APPENDIX B

CSO ALTERNATIVES COSTS

1. Table B-1 - Completion Dates and Cost Analysis for Alternative 1 – Master Plan Alternative 2.A.(1) Plus Equalization

2. Table B-2 - Completion Dates and Cost Analysis for Alternative 2 - Master Plan Alternative 2.A.(1) Plus HRT

3. Table B-3 - Completion Dates and Cost Analysis for Alternative 3 - Master Plan Alternative 2.A.(1) Plus Additional Full Secondary Treatment

4. Table B-4 - Completion Dates and Cost Analysis for Alternative 4 - Master Plan Alternative 2.A.(1) Modified Plus Complete Sewer Separation

TABLE B-1

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 1
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS EQUALIZATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2008 NEEDS (Lake and Allen Sewer Seperation - Full Separation of Sewer Sheds 8D and 8E and Partial Separation of Sewer Sheds 8C and 11)						
80	8	1,582	feet	$147	$ 232,000	Near Rising Park on High Street and flowing south ID #81 at Lake Street
81	10	1,698	feet	$152	$ 258,000	East along Lake Street and then south along Maple Street to ID #82.
82	12	1,415	feet	$159	$ 225,000	South along Maple Street to ID # 83
83	15	1,570	feet	$176	$ 277,000	South along Maple Street to ID #84.
84	18	2,151	feet	$195	$ 419,000	South along Maple Street to the 42" interceptor at Water Street.
85	8	846	feet	$147	$ 124,000	East along Allen Street to ID #82
86	8	1,300	feet	$147	$ 191,000	East along Sixth Avenue to ID #82
87	8	903	feet	$147	$ 133,000	East along the right-of-way between King Street and Mulberry Street to ID #83
88	8	911	feet	$147	$ 134,000	East along the right-of-way between Mulberry Street and Wheeling Street to ID #83
89	8	484	feet	$147	$ 71,000	East along the right-of-way between Wheeling Street and Main Street to ID #83
Storm Sewer Work	12	2,775	feet	$83	$ 229,000	12" Gravity Storm Sewer Pipe
Storm Sewer Work	15	500	feet	$91	$ 45,000	15" Gravity Storm Sewer Pipe
Storm Sewer Work	18	225	feet	$99	$ 22,000	18" Gravity Storm Sewer Pipe
Storm Sewer Work	36	1,200	feet	$157	$ 188,000	Replace 30" Lake Street Combined Sewer w/36" ST
Storm Sewer Work	42	1,000	feet	$198	$ 198,000	Replace 42" Storm Sewer Pipe in kind
Storm Sewer Work	48	120	feet	$743	$ 89,000	48" Bore and Jack Storm Sewer Pipe
Storm Sewer Work		5,394	C.Y.	$30	$ 160,000	Granular Backfill
Storm Sewer Work		2,898	S.Y.	$58	$ 167,000	Pavement Replacement
Storm Sewer Work		20	each	$2,063	$ 41,000	Storm Sewer Manholes
Storm Sewer Work		3	each	$1,980	$ 6,000	Catch Basins
Storm Sewer Work		1	each	$24,750	$ 25,000	Repair 48" Discharge/Headwall on Maple Street
Storm Sewer Work		317	each	$1,650	$ 523,000	Lateral Reconnection & two Cleanouts
Storm Sewer Work		7,275	S.Y.	$53	$ 382,000	Pavement Replacement
			2008 Needs Subtotal		**$ 4,139,000**	
			2008 Annualized Cost		**$ 305,000**	

