

















Appendix B

Cost Estimates

The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 1 Sandy Beach

Segment 2 Wildwood Cemetery

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total
Site Preparation								
Clearing and Grubbing	A	0.95	\$5,000.00	\$4,750.00	A	0.32	\$5,000.00	\$1,600.00
Tree Trimming	LF	0	\$7.50	\$0.00	LF	900	\$7.50	\$6,750.00
Tree Removed - Dia. Under 24 Inches	EA	30	\$750.00	\$22,500.00	EA	0	\$750.00	\$0.00
Tree Removed - Dia. 24 Inches and Over	EA	20	\$1,500.00	\$30,000.00	EA	0	\$1,500.00	\$0.00
Chain Link Fence Removed and Stacked	LF	180	\$4.50	\$810.00	LF	130	\$4.50	\$585.00
Chain Link Fence Gate Removed & Reset	EA	0	\$988.00	\$0.00	EA	1	\$988.00	\$988.00
Sedimentation Fence	LF	0	\$7.50	\$0.00	LF	1,800	\$7.50	\$13,500.00
Mobilization	LS	1	\$5,000.00	\$5,000.00	LS	1	\$5,000.00	\$5,000.00
Bales of Hay for Erosion Control	EA	620	\$13.00	\$8,060.00	EA	500	\$13.00	\$6,500.00
			Subtotal	\$71,120.00			Subtotal	\$34,923.00
Embankment & Path Construction								
Earth Excavation	CY	857	\$26.00	\$22,282.00	CY	0	\$26.00	\$0.00
Earth Excavation Rehandled and Reused	CY	325	\$15.00	\$4,875.00	CY	0	\$15.00	\$0.00
Ordinary Borrow	CY	0	\$25.00	\$0.00	CY	2,535	\$25.00	\$63,375.00
Fine Grading , Compacting and Finishing	SY	4,500	\$5.00	\$22,500.00	SY	3,000	\$5.00	\$15,000.00
Dense Graded Crushed Stone (Towpath)	CY	170	\$44.00	\$7,480.00	CY	115	\$44.00	\$5,060.00
			Subtotal	\$57,137.00			Subtotal	\$83,435.00
Drainage and Utilities								
			Subtotal	\$0.00			Subtotal	\$0.00
Interpretive Elements								
Aqueduct Abutment	EA	1	\$20,000.00	\$20,000.00	EA	0	\$20,000.00	\$0.00
Park Features	LS	1	\$100,000.00	\$100,000.00	LS	0	\$100,000.00	\$0.00
Illustrative Signage	EA	3	\$1,000.00	\$3,000.00	EA	2	\$1,000.00	\$2,000.00
			Subtotal	\$123,000.00			Subtotal	\$2,000.00
			Construction Subtotal	\$251,257.00			Construction Subtotal	\$120,358.00
			25% Construction Contingency	\$62,814.25			25% Construction Contingency	\$30,089.50
			Subtotal	\$314,071.25			Subtotal	\$150,447.50
			Survey and Design	\$37,688.55			Survey and Design	\$18,053.70
Design and Construction Total					Design and Construction Total			
				\$351,760				\$168,501

