G354C | 90347 | MJ470 | G354C | 2 |
| G393A | 90368 | MJ512 | G393B | 2 |
| G393B | 90369 | MJ511 | G393B | 2 |
| G393C | 90370 | MJ513 | G393B | 2 |

Table 2. The calculations and specific flow records and water quality (WQ) stations used to estimate flow volume, TP loads, and TP concentrations for the STA flow-way inflows and outflows during WY2015.

**STA-1E Eastern Flow-way
(Cells 1 & 2)**

Inflow (Cell 1 Inflow) = S363A+S363B+S363C

Mid-levee Inflow (Cell 1 Outflow/Cell 2 Inflow) = S364A+S364B+S364C

Outflow (Cell 2) = S365A+S365B

| Flow Station ^a | DB KEYS (Preferred) ^b | DB KEYS (Source) ^b | DB KEYS (Source) ^b | WQ Station ^c | Mode ^d |
|--|-------------------------------------|----------------------------------|----------------------------------|----------------------------|-------------------|
| Inflow (Cell 1 Inflow) | | | | | |
| S363A | W3910 | SD004 | | S363C | 3 |
| S363B | W3902 | SD005 | | S363C | 3 |
| S363C | W3903 | SD006 | | S363C | 3 |
| Mid-levee (Cell 1 Outflow/Cell 2 Inflow) | | | | | |
| S364A | 63981 | SG557 | | S364A | 0 |
| S364B | 63982 | SG558 | | S364A | 0 |
| S364C | 63983 | SG559 | | S364C | 0 |
| Outflow | | | | | |
| S365A | W3904 | SG561 | | S365A | 3 |
| S365B | W3905 | SG563 | | S365B | 3 |

Table 2. Continued.

**STA-1E Central Flow-way
(Cells 3, 4N, & 4S)**

Inflow (Cell 3 Inflow) = S366A+S366B+S366C+S366D+S366E

Mid-levee (Cell 4N Inflow) = S367A+S367B+S367C+S367D+S367E

Mid-levee (Cell 4N Outflow) = S368A+S368B+S368C+S368D+S368E

Mid-levee (Cell 4S Inflow): S361+S368A+S368B+S368C+S368D+S368E

Outflow (Cell 4S Outflow) = S369A+S369B+S369C+S369D

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 3 Inflow) | | | | | |
| S366A | W3906 | SD001 | | S366B | 3 |
| S366B | W3907 | SD002 | | S366B | 3 |
| S366C | W3908 | SD007 | | S366B | 3 |
| S366D | W3909 | SD003 | | S366D | 3 |
| S366E | W3910 | SD008 | | S366D | 3 |
| Mid-levee (Cell 3 Outflow/Cell 4N Inflow) | | | | | |
| S367A | 63971 | TA349 | | S367B | 0 |
| S367B | 63968 | TA350 | | S367B | 0 |
| S367C | 63966 | TA312 | | S367D | 0 |
| S367D | 63969 | TA351 | | S367D | 0 |
| S367E | 63967 | TA352 | | S367D | 0 |
| Mid-levee (Cell 4N Outflow/Cell 4S Inflow) | | | | | |
| S361 | TP368 | WN254 | | S361 | 2 |
| S368A | 63984 | SG581 | | S368B | 0 |
| S368B | 63979 | SG583 | | S368B | 0 |
| S368C | 63980 | SG585 | | S368D | 0 |
| S368D | 63985 | SG591 | | S368D | 0 |
| S368E | 63986 | SG593 | | S368D | 0 |
| Outflow (Cell 4N Outflow) | | | | | |
| S369A | W3911 | TA355 | | S369B | 3 |
| S369B | W3912 | TA356 | | S369B | 3 |
| S369C | W3913 | TA318 | | S369C | 3 |
| S369D | W3914 | TA357 | | S369C | 3 |

Table 2. Continued.

