

**APPENDIX D**

**DESIGN CALCULATIONS FOR STORMWATER MANAGEMENT**

Rainfall Type: Triangular

Areal Reduction: Unspecif

Mean Annual Percipitation: 723 (mm)

I.D.F Type: HRU/78

Time To Peak: 0.30

Rainfall Region: Inland

Total Area(ha): 0.000

Project No/Name: 12670

Ash Dam for Camden

KAT0001	RES0001	198.000	0.0260	1	1,100.00	45	5	0.200	0.022	3.0	1.0	
KAT0002	RES0002	162.300	0.0400	1	1,000.00	45	5	0.200	0.022	3.0	1.0	
KAT0003	RES0003	214.540	0.0400	1	1,000.00	45	5	0.200	0.022	3.0	1.0	
KAT0004	0001	30.100	0.0260	2	150.00	45	5	0.200	0.022	3.0	1.0	
KAT0005	0002	32.200	0.0400	2	250.00	45	5	0.200	0.022	3.0	1.0	
KAT0006	0003	28.200	0.0400	2	150.00	45	5	0.200	0.022	3.0	1.0	
KAT0007	0004	27.500	0.0400	2	175.00	45	5	0.200	0.022	3.0	1.0	
KAT0008	<END>	5.220	0.3330	2	50.00	25	5	0.200	0.022	2.0	0.5	
KAT0009	<END>	11.810	0.3330	2	50.00	25	5	0.200	0.022	2.0	0.5	
KAT0010	<END>	9.990	0.3330	2	75.00	25	5	0.200	0.022	2.0	0.5	
KAT0011	<END>	18.890	0.3330	2	100.00	25	5	0.200	0.022	2.0	0.5	
KAT0012	<END>	10.300	0.3330	2	75.00	25	5	0.200	0.022	2.0	0.5	
KAT0013	<END>	10.600	0.3330	2	80.00	25	5	0.200	0.022	2.0	0.5	
KAT0014	<END>	8.100	0.3330	2	100.00	25	5	0.200	0.022	2.0	0.5	
KAT0015	<END>	4.900	0.3330	2	80.00	25	5	0.200	0.022	2.0	0.5	
KAT0016	<END>	13.400	0.3300	2	100.00	25	5	0.200	0.022	2.0	0.5	
KAT0017	<END>	4.700	0.3300	2	100.00	25	5	0.200	0.022	2.0	0.5	
KAT0018	<END>	7.600	0.3300	2	120.00	25	5	0.200	0.022	2.0	0.5	
KAT0019	<END>	18.900	0.3300	2	180.00	25	5	0.200	0.022	2.0	0.5	
KAT0020	<END>	11.300	0.3300	2	180.00	25	5	0.200	0.022	2.0	0.5	
KAT0021	<END>	5.700	0.3300	2	180.00	25	5	0.200	0.022	2.0	0.5	

Rainfall Type: Triangular

Areal Reduction: None

Mean Annual Precipitation: 723 (mm)

I.D.F Type: HRU/78

Time To Peak: 0.30

Rainfall Region: Inland

Total Area(ha): 834.250

0001	<END>	<NONE>	1.00	1.5000	1.5000	0.10	0.012		###.##	0.02600	100	0.298
0002	<END>	<NONE>	1.00	1.5000	1.5000	0.10	0.012		###.##	0.04000	100	0.369
0003	<END>	<NONE>	1.00	1.5000	1.5000	0.10	0.012		###.##	0.04000	100	0.369
0004	<END>	<NONE>	1.00	1.5000	1.5000	0.10	0.012		###.##	0.04000	100	0.369

Rainfall Type: Triangular    Areal Red: Unspecif    M.A.F 723 (mm)    I.D.F Type: HRU/78    Time To Peak: 0.30

Project No/Name: 12670  
Total Area(ha): 834.250

Ash Dam for Camden

Reservoir Attenuation: 0.000  
Reservoir Lag Time: u

			Outlet Works (Pipes)			Outlet Works (Culverts)				Outlet Works (Spillways)			
Node ID	Drain To	Elev Points	No	Diameter	Invert Lev	No	Width	Height	Invert Lev	No	Coef	Width	Invert Lev
RES0001	<NONE>	0	0	0.000	0.00	0	0.000	0.00	0.00	1	1.800	20.00	1659.00
Reservoir Storage Contour:									No	Elevation	Storage Volume (m3)		
									1	1650.0000	0.000		
									2	1651.0000	20,000.000		
									3	1652.0000	40,000.000		
									4	1653.0000	60,000.000		
									5	1654.0000	80,000.000		
									6	1655.0000	100,000.000		
									7	1656.0000	120,000.000		
									8	1657.0000	140,000.000		
									9	1658.0000	160,000.000		
									10	1659.0000	180,000.000		
									11	1660.0000	200,000.000		
RES0002	<NONE>	0	0	0.000	0.00	0	0.000	0.00	0.00	1	1.800	20.00	1659.00
Reservoir Storage Contour:									No	Elevation	Storage Volume (m3)		
									1	1650.0000	0.000		
									2	1651.0000	20,000.000		
									3	1652.0000	40,000.000		
									4	1653.0000	60,000.000		
									5	1654.0000	80,000.000		
									6	1655.0000	100,000.000		
									7	1656.0000	120,000.000		
									8	1657.0000	140,000.000		
									9	1658.0000	160,000.000		
									10	1659.0000	180,000.000		
									11	1660.0000	200,000.000		
RES0003	<NONE>	0	0	0.000	0.00	0	0.000	0.00	0.00	1	1.800	20.00	1659.00
Reservoir Storage Contour:									No	Elevation	Storage Volume (m3)		
									1	1650.0000	0.000		
									2	1651.0000	20,000.000		
									3	1652.0000	40,000.000		
									4	1653.0000	60,000.000		
									5	1654.0000	80,000.000		
									6	1655.0000	100,000.000		
									7	1656.0000	120,000.000		
									8	1657.0000	140,000.000		
									9	1658.0000	160,000.000		
									10	1659.0000	180,000.000		
									11	1660.0000	200,000.000		