TABLE B-1

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 1
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS EQUALIZATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
2009 NEEDS (Upper Hocking WPCF, Pump Station, and Force Main)						
59	30	2,996	feet	188	$ 197,000	Sewer along Collins Road to Proposed Upper Hocking WPCF
Upper Hocking Pump Station						
4.39 mgd pump station		1	lump sum	$2,296,000	$ 806,000	Pump Station at Ety Road and West Fair Avenue.
Force main	30	13,440	feet	$196	$ 923,000	Force main from pump station to intersection of Becks Knob Road and Crumley Rd.
Upper Hocking 1.35 mgd WPCF		1	lump sum	$13,284,000	$ 13,284,000	New WPCF on Campground Road in Rock Mill Phase 1 Industrial Park, development area I-7.
90	30	1,498	feet	$188	$ 75,000	Treated effluent discharge from new Upper Hocking WPCF to the Hocking River.
			2009 Needs Subtotal		**$ 15,285,000**	
			2009 Annualized Cost		**$ 1,125,000**	
2015 NEEDS (Express Sewers and Equalization at the Existing WPCF)						
70	30	3,047	feet	187.55	$ 571,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
71	30	1,989	feet	187.55	$ 373,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
75	48	1,191	feet	275.36	$ 328,000	Along Baldwin Run northeast of existing WPCF (Baldwin Run Express Sewer).
Misc. Express Sewer Structures		1	lump sum	$ 636,000	$ 636,000	Miscelaneous Structers Required for Express Sewers
Equalization Pump Station						
20 mgd Pump Station		1	lump sum	$ 8,562,969	$ 8,563,000	Pump Station at exisitng WPCF to Pump to Equalization
Force Main	42	130	feet	$ 230	$ 30,000	Force Main at exisitng WPCF to move flow to Equalization
2 million gallon Equalization		1	lump sum	$ 5,000,000	$ 5,000,000	Equalization with screens and aeration at the existing WPCF
			2015 Needs Subtotal		**$ 15,501,000**	
			2015 Annualized Cost		**$ 1,141,000**	
TOTAL COST					**$ 34,925,000**	

TABLE B-1

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 1
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS EQUALIZATION)

WW Infrastructure Description	Quantity	Unit	Unit Cost	Total Cost	Location Remarks
2008 Alternative 4 Subtotal				$ 4,139,000	$4,139,000
2009 Alternative 4 Subtotal				$ 15,285,000	$19,424,000
2015 Alternative 4 Subtotal				$ 15,501,000	$34,925,000
Long Term Control Plan - Addendum - Alternative - 4 TOTAL				$ 34,925,000	
ANNUALIZED COST					Running Total
2008 Alternative 4 Subtotal				$ 305,000	$305,000
2009 Alternative 4 Subtotal				$ 1,125,000	$1,430,000
2015 Alternative 4 Subtotal				$ 1,141,000	$2,571,000
LTCP - Addendum - Alternative 4 - TOTAL ANNUALIZED COST				$ 2,571,000	

Notes:

1. Costs are based on 2005 Dollars.
2. Costs include a 1.30 contingency factor and a 1.23 engineering cost factor.
3. All dates are construction completion dates.
4. The first phase capacity of the Upper Hocking Pump Station is 9.0 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
5. The Upper Hocking Pump Station Force Main capacity is 12.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.
6. The first phase capacity of the Upper Hocking Water Pollution Control Facility (WPCF) is 4.0 mgd. Only 1.35 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
7. The capacity of the Upper Hocking Water Pollution Control Facility (WPCF) effluent line is 16.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.

Design Life for Analysis (Years)	20
Interest Rate	4.000%
Annualization Factor	0.0736