**STA-1E Western Flow-way
(Cells 5, 6, & 7)**

Inflow (Cells 5, 7 Inflows): S370A+S370B+S370C+S373A+S373B

Mid-levee (Cells 5, 7 Outflows/Cell 6 Inflow):

S371A+S371B+S371C+S374A+S374B+S374C

Outflow (Cell 6 Outflows): S372A+S372B+S372C+S372D+S372E

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cells 5 & 7 Inflows) | | | | | |
| S370A | W3915 | SG921 | | S370A | 3 |
| S370B | W3916 | SG927 | | S370A | 3 |
| S373A | W3923 | SG931 | | S373A | 3 |
| S373B | W3924 | SG937 | | S373B | 3 |
| Mid-levee (Cells 5 & 7 Outflows/Cell 6 Inflow) | | | | | |
| S371A | 63972 | 87607 | TA324 | S371A | 0 |
| S371B | 63974 | TA324 | | S371A | 0 |
| S371C | 63977 | 87599 | TA324 | S371C | 0 |
| S374A | 63964 | TB006 | | S374A | 0 |
| S374B | 63963 | TA336 | | S374A | 0 |
| S374C | 63965 | TB008 | | S374C | 0 |
| Outflow (Cell 6 Outflow) | | | | | |
| S372A | W3918 | TN560 | | S372B | 3 |
| S372B | W3919 | TY236 | | S372B | 3 |
| S372C | W3920 | TA330 | | S372B | 3 |
| S372D | W3921 | TN561 | | S372D | 3 |
| S372E | W3922 | TY238 | | S372D | 3 |

Table 2. Continued.
STA-1W Northern Flow-way
(Cells 5A & 5B)

Inflow (Cell 5A inflow) =

G304A+G304B+G304C+G304D+G304E+G304F+G304G+G304H+G304I+G304J+G327B

Outflow (Cell 5B Outflow) =

G306A+G306B+G306C+G306D+G306E+G306F+G304G+G306H+G306I+G306J

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|---------------------------|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5A Inflow) | | | | | |
| G304A | W3860 | V2485 | | G302 | 3 |
| G304B | W3861 | V2486 | | G302 | 3 |
| G304C | W3862 | V2487 | | G302 | 3 |
| G304D | W3863 | V2488 | | G302 | 3 |
| G304E | W3864 | VW951 | | G302 | 3 |
| G304F | W3865 | VW802 | | G302 | 3 |
| G304G | W3866 | VW952 | | G302 | 3 |
| G304H | W3867 | VW876 | | G302 | 3 |
| G304I | W3868 | VW872 | | G302 | 3 |
| G304J | W3869 | VW953 | | G302 | 3 |
| G327B | TA441 | | | G306C | 0 |
| Outflow (Cell 5B Outflow) | | | | | |
| G306A | W3870 | L9866 | | G306C | 3 |
| G306B | W3871 | L9867 | | G306C | 3 |
| G306C | W3872 | L9868 | | G306C | 3 |
| G306D | W3873 | L9869 | | G306C | 3 |
| G306E | W3874 | L9870 | | G306C | 3 |
| G306F | W3875 | L9871 | | G306G | 3 |
| G306G | W3876 | L9872 | | G306G | 3 |
| G306H | W3877 | L9873 | | G306G | 3 |
| G306I | W3878 | L9874 | | G306G | 3 |
| G306J | W3879 | L9875 | | G306G | 3 |

Table 2. Continued.

STA-1W Eastern Flow-way
(Cells 1A & 1B+3)

Inflow (Cell 1A) = (G303+G250S) - (G255)

Mid-levee (Cell 1A Outflow/Cell 1B+3 Inflow) = G248A+G248B+G248C+G348D

Outflow (Cell 1B+3 Outflow) = G251+G259+G308

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 1A) | | | | | |
| G303 | W3880 | L9830 | | G302 | 3 |
| G250S | W3883 | JK278 | | ENR002 | 2 |
| G255 | WF797 | VM838 | | G255 | 3 |
| Mid-levee (Cell 1A Outflow/Cell 1B+3 Inflow) | | | | | |
| G248A | VW982 | | | G248B | 0 |
| G248B | W3838 | | | G248B | 0 |
| G248C | VW984 | | | G248B | 0 |
| G248D | VW985 | | | G248B | 0 |
| Outflow (Cell 1B+3 Outflow) | | | | | |
| G251 | JW222 | 15848 | | ENR012 | 2 |
| G259 | W3884 | SG917 | | G259 | 2 |
| G308 | W3881 | L9846 | | G308 | 3 |

STA-1W Western Flow-way
(Cells 2A, 2B, & 4)