Rainfall Type: Triangular Areal Red: Not Spec M.A.P: 723 (mm) Project No/Name: 12670

I.D.F Type: HRU/78 Time To Peak: 0.30 Total Area(ha): 834.250 Ash Dam for Camden

Multiple RI used for Analysis - The Simulation Maxima can ONLY be used to Identify Problem Areas

Node ID	Inlet Peak(m3)	Storage(m3)	Velocity (m/s)	Hazard Rating Factor	MaxDepth(m)	Ex Q(m/s)	Resize	Storm Duration
---------	----------------	-------------	----------------	----------------------	-------------	-----------	--------	----------------

## Output Summary for year recurrence Interval 1: 50

## Element Type: Catchments

KAT0001	17.314	13		N/A	0.0350			81
KAT0002	17.333	13		N/A	0.0305			81
KAT0003	22.912	13		N/A	0.0305			81
KAT0004	8.273	7		N/A	0.0163			41
KAT0005	7.697	7		N/A	0.0190			41
KAT0006	8.502	7		N/A	0.0146			41
KAT0007	7.769	7		N/A	0.0158			41
KAT0008	3.506	3		N/A	0.0054			21
KAT0009	7.932	3		N/A	0.0054			21
KAT0010	6.068	3		N/A	0.0069			21
KAT0011	10.524	3		N/A	0.0081			21
KAT0012	6.256	3		N/A	0.0069			21
KAT0013	6.328	3		N/A	0.0071			21
KAT0014	4.513	3		N/A	0.0081			21
KAT0015	2.925	3		N/A	0.0071			21
KAT0016	7.456	3		N/A	0.0081			21
KAT0017	2.615	3		N/A	0.0081			21
KAT0018	3.993	3		N/A	0.0089			21
KAT0019	8.528	3		N/A	0.0111			21
KAT0020	5.099	3		N/A	0.0111			21
KAT0021	2.572	3		N/A	0.0111			21

## Element Type: Channels

0001	8.273		4.72	374 High	0.6193		0.700	41
0002	7.697		5.55	316 High	0.5361		0.600	41
0003	8.502		5.63	361 High	0.5637		0.600	41
0004	7.769		5.52	320 High	0.5385		0.600	41

## Element Type: Reservoirs

RES0001	17.314	183079		N/A	###.###			81
RES0002	17.333	181140		N/A	###.###			81
RES0003	22.912	184824		N/A	###.###			81

Rainfall Type: Triangular      Areal Red: Not Spec      M.A.P: 723 (mm)      Project No/Name: 12670

I.D.F Type: HRU/78      Time To Peak: 0.30      Total Area(ha): 834.250      Ash Dam for Camden

Multiple RI used for Analysis - The Simulation Maxima can ONLY be used to Identify Problem Areas

Node ID	Inlet Peak(m3)	Storage(m3)	Velocity (m/s)	Hazard Rating Factor	MaxDepth(m)	Ex Q(m/s)	Resize	Storm Duration
---------	----------------	-------------	----------------	----------------------	-------------	-----------	--------	----------------

Output Summary for year recurrence Interval 1: 50

Element Type: Catchments

KAT0001	13.495	5		N/A	0.0401			30
KAT0002	14.303	5		N/A	0.0362			30
KAT0003	18.907	5		N/A	0.0362			30
KAT0004	8.314	5		N/A	0.0178			30
KAT0005	7.567	5		N/A	0.0205			30
KAT0006	8.679	5		N/A	0.0159			30
KAT0007	7.840	5		N/A	0.0172			30
KAT0008	3.666	2		N/A	0.0063			11
KAT0009	8.294	2		N/A	0.0063			11
KAT0010	6.114	3		N/A	0.0071			19
KAT0011	10.594	3		N/A	0.0082			20
KAT0012	6.304	3		N/A	0.0071			19
KAT0013	6.358	3		N/A	0.0073			19
KAT0014	4.542	3		N/A	0.0082			20
KAT0015	2.939	3		N/A	0.0073			19
KAT0016	7.503	3		N/A	0.0082			20
KAT0017	2.632	3		N/A	0.0082			20
KAT0018	3.996	3		N/A	0.0091			20
KAT0019	8.588	3		N/A	0.0108			23
KAT0020	5.135	3		N/A	0.0108			23
KAT0021	2.590	3		N/A	0.0108			23

Element Type: Channels

0001	8.314		4.87	378 High	0.6214		0.700	30
0002	7.567		5.51	309 High	0.5314		0.600	30
0003	8.679		5.74	371 High	0.5695		0.600	30
0004	7.840		5.52	324 High	0.5414		0.600	30

Element Type: Reservoirs

RES0001	13.495	108786		N/A	###.####			30
RES0002	14.303	107163		N/A	###.####			30
RES0003	18.907	125563		N/A	###.####			30