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The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 3					Segment 4				
Winn Street to Lowell Street					Lowell Street to Middlesex Park				
Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total	
Site Preparation									
Clearing and Grubbing	A	1.77	\$5,000.00	\$8,850.00	A	1.77	\$5,000.00	\$8,850.00	
Removal of Canal Debris (Wet Segment)	LF	386	\$50.00	\$19,300.00	LF	572	\$50.00	\$28,600.00	
Tree Removed - Dia. Under 24 Inches	EA	150	\$750.00	\$112,500.00	EA	100	\$750.00	\$75,000.00	
Tree Removed - Dia. 24 Inches and Over	EA	75	\$1,500.00	\$112,500.00	EA	40	\$1,500.00	\$60,000.00	
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00	
Bales of Hay for Erosion Control	EA	1,100	\$13.00	\$14,300.00	EA	1,150	\$13.00	\$14,950.00	
			Subtotal	\$277,450.00			Subtotal	\$197,400.00	
Embankment & Path Construction									
Earth Excavation	CY	2386	\$26.00	\$62,036.00	CY	4,475	\$26.00	\$116,350.00	
Earth Excavation Rehandled and Reused	CY	975	\$15.00	\$14,625.00	CY	0	\$15.00	\$0.00	
Ordinary Borrow	CY	0	\$25.00	\$0.00	CY	0	\$25.00	\$0.00	
Fine Grading , Compacting and Finishing	SY	5,450	\$5.00	\$27,250.00	SY	2,835	\$5.00	\$14,175.00	
Gravel Borrow for Sub-base	CY	225	\$35.00	\$7,875.00	CY	0	\$35.00	\$0.00	
Dense Graded Crushed Stone (Towpath)	CY	350	\$44.00	\$15,400.00	CY	315	\$44.00	\$13,860.00	
Hot Mix Asphalt (Parking Area)	TON	170	\$130.00	\$22,100.00	TON	0	\$130.00	\$0.00	
			Subtotal	\$149,286.00			Subtotal	\$144,385.00	
Drainage and Utilities									
Cleaning Drainage Structures	EA	2	\$250.00	\$500.00	EA	3	\$250.00	\$750.00	
			Subtotal	\$500.00			Subtotal	\$750.00	
Interpretive Elements									
100' Wet Canal Restoration	EA	1	\$20,000.00	\$20,000.00	EA	2	\$20,000.00	\$40,000.00	
Park Features	LS	0	\$70,000.00	\$0.00	LS	1	\$70,000.00	\$70,000.00	
Bridge Rehabilitation	LS	0	\$5,000.00	\$0.00	LS	1	\$5,000.00	\$5,000.00	
Illustrative Signage	EA	2	\$1,000.00	\$2,000.00	EA	2	\$1,000.00	\$2,000.00	
			Subtotal	\$22,000.00			Subtotal	\$117,000.00	
			Construction Subtotal	\$449,236.00			Construction Subtotal	\$459,535.00	
			25% Construction Contingency	\$112,309.00			25% Construction Contingency	\$114,883.75	
			Subtotal	\$561,545.00			Subtotal	\$574,418.75	
			Survey and Design	\$67,385.40			Survey and Design	\$68,930.25	
Design and Construction Total				\$628,930	Design and Construction Total				\$643,349
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The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 5 Alfred St. to School St.

Segment 6 Main St. to Burlington Ave.

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total
Site Preparation								
Clearing and Grubbing	A	1.29	\$5,000.00	\$6,450.00	A	7.20	\$5,000.00	\$36,000.00
Removal of Canal Debris (Wet Segment)	LF	844	\$50.00	\$42,200.00	LF	739	\$50.00	\$36,950.00
Tree Removed - Dia. Under 24 Inches	EA	94	\$750.00	\$70,500.00	EA	672	\$750.00	\$504,000.00
Tree Removed - Dia. 24 Inches and Over	EA	4	\$1,500.00	\$6,000.00	EA	50	\$1,500.00	\$75,000.00
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00
Bales of Hay for Erosion Control	EA	1,710	\$13.00	\$22,230.00	EA	3,700	\$13.00	\$48,100.00
			Subtotal	\$157,380.00			Subtotal	\$710,050.00
Embankment & Path Construction								
Earth Excavation	CY	0	\$26.00	\$0.00	CY	3,027	\$26.00	\$78,702.00
Earth Excavation Rehandled and Reused	CY	0	\$15.00	\$0.00	CY	3,002	\$15.00	\$45,030.00
Ordinary Borrow	CY	2,125	\$26.25	\$55,781.25	CY	0	\$26.25	\$0.00
Fine Grading , Compacting and Finishing	SY	4,270	\$5.00	\$21,350.00	SY	19,650	\$5.00	\$98,250.00
Gravel Borrow for Sub-base	CY	1,495	\$35.00	\$52,325.00	CY	0	\$35.00	\$0.00
Dense Graded Crushed Stone (Towpath)	CY	475	\$44.00	\$20,900.00	CY	1,005	\$44.00	\$44,220.00
Hot Mix Asphalt (Bike Path)	TON	1,120	\$130.00	\$145,600.00	TON	0	\$130.00	\$0.00
Wooden Boardwalk (Bike Path)	LF	325	\$100.00	\$32,500.00	LF	425	\$100.00	\$42,500.00
			Subtotal	\$328,456.25			Subtotal	\$308,702.00
Drainage and Utilities								
Cleaning Drainage Structures	EA	2	\$250.00	\$500.00	EA	0	\$250.00	\$0.00
			Subtotal	\$500.00			Subtotal	\$0.00
Interpretive Elements								
100' Wet Canal Restoration	EA	2	\$20,000.00	\$40,000.00	EA	1	\$20,000.00	\$20,000.00
Pedestrian Bridges	EA	2	\$130,000.00	\$260,000.00	EA	1	\$130,000.00	\$130,000.00
English Garden Landscaping	LS	1	\$20,000.00	\$20,000.00	LS	0	\$20,000.00	\$0.00
Illustrative Signage	EA	4	\$1,000.00	\$4,000.00	EA	7	\$1,000.00	\$7,000.00
			Subtotal	\$324,000.00			Subtotal	\$157,000.00
			Construction Subtotal	\$810,336.25			Construction Subtotal	\$1,175,752.00
			25% Construction Contingency	\$202,584.06			25% Construction Contingency	\$293,938.00
			Subtotal	\$1,012,920.31			Subtotal	\$1,469,690.00
			Survey and Design	\$121,550.44			Survey and Design	\$176,362.80
				Design and Construction Total				
				\$1,134,471				
				Design and Construction Total				
				\$1,646,053				