WY2009 - Present WFW = Inflow (Cell 2A): G255

WY2009 - Present WFW Outflow = G258+G307+G309

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--------------------------|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 2A) | | | | | |
| G255 | WF797 | VM838 | | G255 | 3 |
| Outflow (Cell 4 Outflow) | | | | | |
| G258 | SG916 | | | G309 | 3 |
| G307 | VM853 | | | G307 | 3 |
| G309 | W3882 | L9849 | | G309 | 3 |

Table 2. Continued.**STA-2 Flow-way 1****(Cell 1)**

Inflow (Cell 1 Inflow) = G329A+G329B+G329C+G329D

Outflow (Cell 1 Outflow) = G330A+G330B+G330C+G330D+G330E

| Flow Station ^a | DB KEYs (Preferred) ^b | DB KEYs (Source) ^b | DB KEYs (Source) ^b | WQ Station ^c | Mode ^d |
|---------------------------|----------------------------------|-------------------------------|-------------------------------|-------------------------|-------------------|
| Inflow (Cell 1 Inflow) | | | | | |
| G329A | W3926 | N0748 | | G329B | 3 |
| G329B | W3927 | LG703 | | G329B | 3 |
| G329C | W3928 | LG704 | | G329B | 3 |
| G329D | W3929 | LG705 | | G329B | 3 |
| Outflow (Cell 1 Outflow) | | | | | |
| G330A | W3930 | LG706 | | G330D | 3 |
| G330B | W3931 | LG707 | | G330D | 3 |
| G330C | W3932 | LG708 | | G330D | 3 |
| G330D | W3933 | LG709 | | G330D | 3 |
| G330E | W3934 | LG710 | | G330D | 3 |

STA-2 Flow-way 2**(Cell 2)**

Inflow (Cell 2 Inflow) = G331A+G331B+G331C+G331D+G331E+G331F+G331G

Outflow (Cell 2 Outflow) = G332

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--------------------------|---------------------|------------------|------------------|------------|------|
| Inflow (Cell 2 Inflow) | | | | | |
| G331A | W3935 | LG711 | | G331D | 3 |
| G331B | W3936 | LG712 | | G331D | 3 |
| G331C | W3937 | LG713 | | G331D | 3 |
| G331D | W3938 | LG714 | | G331D | 3 |
| G331E | W3939 | LG715 | | G331D | 3 |
| G331F | W3940 | LG716 | | G331D | 3 |
| G331G | W3941 | LG718 | | G331D | 3 |
| Outflow (Cell 2 Outflow) | | | | | |
| G332 | W3942 | LG719 | | G332 | 3 |

Table 2. Continued.**STA-2 Flow-way 3****(Cell 3)**

Inflow (Cell 3 Inflow) = G333A+G333B+G333C+G333D+G333E

Outflow (Cell 3 Outflow) = G334

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--------------------------|---------------------|------------------|------------------|------------|------|
| Inflow (Cell 3 Inflow) | | | | | |
| G333A | W3943 | LG720 | | G333C | 3 |
| G333B | W3944 | LG721 | | G333C | 3 |
| G333C | W3945 | LG722 | | G333C | 3 |
| G333D | W3946 | LG723 | | G333C | 3 |
| G333E | W3947 | LG724 | | G333C | 3 |
| Outflow (Cell 3 Outflow) | | | | | |
| G334 | W3948 | LG725 | | G334 | 3 |

