POND A

STAGE-DISCHARGE DATA

```
RECORD NUMBER  : 2
TYPE           : TRAPEZOIDAL WEIR
DESCRIPTION    : Pond A (100-YR Storm)

[RATING CURVE LIMIT]

Minimum Elevation........................  =      326.50 (ft)
Maximum Elevation........................  =      330.00 (ft)
Elevation Increment......................  =        0.25 (ft)

[OUTLET STRUCTURE INFORMATION]

Weir Angle...............................  =   35.78000 (deg)
Crest Elevation..........................  =      326.50 (ft)
Crest Length.............................  =       25.00 (ft)

Coefficient Cw...........................  =     3.00000
Exponential..............................  =     2.50000

[TRAP EQUATION]

Q = Cw*tan(ang/2)H^exp
H   = Headwater depth above inlet control section invert, (ft)
ang = Weir Angle

[Culvert Weir Discharge Value vs. Stage]
(the elevation increment is 0.2)
```

STAGE	ELEVATION (ft)	FLOW (cfs)
0.25	326.75	2.35
0.50	327.00	13.33
0.75	327.25	36.82
1.00	327.50	75.77
1.25	327.75	192.71
1.50	328.00	209.88
1.75	328.25	309.34
2.00	328.50	433.03
2.25	328.75	582.77
2.50	329.00	760.30
2.75	329.25	967.29
3.00	329.50	1205.36
3.25	329.75	1476.08
3.50	330.00	1780.97

STAGE-STORAGE-DISCHARGE DATA

```
RECORD NUMBER  : 2
STORAGE TYPE   : MAN STAGE/AREA
DISCHARGE TYPE : COMP STAGE/DIS
DESCRIPTION    : Pond A (100-YR Storm)

[RATING CURVE LIMIT]

Minimum Elevation........................  =      326.50 (ft)
Maximum Elevation........................  =      330.00 (ft)
Elevation Increment......................  =        0.10 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Contour Area vs. Elevation]
```

ELEVATION (ft)	CONTOUR AREA (sqft)
326.50	20651.00
327.00	22074.00
328.00	24695.00
329.00	27394.00
330.00	30179.00

```
[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:

STR #       :  2
TYPE        :  TRAPEZOIDAL WEIR
DESCRIPTION :  Pond A (100-YR Storm)

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)
```

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.00	326.50	20651.00	0.00	0.00
0.10	326.60	20935.60	2079.33	0.24
0.20	326.70	21220.20	4187.12	1.34
0.30	326.80	21504.80	6323.37	3.71
0.40	326.90	21789.40	8488.08	7.62
0.50	327.00	22074.00	10681.25	13.33
0.60	327.10	22336.10	12901.76	21.04
0.70	327.20	22598.20	15148.47	30.97
0.80	327.30	22860.30	17421.40	43.29
0.90	327.40	23122.40	19720.53	58.17
1.00	327.50	23384.50	22045.88	75.77
1.10	327.60	23646.60	24397.43	96.26
1.20	327.70	23908.70	26775.20	119.77
1.30	327.80	24170.80	29179.17	146.46
1.40	327.90	24432.90	31609.36	176.45
1.50	328.00	24695.00	34065.75	209.88
1.60	328.10	24964.90	36548.75	246.88
1.70	328.20	25234.80	39058.73	287.57
1.80	328.30	25504.70	41595.70	332.08
1.90	328.40	25774.60	44159.67	380.53
2.00	328.50	26044.50	46750.62	433.03
2.10	328.60	26314.40	49368.57	489.70
2.20	328.70	26584.30	52013.50	550.65
2.30	328.80	26854.20	54685.43	616.00
2.40	328.90	27124.10	57384.34	685.84
2.50	329.00	27394.00	60110.25	760.30
2.60	329.10	27672.50	62863.58	839.47
2.70	329.20	27951.00	65644.75	923.46
2.80	329.30	28229.50	68453.77	1012.37
2.90	329.40	28508.00	71290.65	1106.30
3.00	329.50	28786.50	74155.37	1205.36
3.10	329.60	29065.00	77047.95	1309.65
3.20	329.70	29343.50	79968.37	1419.25
3.30	329.80	29622.00	82916.65	1534.28
3.40	329.90	29900.50	85892.77	1654.82
3.50	330.00	30179.00	88896.75	1780.97