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The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 7 Shawsheen Ave. to Richmond St.

Segment 8 Richmond Street to Lake Street

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total	
Site Preparation									
Clearing and Grubbing	A	0.82	\$5,000.00	\$4,100.00	A	2.70	\$5,000.00	\$13,500.00	
Removal of Canal Debris (Wet Segment)	LF	234	\$50.00	\$11,700.00	LF	954	\$50.00	\$47,700.00	
Tree Removed - Dia. Under 24 Inches	EA	50	\$750.00	\$37,500.00	EA	30	\$750.00	\$22,500.00	
Tree Removed - Dia. 24 Inches and Over	EA	30	\$1,500.00	\$45,000.00	EA	50	\$1,500.00	\$75,000.00	
Fence Removed and Reset	LF	300	\$22.00	\$6,600.00	LF	0	\$22.00	\$0.00	
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00	
Bales of Hay for Erosion Control	EA	475	\$13.00	\$6,175.00	EA	1,930	\$13.00	\$25,090.00	
			Subtotal	\$121,075.00			Subtotal	\$193,790.00	
Embankment & Path Construction									
Earth Excavation	CY	1,355	\$26.00	\$35,230.00	CY	0	\$26.00	\$0.00	
Earth Excavation Rehandled and Reused	CY	1,100	\$15.00	\$16,500.00	CY	0	\$15.00	\$0.00	
Ordinary Borrow	CY	0	\$25.00	\$0.00	CY	3,985	\$25.00	\$99,625.00	
Fine Grading , Compacting and Finishing	SY	8285	\$5.00	\$41,425.00	SY	8,000	\$5.00	\$40,000.00	
Dense Graded Crushed Stone (Towpath)	CY	400	\$44.00	\$17,600.00	CY	890	\$44.00	\$39,160.00	
72 Inch Chain Link Fence (STW)	LF	450	\$31.00	\$13,950.00	LF	0	\$31.00	\$0.00	
			Subtotal	\$124,705.00			Subtotal	\$178,785.00	
Drainage and Utilities									
Cleaning Drainage Structures	EA	1	\$250.00	\$250.00	EA	1	\$250.00	\$250.00	
			Subtotal	\$250.00			Subtotal	\$250.00	
Interpretive Elements									
100' Wet Canal Restoration	EA	1	\$20,000.00	\$20,000.00	EA	1	\$20,000.00	\$20,000.00	
Pedestrian Bridge	EA	0	\$130,000.00	\$0.00	EA	1	\$130,000.00	\$130,000.00	
Illustrative Signage	EA	1	\$1,000.00	\$1,000.00	EA	2	\$4,000.00	\$8,000.00	
			Subtotal	\$21,000.00			Subtotal	\$158,000.00	
			Construction Subtotal	\$267,030.00			Construction Subtotal	\$530,825.00	
			25% Construction Contingency	\$66,757.50			25% Construction Contingency	\$132,706.25	
			Subtotal	\$333,787.50			Subtotal	\$663,531.25	
			Survey and Design	\$40,054.50			Survey and Design	\$79,623.75	
Design and Construction Total				\$373,842	Design and Construction Total				\$743,155
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The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 9 Lake Street to Nichols Street