Table 2. Continued.**STA-2 Flow-way 4****(Cells 4, 5, & 6)**

Inflow (Cells 5 & 6 Inflows) =

G438A+G438B+G438C+G438D+G438E+G438F+G438G+G438H+G438I+G438J

Mid-levee (Cells 5 & 6 Outflow/Cell 4 Inflow) =

G367A+G367B+G367C+G367D+G367E+G367F

Outflow (Cell 4 Outflow) = G368

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|---|---------------------|------------------|------------------|------------|------|
| Inflow (Cells 5 & 6 Inflows) | | | | | |
| G438A | AI410 | | | G438D | 0 |
| G438B | AI419 | | | G438D | 0 |
| G438C | AI425 | | | G438D | 0 |
| G438D | AI427 | | | G438D | 0 |
| G438E | AI439 | | | G438D | 0 |
| G438F | AI442 | | | G438I | 0 |
| G438G | AI458 | | | G438I | 0 |
| G438H | AI460 | | | G438I | 0 |
| G438I | AI466 | | | G438I | 0 |
| Mid-levee (Cells 5 & 6 Outflow/Cell 4 Inflow) | | | | | |
| G438J | AI472 | | | G438I | 0 |
| G367A | W4349 | | | G367B | 0 |
| G367B | VN382 | | | G367B | 0 |
| G367C | VN383 | | | G367B | 0 |
| G367D | W4350 | | | G367E | 0 |
| G367E | VN384 | | | G367E | 0 |
| G367F | VW834 | | | G367E | 0 |
| Outflow (Cell 4 Outflow) | | | | | |
| G368 | VN385 | | | G368 | 3 |

Table 2. Continued.
STA-2 Flow-way 5
(Cells 7 & 8)

Inflow (Cell 7 Inflow) = G440A+G440B+G440C+G440D+G440E+G440F

Outflow (Cell 8 Outflow) = G441

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|------------------------|---------------------|------------------|------------------|------------|------|
| Inflow (Cell 7 Inflow) | | | | | |
| G440A | AI583 | | | G440D | 0 |
| G440B | AI593 | | | G440D | 0 |
| G440C | AI595 | | | G440D | 0 |
| G440D | AI601 | | | G440D | 0 |
| G440E | AI604 | | | G440D | 0 |
| G440F | AI609 | | | G440D | 0 |
| Outflow (Cell 8) | | | | | |
| G441 | AI621 | | | G441 | 3 |

Table 2. Continued.
STA-3/4 Eastern Flow-way
(Cells 1A & 1B)

Inflow (Cell 1A Inflow) =

G374A+G374B+G374C+G374D+G374E+G374F+G382A_Pos

Mid-levee (Cell 1A Outflow) =

G375A+G375B+G375C+G375D+G375E+G375F+G385+G382A_Neg

Mid-levee (Cell 1B Inflow) =

G375A+G375B+G375C+G375D+G375E+G375F+G385

Outflow (Cell 1B Outflow) = G376A+G376B+G376C+G376D+G376E+G376F

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 1A Inflow) | | | | | |
| G374A | W3964 | T8434 | | G374B | 3 |
| G374B | W3965 | T8435 | | G374B | 3 |
| G374C | W3966 | T8436 | | G374B | 3 |
| G374D | W3967 | T8437 | | G374E | 3 |
| G374E | W3968 | T8438 | | G374E | 3 |
| G374F | W3969 | T8439 | | G374E | 3 |
| G382_A_Pos | T9990 | | | G378B | 0 |
| Mid-levee (Cell 1A Outflow/Cell 1B Inflow) | | | | | |
| G375A | 37202 | T8440 | | G375B | 0 |
| G375B | 37203 | T8441 | | G375B | 0 |
| G375C | 37204 | T8442 | | G375B | 0 |
| G375D | 37213 | T8443 | | G375E | 0 |
| G375E | 37214 | T8444 | | G375E | 0 |
| G375F | 37217 | T8445 | | G375E | 0 |
| G385 | VW873 | | | G375B | 0 |
| Outflow (Cell 1B Outflow) | | | | | |
| G376A | 90348 | T1036 | | G376B | 2 |
| G376B | TA582 | T1037 | | G376B | 2 |
| G376C | 90349 | T1038 | | G376B | 2 |
| G376D | 90359 | T1039 | | G376E | 2 |
| G376E | TA583 | T1040 | | G376E | 2 |
| G376F | 90360 | T1041 | | G376E | 2 |

Table 2. Continued.
STA-3/4 Central Flow-way
(Cells 2A & 2B)