TABLE B-2

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 2
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS CHEMICAL/ PHYSICAL TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2008 NEEDS (Lake and Allen Sewer Seperation - Full Separation of Sewer Sheds BD and BE and Partial Separation of Sewer Sheds BC and BD)						
80	8	1,582	feet	$147	$ 232,000	Near Rising Park on High Street and flowing south ID #81 at Lake Street
81	10	1,698	feet	$152	$ 258,000	East along Lake Street and then south along Maple Street to ID #82.
82	12	1,415	feet	$159	$ 225,000	South along Maple Street to ID # 83
83	15	1,570	feet	$176	$ 277,000	South along Maple Street to ID #84.
84	18	2,151	feet	$195	$ 419,000	South along Maple Street to the 42" interceptor at Water Street.
85	8	846	feet	$147	$ 124,000	East along Allen Street to ID #82
86	8	1,300	feet	$147	$ 191,000	East along Sixth Avenue to ID #82
87	8	903	feet	$147	$ 133,000	East along the right-of-way between King Street and Mulberry Street to ID #83
88	8	911	feet	$147	$ 134,000	East along the right-of-way between Mulberry Street and Wheeling Street to ID #83
89	8	484	feet	$147	$ 71,000	East along the right-of-way between Wheeling Street and Main Street to ID #83
Storm Sewer Work	12	2,775	feet	$83	$ 229,000	12" Gravity Storm Sewer Pipe
Storm Sewer Work	15	500	feet	$91	$ 45,000	15" Gravity Storm Sewer Pipe
Storm Sewer Work	18	225	feet	$99	$ 22,000	18" Gravity Storm Sewer Pipe
Storm Sewer Work	36	1,200	feet	$157	$ 188,000	Replace 30" Lake Street Combined Sewer w/36" ST
Storm Sewer Work	42	1,000	feet	$198	$ 198,000	Replace 42" Storm Sewer Pipe in kind
Storm Sewer Work	48	120	feet	$743	$ 89,000	48" Bore and Jack Storm Sewer Pipe
Storm Sewer Work		5,394	C.Y.	$30	$ 160,000	Granular Backfill
Storm Sewer Work		2,898	S.Y.	$58	$ 167,000	Pavement Replacement
Storm Sewer Work		20	each	$2,063	$ 41,000	Storm Sewer Manholes
Storm Sewer Work		3	each	$1,980	$ 6,000	Catch Basins
Storm Sewer Work		1	each	$24,750	$ 25,000	Repair 48" Discharge/Headwall on Maple Street
Storm Sewer Work		317	each	$1,650	$ 523,000	Lateral Reconnection & two Cleanouts
Storm Sewer Work		7,275	S.Y.	$53	$ 382,000	Pavement Replacement
			2008 Needs Subtotal		**$ 4,139,000**	
			2008 Annualized Cost		**$ 305,000**	
2009 NEEDS (Upper Hocking WPCP, Pump Station, and Force Main)						

TABLE B-2

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 2
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS CHEMICAL/ PHYSICAL TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
59	30	2,996	feet	188	$ 197,000	Sewer along Collins Road to Proposed Upper Hocking WPCF
Upper Hocking Pump Station						
4.39 mgd pump station		1	lump sum	$2,296,000	$ 806,000	Pump Station at Ety Road and West Fair Avenue.
Force main	30	13,440	feet	$196	$ 923,000	Force main from pump station to intersection of Becks Knob Road and Crumley Rd.
Upper Hocking 1.35 mgd WPCF		1	lump sum	$13,284,000	$ 13,284,000	New WPCF on Campground Road in Rock Mill Phase 1 Industrial Park, development area I-7.
90	30	1,498	feet	$188	$ 75,000	Treated effluent discharge from new Upper Hocking WPCF to the Hocking River.
			2009 Needs Subtotal		**$ 15,285,000**	
			2009 Annualized Cost		**$ 1,125,000**	
2015 NEEDS (Express Sewers and High Rate Physical/Chemical Treatment at the Existing WPCF)						
70	30	3,047	feet	$188	$ 571,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
71	30	1,989	feet	$188	$ 373,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
75	48	1,191	feet	$275	$ 328,000	Along Baldwin Run northeast of existing WPCF (Baldwin Run Express Sewer).
Misc. Express Sewer Structures		1	lump sum	$636,000	$ 636,000	Miscelaneous Structers Required for Express Sewers
HRT Pump Station						
20 mgd Pump Station		1	lump sum	$8,563,000	$ 8,563,000	Pump Station at exisitng WPCF to Pump to HRT
Force Main	42	130	feet	$230	$ 30,000	Force Main at exisitng WPCF to move flow to HRT
High-Rate Treatment Building		1	lump sum	$1,790,000	$ 1,790,000	
Screening Facility		1	lump sum	$2,274,000	$ 2,274,000	
HRT Facility (20 MGD)		1	lump sum	$3,580,000	$ 3,580,000	
UV Disinfection (20 MGD)		1	lump sum	$910,000	$ 910,000	
			2015 Needs Subtotal		**$ 19,055,000**	
			2015 Annualized Cost		**$ 1,402,000**	
TOTAL COST					$ 34,340,000	