Segment 10 Grace Drive to Melody Lane

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total
Site Preparation								
Clearing and Grubbing	A	1.47	\$5,000.00	\$7,350.00	A	1.12	\$5,000.00	\$5,600.00
Removal of Canal Debris (Wet Segment)	LF	420	\$50.00	\$21,000.00	LF	356	\$50.00	\$17,800.00
Tree Removed - Dia. Under 24 Inches	EA	50	\$750.00	\$37,500.00	EA	60	\$750.00	\$45,000.00
Tree Removed - Dia. 24 Inches and Over	EA	60	\$1,500.00	\$90,000.00	EA	40	\$1,500.00	\$60,000.00
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$5,000.00	\$5,000.00
Bales of Hay for Erosion Control	EA	850	\$13.00	\$11,050.00	EA	720	\$13.00	\$9,360.00
			Subtotal	\$176,900.00			Subtotal	\$142,760.00
Embankment & Path Construction								
Ordinary Borrow	CY	996	\$25.00	\$24,900.00	CY	896	\$25.00	\$22,400.00
Fine Grading , Compacting and Finishing	SY	2,350	\$5.00	\$11,750.00	SY	1,800	\$5.00	\$9,000.00
Dense Graded Crushed Stone (Towpath)	CY	240	\$44.00	\$10,560.00	CY	200	\$44.00	\$8,800.00
			Subtotal	\$47,210.00			Subtotal	\$40,200.00
Drainage and Utilities								
Cleaning Drainage Structures	EA	1	\$250.00	\$250.00	EA	1	\$250.00	\$250.00
			Subtotal	\$250.00			Subtotal	\$250.00
Interpretive Elements								
100' Wet Canal Restoration	EA	2	\$20,000.00	\$40,000.00	EA	2	\$20,000.00	\$40,000.00
Illustrative Signage	EA	2	\$1,000.00	\$2,000.00	EA	2	\$1,000.00	\$2,000.00
			Subtotal	\$42,000.00			Subtotal	\$42,000.00
			Construction Subtotal	\$266,360.00			Construction Subtotal	\$225,210.00
			25% Construction Contingency	\$66,590.00			25% Construction Contingency	\$56,302.50
			Subtotal	\$332,950.00			Subtotal	\$281,512.50
			Survey and Design	\$39,954.00			Survey and Design	\$33,781.50
Design and Construction Total					Design and Construction Total			
				\$372,904				\$315,294

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The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 11 Shawsheen River Aqueduct