Inflow (Cell 2A Inflow) =

G377A+G377B+G377C+G377D+G377E+G382A_Neg+G382B_Pos

Mid-levee (Cell 2A Outflow) = G378A+G378B+G378C+G378D+G378E+G386+G382B

Mid-levee (Cell 2B Inflow) = G378A+G378B+G378C+G378D+G378E+G386

Outflow (Cell 2B Outflow) = G379A+G379B+G379C+G379D+G379E+G388

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 2A Inflow) | | | | | |
| G377A | W3970 | T9945 | | G377B | 3 |
| G377B | W3971 | T9946 | | G377B | 3 |
| G377C | W3972 | T9947 | | G377B | 3 |
| G377D | W3973 | T9948 | | G377D | 3 |
| G377E | W3974 | T9949 | | G377D | 3 |
| G382A_Neg | T9990 | | | G375E | 0 |
| G382B_Pos | T9992 | | | G381B | 0 |
| Mid-levee (Cell 2A Outflow/Cell 2B Inflow) | | | | | |
| G378A | 37218 | T9950 | 87613 | G378B | 0 |
| G378B | 37219 | T9951 | 87614 | G378B | 0 |
| G378C | 37220 | T9952 | 87615 | G378B | 0 |
| G378D | 37221 | T9953 | 87616 | G378B | 0 |
| | | | 87617 & | | |
| G378E | 37222 | T9954 | UT729 | G378D | 0 |
| G386 | VW874 | | | G378B | 0 |
| Outflow (Cell 2B Outflow) | | | | | |
| G379A | 90361 | TA302 | | G379B | 2 |
| G379B | TA584 | TA303 | | G379B | 2 |
| G379C | 90362 | TA304 | | G379B | 2 |
| G379D | TA585 | TA305 | | G379D | 2 |
| G379E | 90363 | UT730 | | G379D | 2 |
| G388 | W3981 | V2504 | | G388 | 2 |

Table 2. Continued.

**STA-3/4 Western Flow-way
(Cells 3A & 3B)**

Inflow (Cell 3A Inflow) = G380A+G380B+G380C+G380D+G380E+G380F

Mid-levee (Cell 3A Outflow) =

G384A+G384B+G384C+G384D+G384E+G384F+G387

Mid-levee (Cell 3B Inflow) =

G384A+G384B+G384C+G384D+G384E+G384F+G387+G382B_Neg

Outflow (Cell 3B Outflow) =

G381A+G381B+G381C+G381D+G381E+G381F+G382B_Pos

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 3A Inflow) | | | | | |
| G380A | W3975 | T9955 | | G380B | 3 |
| G380B | W3976 | T9956 | | G380B | 3 |
| G380C | W3977 | T9957 | | G380B | 3 |
| G380D | W3978 | T9958 | | G380E | 3 |
| G380E | W3979 | T9959 | | G380E | 3 |
| G380F | W3980 | T9960 | | G380E | 3 |
| Mid-levee (Cell 3A Outflow/Cell 3B Inflow) | | | | | |
| G384A | 90691 | W1927 | | G384B | 0 |
| G384B | 90692 | W1928 | | G384B | 0 |
| G384C | 90693 | VV483 | | G384B | 0 |
| G384D | 90694 | W1929 | | G384E | 0 |
| G384E | 90695 | W1930 | | G384E | 0 |
| G384F | 90696 | W1931 | | G384E | 0 |
| G387 | VW875 | | | G384B | 0 |
| G382B_Neg | T9992 | | | G378D | 0 |
| Outflow (Cell 3B Outflow) | | | | | |
| G381A | 90364 | TA296 | | G381B | 2 |
| G381B | TA586 | TA297 | | G381B | 2 |
| G381C | 90365 | TA298 | | G381E | 2 |
| G381D | 90366 | TA299 | | G381E | 2 |
| G381E | TA587 | TA300 | | G381E | 2 |
| G381F | 90367 | TA301 | | G381E | 2 |
| G382B_Pos | T9992 | | | G381B | 0 |

Table 2. Continued.**STA-5/6 Flow-way 1
(Cells 5-1A & 5-1B)**

Inflow (Cell 5-1A Inflow & Cell 5-1B water supply structures (G507 & G345) =
G342A+G342B+G349A+G349C+Cell 5-1B water supply structures G507 &
G345_Neg