TABLE B-2

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 2
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS CHEMICAL/ PHYSICAL TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
				2008 Alternative 4 Subtotal	**$ 4,139,000**	$4,139,000
				2009 Alternative 4 Subtotal	**$ 15,285,000**	$19,424,000
				2015 Alternative 4 Subtotal	**$ 19,055,000**	$38,479,000
				Long Term Control Plan - Addendum - Alternative - 4 TOTAL	**$ 38,479,000**	
ANNUALIZED COST						**Running Total**
				2008 Alternative 4 Subtotal	**$ 305,000**	$305,000
				2009 Alternative 4 Subtotal	**$ 1,125,000**	$1,430,000
				2015 Alternative 4 Subtotal	**$ 1,402,000**	$2,832,000
				LTCP - Addendum - Alternative 4 - TOTAL ANNUALIZED COST	**$ 2,832,000**	

Notes:

1. Costs are based on 2005 Dollars.
2. Costs include a 1.30 contingency factor and a 1.23 engineering cost factor.
3. All dates are construction completion dates.
4. The first phase capacity of the Upper Hocking Pump Station is 9.0 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
5. The Upper Hocking Pump Station Force Main capacity is 12.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.
6. The first phase capacity of the Upper Hocking Water Pollution Control Facility (WPCF) is 4.0 mgd. Only 1.35 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
7. The capacity of the Upper Hocking Water Pollution Control Facility (WPCF) effluent line is 16.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.

Design Life for Analysis (Years)	20
Interest Rate	4.000%
Annualization Factor	0.0736

TABLE B-3

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 3
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS FULL SECONDARY TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2008 NEEDS (Lake and Allen Sewer Seperation - Full Separation of Sewer Sheds 8D and 8E and Partial Separation of Sewer Sheds 8C and 11)						
80	8	1,582	feet	$147	$ 232,000	Near Rising Park on High Street and flowing south ID #81 at Lake Street
81	10	1,698	feet	$152	$ 258,000	East along Lake Street and then south along Maple Street to ID #82.
82	12	1,415	feet	$159	$ 225,000	South along Maple Street to ID # 83
83	15	1,570	feet	$176	$ 277,000	South along Maple Street to ID #84.
84	18	2,151	feet	$195	$ 419,000	South along Maple Street to the 42" interceptor at Water Street.
85	8	846	feet	$147	$ 124,000	East along Allen Street to ID #82
86	8	1,300	feet	$147	$ 191,000	East along Sixth Avenue to ID #82
87	8	903	feet	$147	$ 133,000	East along the right-of-way between King Street and Mulberry Street to ID #83
88	8	911	feet	$147	$ 134,000	East along the right-of-way between Mulberry Street and Wheeling Street to ID #83
89	8	484	feet	$147	$ 71,000	East along the right-of-way between Wheeling Street and Main Street to ID #83
Storm Sewer Work	12	2,775	feet	$83	$ 229,000	12" Gravity Storm Sewer Pipe
Storm Sewer Work	15	500	feet	$91	$ 45,000	15" Gravity Storm Sewer Pipe
Storm Sewer Work	18	225	feet	$99	$ 22,000	18" Gravity Storm Sewer Pipe
Storm Sewer Work	36	1,200	feet	$157	$ 188,000	Replace 30" Lake Street Combined Sewer w/36" ST
Storm Sewer Work	42	1,000	feet	$198	$ 198,000	Replace 42" Storm Sewer Pipe in kind
Storm Sewer Work	48	120	feet	$743	$ 89,000	48" Bore and Jack Storm Sewer Pipe
Storm Sewer Work		5,394	C.Y.	$30	$ 160,000	Granular Backfill
Storm Sewer Work		2,898	S.Y.	$58	$ 167,000	Pavement Replacement
Storm Sewer Work		20	each	$2,063	$ 41,000	Storm Sewer Manholes
Storm Sewer Work		3	each	$1,980	$ 6,000	Catch Basins
Storm Sewer Work		1	each	$24,750	$ 25,000	Repair 48" Discharge/Headwall on Maple Street
Storm Sewer Work		317	each	$1,650	$ 523,000	Lateral Reconnection & two Cleanouts
Storm Sewer Work		7,275	S.Y.	$53	$ 382,000	Pavement Replacement
				2008 Needs Subtotal	**$ 4,139,000**	
				2008 Annualized Cost	**$ 305,000**	
2009 NEEDS (Upper Hocking WPCF, Pump Station, and Force Main)						