Segment 12 George Brown Street to Digon Road

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total	
Site Preparation									
Clearing and Grubbing	A	0.13	\$5,000.00	\$650.00	A	2.04	\$5,000.00	\$10,200.00	
Removal of Canal Debris (Wet Segment)	LF	0	\$50.00	\$0.00	LF	590	\$50.00	\$29,500.00	
Tree Removed - Dia. Under 24 Inches	EA	30	\$750.00	\$22,500.00	EA	100	\$750.00	\$75,000.00	
Tree Removed - Dia. 24 Inches and Over	EA	15	\$1,500.00	\$22,500.00	EA	140	\$1,500.00	\$210,000.00	
Mobilization	LS	1	\$5,000.00	\$5,000.00	LS	1	\$10,000.00	\$10,000.00	
Bales of Hay for Erosion Control	EA	260	\$13.00	\$3,380.00	EA	1,200	\$13.00	\$15,600.00	
			Subtotal	\$54,030.00			Subtotal	\$350,300.00	
Embankment & Path Construction									
Earth Excavation	CY	430	\$26.00	\$11,180.00	CY	0	\$26.00	\$0.00	
Earth Excavation Rehandled and Reused	CY	165	\$15.00	\$2,475.00	CY	0	\$15.00	\$0.00	
Ordinary Borrow	CY	0	\$25.00	\$0.00	CY	1,495	\$25.00	\$37,375.00	
Fine Grading , Compacting and Finishing	SY	2,250	\$5.00	\$11,250.00	SY	3,000	\$5.00	\$15,000.00	
Dense Graded Crushed Stone (Towpath)	CY	84	\$44.00	\$3,696.00	CY	335	\$44.00	\$14,740.00	
			Subtotal	\$28,601.00			Subtotal	\$67,115.00	
Drainage and Utilities									
Cleaning Drainage Structures	EA	0	\$250.00	\$0.00	EA	1	\$250.00	\$250.00	
			Subtotal	\$0.00			Subtotal	\$250.00	
Interpretive Elements									
100' Wet Canal Restoration	EA	0	\$20,000.00	\$0.00	EA	2	\$20,000.00	\$40,000.00	
Public Recreation Space	LS	1	\$13,000.00	\$13,000.00	LS	0	\$6,500.00	\$0.00	
Lighting	LS	1	\$2,500.00	\$2,500.00	LS	0	\$2,500.00	\$0.00	
Illustrative Signage	EA	2	\$1,000.00	\$2,000.00	EA	2	\$1,000.00	\$2,000.00	
			Subtotal	\$17,500.00			Subtotal	\$42,000.00	
			Construction Subtotal	\$100,131.00			Construction Subtotal	\$459,665.00	
			25% Construction Contingency	\$25,032.75			25% Construction Contingency	\$114,916.25	
			Subtotal	\$125,163.75			Subtotal	\$574,581.25	
			Survey and Design	\$15,019.65			Survey and Design	\$68,949.75	
Design and Construction Total				\$140,183	Design and Construction Total				\$643,531
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The Middlesex Canal Restoration

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August 15, 2007

Segment 13 Kitchen Avenue to Staples Street

Segment 14 Gray Street to Pond Street

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total	
Site Preparation									
Clearing and Grubbing	A	0.83	\$5,000.00	\$4,150.00	A	2.60	\$5,000.00	\$13,000.00	
Removal of Canal Debris (Wet Segment)	LF	0	\$50.00	\$0.00	LF	752	\$50.00	\$37,600.00	
Tree Removed - Dia. Under 24 Inches	EA	70	\$750.00	\$52,500.00	EA	200	\$750.00	\$150,000.00	
Tree Removed - Dia. 24 Inches and Over	EA	70	\$1,500.00	\$105,000.00	EA	200	\$1,500.00	\$300,000.00	
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00	
Bales of Hay for Erosion Control	EA	480	\$13.00	\$6,240.00	EA	1,900	\$13.00	\$24,700.00	
			Subtotal	\$177,890.00			Subtotal	\$535,300.00	
Embankment & Path Construction									
Earth Excavation	CY	1,905	\$26.00	\$49,530.00	CY	955	\$26.00	\$24,830.00	
Earth Excavation Rehandled and Reused	CY	385	\$15.00	\$5,775.00	CY	955	\$15.00	\$14,325.00	
Ordinary Borrow	CY	0	\$25.00	\$0.00	CY	3,300	\$25.00	\$82,500.00	
Fine Grading , Compacting and Finishing	SY	5,300	\$5.00	\$26,500.00	SY	12,817	\$5.00	\$64,085.00	
Dense Graded Crushed Stone (Towpath)	CY	200	\$44.00	\$8,800.00	CY	1,054	\$44.00	\$46,376.00	
			Subtotal	\$90,605.00			Subtotal	\$232,116.00	
Drainage and Utilities									
Cleaning Drainage Structures	EA	0	\$250.00	\$0.00	EA	2	\$250.00	\$500.00	
			Subtotal	\$0.00			Subtotal	\$500.00	
Interpretive Elements									
100' Wet Canal Restoration	EA	0	\$20,000.00	\$0.00	EA	1	\$20,000.00	\$20,000.00	
Illustrative Signage	EA	2	\$1,000.00	\$2,000.00	EA	2	\$1,000.00	\$2,000.00	
			Subtotal	\$2,000.00			Subtotal	\$22,000.00	
			Construction Subtotal	\$270,495.00			Construction Subtotal	\$789,916.00	
		25% Construction Contingency		\$67,623.75		25% Construction Contingency		\$197,479.00	
			Subtotal	\$338,118.75			Subtotal	\$987,395.00	
			Survey and Design	\$40,574.25			Survey and Design	\$118,487.40	
Design and Construction Total				\$378,693	Design and Construction Total				\$1,105,882
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August 15, 2007