Mid-levee (Cell 5-1A Outflow) = G343A+G343B+G343C+G343D

Mid-levee (Cell 5-1B Inflow) = G343A+G343B+G343C+G343D+G345_Neg+G507

Outflow (Cell 5-1B Outflow) = G344A+G344B+G345_Pos

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5-1A Inflow) | | | | | |
| G342A | J6406 | JJ111 | | G342A | 2 |
| G342B | J6398 | JJ116 | | G342B | 2 |
| G349A | JJ838 | JJ130 | | G349A | 2 |
| G349C | VV392 | 64014 | | G349C | 0 |
| Mid-levee (Cell 5-1A Outflow/Cell 5-1B Inflow) | | | | | |
| G343A | VG491 | | | G343B | 0 |
| G343B | VV382 | | | G343B | 0 |
| G343C | VV383 | | | G343C | 0 |
| G343D | VV419 | | | G343C | 0 |
| G345_Neg | 87581 | P4547 | | G344B | 0 |
| G507 | SJ382 | SJ383 | | G507 | 2 |
| Outflow (Cell 5-1B Outflow) | | | | | |
| G344A | J0719 | JJ117 | | G344A | 2 |
| G344B | J0720 | JJ118 | | G344B | 2 |
| G345_Pos | 87581 | P4547 | | G344C | 0 |

Table 2. Continued.**STA-5/6 Flow-way 2
(Cells 5-2A & 5-2B)**

Inflow (Cell 5-2A Inflow) = G342C+G342D+G349A+ Cell 5-2B water supply structures (G345_Pos & G510)

Mid-levée (Cell 5-2A Outflow) = G343E+G343F+G343G+G343H

Mid-levée (Cell 5-2B Inflow) = G343E+G343F+G343G+G343H+G345_Pos+G510

Outflow (Cell 5-2B Outflow) = G344C+G344D+G345_Neg

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5-2A Inflow) | | | | | |
| G342C | J6407 | LS293 | | G342C | 2 |
| G342D | J6405 | JJ126 | | G342D | 2 |
| Mid-levée (Cell 5-2A Outflow/Cell 5-2B Inflow) | | | | | |
| G343E | VV420 | | | G343F | 0 |
| G343F | VV384 | | | G343F | 0 |
| G343G | VV385 | | | G343G | 0 |
| G343H | VV421 | | | G343G | 0 |
| G345_Pos | 87581 | P4547 | | G344B | 0 |
| G510 | AI886 | | | G344D | 0 |
| Outflow (Cell 5-2B Outflow) | | | | | |
| G344C | J0721 | JJ119 | | G344C | 2 |
| G344D | J0722 | JJ120 | | G344D | 2 |
| G345_Neg | 87581 | P4547 | | G344B | 0 |

Table 2. Continued.

| STA-5/6 Flow-way 3 (Cells 5-3A & 5-3B) | | | | | |
|---|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5-3A Inflow) = G342G+G342H+Cell 5-3B water supply structures (G-715_Pos) | | | | | |
| Mid-levee (Cell 5-3A Outflow) = G343I+G343J | | | | | |
| Mid-levee (Cell 5-3B Inflow) = G343I+G343J+G715_Pos | | | | | |
| Outflow (Cell 5-3B Outflow)= G344E+G344F | | | | | |
| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
| Inflow (Cell 5-3A Inflow) | | | | | |
| G342G | 90410 | AI640 | | G342G | 3 |
| G342H | 90411 | AI646 | | G342G | 3 |
| Mid-levee (Cell 5-3A Outflow/Cell 5-3B Inflow) | | | | | |
| G343I | VW789 | | | G343I | 0 |
| G343J | VW790 | | | G343J | 0 |
| G715_Pos | 90636 | | | G344D | 0 |
| Outflow (Cell 5-3B Outflow) | | | | | |
| G344E | WH026 | VW787 | | G344E | 2 |
| G344F | WH027 | VW788 | | G344F | 2 |

STA-5/6 Flow-way 4
(Cells 5-4A & 5-4B)

Inflow (Cell 5-4A Inflow) = G342I+G342J

Mid-levee (Cell 5-4A Outflow/Cell 5-4B Inflow) = G343K+G343L

Outflow (Cell 5-4B Outflow) = G344G+G344H

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5-4A Inflow) | | | | | |
| G342I | 90412 | AI670 | | G342I | 3 |
| G342J | 90413 | AI676 | | G342J | 3 |
| Mid-levee (Cell 5-4A Outflow/Cell 5-4B Inflow) | | | | | |
| G343K | AI749 | | | G343K | 0 |
| G343L | AI763 | | | G343L | 0 |
| Outflow (Cell 5-4B Outflow) | | | | | |
| G344G | 90335 | AI688 | | G344G | 2 |
| G344H | 90336 | AI694 | | G344G | 2 |

Table 2. Continued.