STAGE-STORAGE DATA

Pond A (Elevation-Storage) 100-Yr Storm

Elevation (Ft)	Depth (Ft)	Area (Ac)	Area (Sq Ft)	Ave Area (Sq Ft)	Storage (Cu Ft)	Total Storage (Cu Ft)	Total Storage (Ac-Ft)
326.50	0.00	0.4741	20,651	0	0	0	0.00
327.00	0.50	0.5067	22,074	21,363	10,681	10,681	0.25
328.00	1.00	0.5669	24,695	23,385	23,385	34,066	0.78
329.00	1.00	0.6289	27,394	26,045	26,045	60,110	1.38
330.00	1.00	0.6928	30,179	28,787	28,787	88,897	2.04

100-YEAR STORM ROUTING

```
RECORD NUMBER  : 6
TYPE           : RESER STOR. IND
DESCRIPTION    : 100-YR Pond A OUTFLOW

[HYDROGRAPH INFORMATION]

Peak Discharge...........................  =      108.13 (cfs)
Volume...................................  =        3.28 (acft)
Time Interval............................  =        5.00 (min)
Time to Peak.............................  =       10.00 (min)
Time of Base.............................  =      925.00 (min)
Peak Elevation...........................  =      327.65 (ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #..............................  =           2
Description..............................  = Pond A (100-YR Storm)
Storage type.............................  = MAN STAGE/AREA
Max storage..............................  =     88896.75 Cuft
Discharge type...........................  = COMP STAGE/DIS
Max discharge............................  =      1780.97 cfs

[RESERVOIR INFORMATION]

Reservoir #..............................  =           2
Reservoir Description....................  = Pond A (100-YR Storm)

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #.............................  =           5
Hydrograph Description...................  = 100-YR Pond A INFLOW

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5.0 min)
```

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
1	5.0	127.30	19095.00	+	0.00	=	19095.00	29.11	14728.12	327.18
2	10.0	82.40	31455.00	+	10361.25	=	41816.25	108.13	25597.30	327.65
3	15.0	61.20	21540.00	+	9378.35	=	30918.35	66.93	20878.25	327.45
4	20.0	48.40	16440.00	+	10838.15	=	27278.15	54.33	19128.09	327.37
5	25.0	40.50	13335.00	+	10978.03	=	24313.03	44.60	17683.61	327.31
6	30.0	34.30	11220.00	+	10934.19	=	22154.19	38.03	16450.41	327.26
7	35.0	30.10	9660.00	+	10746.63	=	20406.63	32.80	15486.45	327.21
8	40.0	26.80	8535.00	+	10566.27	=	19101.27	29.13	14731.89	327.18
9	45.0	24.30	7665.00	+	10362.52	=	18027.52	26.28	14086.10	327.15

POND B

STAGE-DISCHARGE DATA

```
OUTLET STRUCTURE REPORT

RECORD NUMBER  : 4
TYPE           : TRAPEZOIDAL WEIR
DESCRIPTION    : Pond B (100-YR Storm)

[RATING CURVE LIMIT]

Minimum Elevation........................  =      324.15 (ft)
Maximum Elevation........................  =      326.00 (ft)
Elevation Increment......................  =        0.10 (ft)

[OUTLET STRUCTURE INFORMATION]

Weir Angle...............................  =   35.78000 (deg)
Crest Elevation..........................  =      324.50 (ft)
Crest Length.............................  =       75.00 (ft)

Coefficient Cw...........................  =     3.00000
Exponential..............................  =     2.50000

[TRAP EQUATION]

Q = Cw*tan(ang/2)H^exp
H   = Headwater depth above inlet control section invert, (ft)
ang = Weir Angle

[Culvert Weir Discharge Value vs. Stage]
(the elevation increment is 0.1)
```

STAGE	ELEVATION (ft)	FLOW (cfs)
0.40	324.55	0.13
0.50	324.65	1.96
0.60	324.75	7.04
0.70	324.85	16.33
0.80	324.95	30.61
0.90	325.05	50.57
1.00	325.15	76.81
1.10	325.25	109.89
1.20	325.35	150.31
1.30	325.45	198.57
1.40	325.55	255.11
1.50	325.65	320.36
1.60	325.75	394.75
1.70	325.85	478.66
1.80	325.95	572.49
1.85	326.00	623.23

STAGE-STORAGE-DISCHARGE DATA

```
RECORD NUMBER  : 4
STORAGE TYPE   : MAN STAGE/STOR
DISCHARGE TYPE : COMP STAGE/DIS
DESCRIPTION    : Pond B (100-YR Storm)

[RATING CURVE LIMIT]

Minimum Elevation........................  =      324.15 (ft)
Maximum Elevation........................  =      326.00 (ft)
Elevation Increment......................  =        0.10 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Storage vs. Elevation]
```

ELEVATION (ft)	STORAGE (cuft)
326.00	178793.00

```
[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:

STR #       :  4
TYPE        :  TRAPEZOIDAL WEIR
DESCRIPTION :  Pond B (100-YR Storm)

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)
```