TABLE B-3

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 3
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS FULL SECONDARY TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
59	30	2,996	feet	188	$ 197,000	Sewer along Collins Road to Proposed Upper Hocking WPCF
Upper Hocking Pump Station						
4.39 mgd pump station		1	lump sum	$2,296,000	$ 806,000	Pump Station at Ety Road and West Fair Avenue.
Force main	30	13,440	feet	$196	$ 923,000	Force main from pump station to intersection of Becks Knob Road and Crumley Rd.
Upper Hocking 1.35 mgd WPCF		1	lump sum	$13,284,000	$ 13,284,000	New WPCF on Campground Road in Rock Mill Phase 1 Industrial Park, development area I-7.
90	30	1,498	feet	$188	$ 75,000	Treated effluent discharge from new Upper Hocking WPCF to the Hocking River.
			2009 Needs Subtotal		**$ 15,285,000**	
			2009 Annualized Cost		**$ 1,125,000**	
2015 NEEDS (Express Sewers and Additional Full Secondary Treatment)						
70	30	3,047	feet	$188	$ 571,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
71	30	1,989	feet	$188	$ 373,000	West of the existing WPCF on Canal Street (Broad Street Express Sewer).
75	48	1,191	feet	$275	$ 328,000	Along Baldwin Run northeast of existing WPCF (Baldwin Run Express Sewer).
Misc. Express Sewer Structures		1	lump sum	$636,000	$ 636,000	Miscelaneous Structers Required for Express Sewers
20 mgd Full Secondary						
Treatment at Existing WPCF		1	lump sum	$61,500,000	$ 61,500,000	
			2015 Needs Subtotal		**$ 63,408,000**	
			2015 Annualized Cost		**$ 4,666,000**	
TOTAL COST					**$ 82,693,000**	

TABLE B-3

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 3
(MASTER PLAN ALTERNATIVE 2.A.(1) PLUS FULL SECONDARY TREATMENT)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
				2008 Alternative 4 Subtotal	**$ 4,139,000**	$4,139,000
				2009 Alternative 4 Subtotal	**$ 15,285,000**	$19,424,000
				2015 Alternative 4 Subtotal	**$ 63,408,000**	$82,832,000
				Long Term Control Plan - Addendum - Alternative - 4 TOTAL	**$ 82,832,000**	
ANNUALIZED COST						Running Total
				2008 Alternative 4 Subtotal	**$ 305,000**	$305,000
				2009 Alternative 4 Subtotal	**$ 1,125,000**	$1,430,000
				2015 Alternative 4 Subtotal	**$ 4,666,000**	$6,096,000
				LTCP - Addendum - Alternative 4 - TOTAL ANNUALIZED COST	**$ 6,096,000**	

Notes:

1. Costs are based on 2005 Dollars.
2. Costs include a 1.30 contingency factor and a 1.23 engineering cost factor.
3. All dates are construction completion dates.
4. The first phase capacity of the Upper Hocking Pump Station is 9.0 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
5. The Upper Hocking Pump Station Force Main capacity is 12.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.
6. The first phase capacity of the Upper Hocking Water Pollution Control Facility (WPCF) is 4.0 mgd. Only 1.35 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
7. The capacity of the Upper Hocking Water Pollution Control Facility (WPCF) effluent line is 16.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.

Design Life for Analysis (Years)	20
Interest Rate	4.000%
Annualization Factor	0.0736