STA-5/6 Flow-way 5
(Cells 5-5A & 5-5B)

Inflow (Cell 5-5A Inflow) = G342K+G342L+G342M

Mid-levee (Cell 5-5A Outflow/Cell 5-5B Inflow) = G343M+G343N+G343O

Outflow (Cell 5-5B Outflow) = G344I+G344J+G344K

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 5-5A Inflow) | | | | | |
| G342K | 90414 | AI715 | | G342K | 3 |
| G342L | 90415 | AI725 | | G342L | 3 |
| G342M | 90416 | AI731 | | G342M | 3 |
| Mid-levee (Cell 5-5A Outflow/Cell 5-5B Inflow) | | | | | |
| G343M | AI765 | | | G343M | 0 |
| G343N | AI679 | | | G343M | 0 |
| G343O | AI771 | | | G343O | 0 |
| Outflow (Cell 5-5B Outflow) | | | | | |
| G344I | 90337 | AI704 | | G344I | 2 |
| G344J | 90338 | AI781 | | G344J | 2 |
| G344K | 90339 | AI783 | | G344K | 2 |

STA-5/6 Flow-way 6
(Cells 6-4 & 6-2)

Inflow (Cell 6-4 Inflow) = G342N

Mid-levee (Cell 6-4 Outflow/Cell 6-2 Inflow) = G396A+G396B+G396C

Outflow (Cell 6-2 Outflow) = G352A+G352B+G352C

| Flow Station | DB KEYs (Preferred) | DB KEYs (Source) | DB KEYs (Source) | WQ Station | Mode |
|--|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 6-4 Inflow) | | | | | |
| G342N | 90417 | AI742 | | G342N | 3 |
| Mid-levee (Cell 6-4 Outflow/Cell 6-2 Inflow) | | | | | |
| G396A | AL659 | VV553 | | G396B | 0 |
| G396B | AL682 | VV554 | | G396B | 0 |
| G396C | AL683 | VV555 | | G396B | 0 |
| Outflow (Cell 6-2 Outflow) | | | | | |
| G352A | 90340 | VW786 | | G352B | 2 |
| G352B | 90341 | VW775 | | G352B | 2 |
| G352C | 90342 | VW774 | | G352B | 2 |

Table 2. Continued.**STA-5/6 Flow-way 7****(Cell 6-5)**

Inflow (Cell 6-5 Inflow) = G353A+G353B

Outflow (Cell 6-5 Outflow) = G354A+G354B+G354C

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|----------------------------|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 6-5 Inflow) | | | | | |
| G353A | 90343 | VV550 | | G353B | 2 |
| G353B | 90344 | VV551 | | G353B | 2 |
| Outflow (Cell 6-5 Outflow) | | | | | |
| G354A | 90345 | MJ509 | | G354C | 2 |
| G354B | 90346 | MJ510 | | G354C | 2 |
| G354C | 90347 | MJ470 | | G354C | 2 |

STA-5/6 Flow-way 8**(Cell 6-3)**

Inflow (Cell 6-3 Inflow) = G353C

Outflow (Cell 6-3 Outflow) = G393A+G393B+G393C

| Flow Station | DB KEYS (Preferred) | DB KEYS (Source) | DB KEYS (Source) | WQ Station | Mode |
|----------------------------|------------------------|---------------------|---------------------|---------------|------|
| Inflow (Cell 6-3 Inflow) | | | | | |
| G353C | WN384 | VV552 | | G353C | 3 |
| Outflow (Cell 6-3 Outflow) | | | | | |
| G393A | 90368 | MJ512 | | G393B | 2 |
| G393B | 90369 | MJ511 | HD874 | G393B | 2 |
| G393C | 90370 | MJ513 | | G393B | 2 |

^a Unless specifically designated, both positive and negative flows are used.

^b Specific flow records in the DBHYDRO; preferred keys are used preferentially over the source keys.

^c The water quality stations where the concentration data were collected.

^d Interpolation modes used in Nutrient Load Program to estimate daily TP loads from the water quality concentration data.

Modes:

0 = Use grab sample results only on days with flow and extrapolate between missing values.

2 = Use autosampler results first, if missing use grab sample results only on days with flow and extrapolate between missing values.

3 = Use autosamplers first, grabs if missing and extrapolate between missing values.