ENGINEERING
PLANNING
SURVEYING

Project Name: Mercer Parkway Lot 2 As-Built
Project No.: 12-15711

As-Built Detention Basin Volume Calculations

Elevation (Ft)	Area (Ft^2)	A1 + A2 + SQRT(A1*A2) (Ft.)	Incremental Volume* (Ft^3)	(Ft^3)
556	136	0	0	0
557	723	1,173	391	391
558	1,264	2,943	981	1,372
559	1,894	4,705	1,568	2,940
560	2,614	6,733	2,244	5,185
561	3,425	9,031	3,010	8,195
561.93	4,389	11,691	3,624	11,819

STATE OF MISSOURI
TODD C. FLAUAUS
NUMBER PE-2005000982
PROFESSIONAL ENGINEER
4/11/13

POND VOLUME EQUATIONS
Incremental volume computed by the Conic Method for Reservoir Volumes

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

Where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

BAX ENGINEERING CO.
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552 FAX 928-1718

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Project Name: Mercer Parkway Lot 12 As-Built
Project No.: 12-15711

Proposed Design Detention Basin Volume Calculations

Elevation (Ft)	Area (Ft^2)	A1 + A2 + SQRT(A1*A2) (Ft.)	Incremental Volume* (Ft^3)	(Ft^3)
556	260	0	0	0
557	711	1,401	467	467
558	1,233	2,880	960	1,427
559	1,828	4,562	1,521	2,948
560	2,495	6,459	2,153	5,101
561	3,230	8,564	2,855	7,955
562	4,018	10,851	3,617	11,572

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POND VOLUME EQUATIONS
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Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

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MERS Goodwill

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	12	2.87	543.40	544.40	1.00	0.79	3.65	0.21	544.61	0.650	44.533	543.50	544.69	1.00	0.79	3.65	0.21	544.90	0.650	0.650	0.289	1.99	0.41
2	12	0.52	544.20	545.10	0.90	0.20	0.70	0.11	545.21	0.000	57.000	544.70	545.00	0.30**	0.20	2.64	0.11	545.11	0.000	0.000	n/a	0.59	n/a
3	8	0.05	545.47	545.55	0.08*	0.03	1.93	0.03	545.59	0.000	54.291	546.25	546.35	0.10**	0.03	1.50	0.03	546.39	0.000	0.000	n/a	1.00	n/a
4	12	0.21	544.90	545.11	0.21*	0.12	1.79	0.05	545.16	0.398	75.261	545.20	545.41	0.21	0.12	1.80	0.05	545.46	0.405	0.402	0.302	1.00	0.05
5	12	1.61	543.70	545.10	1.00	0.79	2.05	0.07	545.17	0.204	78.000	544.24	545.24	1.00	0.79	2.05	0.07	545.30	0.198	0.201	0.157	1.36	0.00
6	12	0.48	544.44	545.33	0.89	0.74	0.65	0.01	545.33	0.016	117.259	545.00	545.40	0.40	0.29	1.65	0.04	545.44	0.163	0.090	0.105	1.00	0.04
7	12	0.30	538.20	539.40	1.00	0.13	0.38	0.00	539.40	0.007	31.529	540.00	540.23 j	0.23**	0.13	2.26	0.08	540.31	0.571	0.289	n/a	1.00	0.08
8	12	2.12	528.20	529.20	1.00*	0.51	2.70	0.11	529.31	0.355	48.268	532.00	532.62 j	0.62**	0.51	4.13	0.27	532.89	0.706	0.530	n/a	0.65	n/a
9	12	1.24	532.20	532.62	0.42	0.31	3.94	0.18	532.80	0.000	122.000	533.90	534.37	0.47**	0.36	3.42	0.18	534.55	0.000	0.000	n/a	1.00	n/a

STATE OF MISSOURI
ERIC SCOTT KIRCHNER
E-2001004618
REGISTERED PROFESSIONAL ENGINEER
10/25/2013

Project File: new storm 10-23-13.stm | Number of lines: 9 | Run Date: 10/24/2013

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box