TABLE B-4

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 4
(MASTER PLAN ALTERNATIVE 2.A.(1) MODIFIED PLUS COMPLETE SEWER SEPARATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2008 NEEDS (Lake and Allen Sewer Seperation - Full Separation of Sewer Sheds BD and SE and Partial Separation of Sewer Sheds BC and TI)						
80	8	1,582	feet	$147	$ 232,000	Near Rising Park on High Street and flowing south ID #81 at Lake Street
81	10	1,698	feet	$152	$ 258,000	East along Lake Street and then south along Maple Street to ID #82.
82	12	1,415	feet	$159	$ 225,000	South along Maple Street to ID # 83
83	15	1,570	feet	$176	$ 277,000	South along Maple Street to ID #84.
84	18	2,151	feet	$195	$ 419,000	South along Maple Street to the 42" interceptor at Water Street.
85	8	846	feet	$147	$ 124,000	East along Allen Street to ID #82
86	8	1,300	feet	$147	$ 191,000	East along Sixth Avenue to ID #82
87	8	903	feet	$147	$ 133,000	East along the right-of-way between King Street and Mulberry Street to ID #83
88	8	911	feet	$147	$ 134,000	East along the right-of-way between Mulberry Street and Wheeling Street to ID #83
89	8	484	feet	$147	$ 71,000	East along the right-of-way between Wheeling Street and Main Street to ID #83
Storm Sewer Work	12	2,775	feet	$83	$ 229,000	12" Gravity Storm Sewer Pipe
Storm Sewer Work	15	500	feet	$91	$ 45,000	15" Gravity Storm Sewer Pipe
Storm Sewer Work	18	225	feet	$99	$ 22,000	18" Gravity Storm Sewer Pipe
Storm Sewer Work	36	1,200	feet	$157	$ 188,000	Replace 30" Lake Street Combined Sewer w/36" ST
Storm Sewer Work	42	1,000	feet	$198	$ 198,000	Replace 42" Storm Sewer Pipe in kind
Storm Sewer Work	48	120	feet	$743	$ 89,000	48" Bore and Jack Storm Sewer Pipe
Storm Sewer Work		5,394	C.Y.	$30	$ 160,000	Granular Backfill
Storm Sewer Work		2,898	S.Y.	$58	$ 167,000	Pavement Replacement
Storm Sewer Work		20	each	$2,063	$ 41,000	Storm Sewer Manholes
Storm Sewer Work		3	each	$1,980	$ 6,000	Catch Basins
Storm Sewer Work		1	each	$24,750	$ 25,000	Repair 48" Discharge/Headwall on Maple Street
Storm Sewer Work		317	each	$1,650	$ 523,000	Lateral Reconnection & two Cleanouts
Storm Sewer Work		7,275	S.Y.	$53	$ 382,000	Pavement Replacement
			2008 Needs Subtotal		**$ 4,139,000**	
			2008 Annualized Cost		**$ 305,000**	

TABLE B-4

CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 4
(MASTER PLAN ALTERNATIVE 2.A.(1) MODIFIED PLUS COMPLETE SEWER SEPARATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2009 NEEDS (Upper Hocking WPCF, Pump Station, and Force Main)						
59	30	2,996	feet	188	$ 197,000	Sewer along Collins Road to Proposed Upper Hocking WPCF
Upper Hocking Pump Station						
4.39 mgd pump station		1	lump sum	$2,296,000	$ 806,000	Pump Station at Ety Road and West Fair Avenue.
Force main	30	13,440	feet	$196	$ 923,000	Force main from pump station to intersection of Becks Knob Road and Crumley Rd.
Upper Hocking 1.35 mgd WPCF		1	lump sum	$13,284,000	$ 13,284,000	New WPCF on Campground Road in Rock Mill Phase 1 Industrial Park, development area I-7.
90	30	1,498	feet	$188	$ 75,000	Treated effluent discharge from new Upper Hocking WPCF to the Hocking River.
			2009 Needs Subtotal		**$ 15,285,000**	
			2009 Annualized Cost		**$ 1,125,000**	
2011 (Sewer Sheds 3, 4, 5, 8A, 8B, & 8C Separation)						
Sewer Shed 3	varies	83	acres	$41,310	$ 3,429,000	
Sewer Shed 4	varies	46	acres	$41,310	$ 1,900,000	
Sewer Shed 5A	varies	95	acres	$41,310	$ 3,924,000	
Sewer Shed 8A	varies	55	acres	$41,310	$ 2,272,000	
Sewer Shed 8B	varies	48	acres	$41,310	$ 1,983,000	
Sewer Shed 8C	varies	54	acres	$41,310	$ 2,231,000	
Sewer Shed 8D	varies	94	acres	$41,310	$ 3,883,000	
			2011 Needs Subtotal		**$ 19,622,000**	
			2011 Annualized Cost		**$ 1,444,000**	
2013 (Sewer Sheds 9, 11, 14, 15, 16, 17, 19, & 20 Separation)						
Sewer Shed 9	varies	81	acres	$41,310	$ 3,346,000	
Sewer Shed 11	varies	70	acres	$41,310	$ 2,892,000	
Sewer Shed 14	varies	66	acres	$41,310	$ 2,726,000	
Sewer Shed 15	varies	49	acres	$41,310	$ 2,024,000	
Sewer Shed 16	varies	36	acres	$41,310	$ 1,487,000	
Sewer Shed 17	varies	51	acres	$41,310	$ 2,107,000	
Sewer Shed 19	varies	42	acres	$41,310	$ 1,735,000	
Sewer Shed 20	varies	32	acres	$41,310	$ 1,322,000	
			2013 Needs Subtotal		**$ 17,639,000**	
			2013 Annualized Cost		**$ 1,298,000**	