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.00	324.15	0.00	0.00	0.00
0.10	324.25	289934.59	9664.49	0.00
0.20	324.35	289934.59	19328.97	0.00
0.30	324.45	289934.59	28993.46	0.00
0.40	324.55	289934.59	38657.95	0.13
0.50	324.65	289934.59	48322.43	1.96
0.60	324.75	289934.59	57986.92	7.04
0.70	324.85	289934.59	67651.41	16.33
0.80	324.95	289934.59	77315.89	30.61
0.90	325.05	289934.59	86980.38	50.57
1.00	325.15	289934.59	96644.86	76.81
1.10	325.25	289934.59	106309.35	109.89
1.20	325.35	289934.59	115973.84	150.31
1.30	325.45	289934.59	125638.32	198.57
1.40	325.55	289934.59	135302.81	255.11
1.50	325.65	289934.59	144967.30	320.36
1.60	325.75	289934.59	154631.78	394.75
1.70	325.85	289934.59	164296.27	478.66
1.80	325.95	289934.59	173960.76	572.49
1.85	326.00	289934.59	178793.00	623.23

STAGE-STORAGE DATA

Pond B (Elevation-Storage) 100-Yr Storm

Elevation (Ft)	Depth (Ft)	Area (Ac)	Area (Sq Ft)	Ave Area (Sq Ft)	Storage (Cu Ft)	Total Storage (Cu Ft)	Total Storage (Ac-Ft)
324.15	0.00	1.9803	86,263	0	0	0	0.00
326.00	1.85	2.4570	107,027	96,645	178,793	178,793	4.10

100-YEAR STORM ROUTING

```
RECORD NUMBER  : 12
TYPE           : RESER STOR. IND
DESCRIPTION    : 100-YR Pond B OUTFLOW

[HYDROGRAPH INFORMATION]

Peak Discharge...........................  =      214.05 (cfs)
Volume...................................  =        8.75 (acft)
Time Interval............................  =        5.00 (min)
Time to Peak.............................  =       15.00 (min)
Time of Base.............................  =     6545.00 (min)
Peak Elevation...........................  =      325.48 (ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #..............................  =           4
Description..............................  = Pond B (100-YR Storm)
Storage type.............................  = MAN STAGE/STOR
Max storage..............................  =    178793.00 Cuft
Discharge type...........................  = COMP STAGE/DIS
Max discharge............................  =       623.23 cfs

[RESERVOIR INFORMATION]

Reservoir #..............................  =           4
Reservoir Description....................  = Pond B (100-YR Storm)

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #.............................  =          11
Hydrograph Description...................  = 100-YR Pond B INFLOW

[Computation of Reservoir Outflow Table of Storage Indication Method]
(The time interval is 5.0 min)
```

INTV#	TIME (min)	INFLOW (cfs)	EQUATION 0.5(I1+I2)dt	+	S1-0.5(O1)dt	=	S2+0.5(O2)dt	OUTFLOW O2(cfs)	STORAGE (cuft)	ELEVATION (ft)
2	10.0	311.00	67845.00	+	21195.00	=	89040.00	41.86	82761.27	325.01
3	15.0	248.40	83910.00	+	76482.54	=	160392.54	214.05	128284.88	325.48
4	20.0	170.50	68835.00	+	96177.21	=	159012.21	209.75	127549.69	325.47
5	25.0	134.40	45735.00	+	96087.17	=	141822.17	159.74	117861.41	325.37
6	30.0	109.80	36630.00	+	93900.65	=	130530.65	129.78	111064.05	325.30
7	35.0	93.30	30465.00	+	91597.46	=	122062.46	108.24	105826.78	325.25
8	40.0	83.30	26490.00	+	89591.11	=	116081.11	94.71	101874.43	325.20
9	45.0	74.10	23610.00	+	87667.75	=	111277.75	83.85	98700.47	325.17

REVISIONS

SURVEY N/A

DESIGN SCP

DRAWN SCP

CHECKED JEM

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DATE 2/2004

SCALE HORZ: N/A
VERT: N/A

SEAL

COMMONWEALTH OF VIRGINIA
JOHN E. MORRIS
No. 7964
PROFESSIONAL ENGINEER
4/14/04

PROJECT

100-YEAR POND ROUTING (POND A & B)

FINAL CONVERSION OF EXISTING SWM FACILITIES
LOUDOUN COUNY GOVERNMENT CENTER
CATOCTIN ELECTION DISTRICT
LOUDOUN COUNTY, VIRGINIA

JOB 2000-0501

CADD 10Plt-Comps2.dwg

SHEET 10 OF 10

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