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(MASTER PLAN ALTERNATIVE 2.A.(1) MODIFIED PLUS COMPLETE SEWER SEPARATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
2015 (Sewer Shed 21A, 21B, 22, 23, 24, & 26 Separation)						
Sewer Shed 21A	varies	86	acres	$41,310	$ 3,553,000	
Sewer Shed 21B	varies	52	acres	$41,310	$ 2,148,000	
Sewer Shed 22	varies	34	acres	$41,310	$ 1,405,000	
Sewer Shed 23	varies	34	acres	$41,310	$ 1,405,000	
Sewer Shed 24	varies	59	acres	$41,310	$ 2,437,000	
Sewer Shed 26	varies	269	acres	$41,310	$ 11,112,000	
			2015 Needs Subtotal		**$ 22,060,000**	
			2015 Annualized Cost		**$ 1,623,000**	
TOTAL COST					$ 78,745,000	
			2008 Alternative 4 Subtotal		**$ 4,139,000**	$4,139,000
			2009 Alternative 4 Subtotal		**$ 15,285,000**	$19,424,000
			2011 Alternative 4 Subtotal		**$ 19,622,000**	$39,046,000
			2013 Alternative 4 Subtotal		**$ 17,639,000**	$56,685,000
			2015 Alternative 4 Subtotal		**$ 22,060,000**	$78,745,000
Long Term Control Plan - Addendum - Alternative - 4 TOTAL					**$ 78,745,000**	

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CITY OF LANCASTER
LONG TERM CONTROL PLAN - ADDENDUM
CSO PROJECT COMPLETION DATES AND COST ANALYSIS FOR ALTERNATIVE 4
(MASTER PLAN ALTERNATIVE 2.A.(1) MODIFIED PLUS COMPLETE SEWER SEPARATION)

WW Infrastructure Description		Quantity	Unit	Unit Cost	Total Cost	Location Remarks
Pipe Section Number	Pipe Diameter					
ANNUALIZED COST						Running Total
				2008 Alternative 4 Subtotal	$ 305,000	$305,000
				2009 Alternative 4 Subtotal	$ 1,125,000	$1,430,000
				2011 Alternative 4 Subtotal	$ 1,444,000	$2,874,000
				2013 Alternative 4 Subtotal	$ 1,298,000	$4,172,000
				2015 Alternative 4 Subtotal	$ 1,623,000	$5,795,000
				LTCP - Addendum - Alternative 4 - TOTAL ANNUALIZED COST	$ 5,795,000	

Notes:

1. Costs are based on 2005 Dollars.
2. Costs include a 1.30 contingency factor and a 1.23 engineering cost factor.
3. All dates are construction completion dates.
4. The first phase capacity of the Upper Hocking Pump Station is 9.0 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
5. The Upper Hocking Pump Station Force Main capacity is 12.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.
6. The first phase capacity of the Upper Hocking Water Pollution Control Facility (WPCF) is 4.0 mgd. Only 1.35 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the first phase cost is considered cost for growth.
7. The capacity of the Upper Hocking Water Pollution Control Facility (WPCF) effluent line is 16.5 mgd. Only 4.39 mgd of this capacity is for existing flows and the associated cost for this capacity is considered cost for CSO abatement. The remaining part of the cost is considered cost for growth.

Design Life for Analysis (Years)	20
Interest Rate	4.000%
Annualization Factor	0.0736