Segment 15 Pond Street to High Street

Segment 16 High Street to Rogers Street

Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total	
Site Preparation									
Clearing and Grubbing	A	1.30	\$5,000.00	\$6,500.00	A	3.63	\$5,000.00	\$18,150.00	
Removal of Canal Debris (Wet Segment)	LF	471	\$50.00	\$23,550.00	LF	838	\$50.00	\$41,900.00	
Tree Removed - Dia. Under 24 Inches	EA	100	\$750.00	\$75,000.00	EA	135	\$750.00	\$101,250.00	
Tree Removed - Dia. 24 Inches and Over	EA	100	\$1,500.00	\$150,000.00	EA	150	\$1,500.00	\$225,000.00	
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00	
Bales of Hay for Erosion Control	EA	950	\$13.00	\$12,350.00	EA	1,690	\$13.00	\$21,970.00	
			Subtotal	\$277,400.00			Subtotal	\$418,270.00	
Embankment & Path Construction									
Ordinary Borrow	CY	2,325	\$25.00	\$58,125.00	CY	2,200	\$25.00	\$55,000.00	
Fine Grading , Compacting and Finishing	SY	4,670	\$5.00	\$23,350.00	SY	4,420	\$5.00	\$22,100.00	
Dense Graded Crushed Stone (Towpath)	CY	520	\$44.00	\$22,880.00	CY	495	\$44.00	\$21,780.00	
			Subtotal	\$104,355.00			Subtotal	\$98,880.00	
Drainage and Utilities									
Cleaning Drainage Structures	EA	3	\$250.00	\$750.00	EA	4	\$250.00	\$1,000.00	
			Subtotal	\$750.00			Subtotal	\$1,000.00	
Interpretive Elements									
100' Wet Canal Restoration	EA	2	\$20,000.00	\$40,000.00	EA	3	\$20,000.00	\$60,000.00	
Illustrative Signage	EA	2	\$1,000.00	\$2,000.00	EA	2	\$1,000.00	\$2,000.00	
Railroad Crossing					LS	1	\$200,000.00	\$200,000.00	
			Subtotal	\$42,000.00			Subtotal	\$262,000.00	
			Construction Subtotal	\$424,505.00			Construction Subtotal	\$780,150.00	
			25% Construction Contingency	\$106,126.25			25% Construction Contingency	\$195,037.50	
			Subtotal	\$530,631.25			Subtotal	\$975,187.50	
			Survey and Design	\$63,675.75			Survey and Design	\$117,022.50	
* This estimate for budgeting purposes only									
Design and Construction Total				\$594,307	Design and Construction Total				\$1,092,210

A = Acre, EA = Each, CY = Cubic Yard, LF = Linear Feet, LS = Lump Sum, SY = Square Yard, TON = Ton

The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 17 Mill Pond Park to Brick Kiln Rd.					Segment 18 Brick Kiln Road to Riverneck Rd.			
Item	Unit	Quantity	Unit price	Total	Unit	Quantity	Unit price	Total
Site Preparation								
Clearing and Grubbing	A	4.08	\$5,000.00	\$20,400.00	A	3.10	\$5,000.00	\$15,500.00
Removal of Canal Debris (Wet Segment)	LF	866	\$50.00	\$43,300.00	LF	1,394	\$50.00	\$69,700.00
Tree Removed - Dia. Under 24 Inches	EA	80	\$750.00	\$60,000.00	EA	265	\$750.00	\$198,750.00
Tree Removed - Dia. 24 Inches and Over	EA	100	\$1,500.00	\$150,000.00	EA	170	\$1,500.00	\$255,000.00
Mobilization	LS	1	\$10,000.00	\$10,000.00	LS	1	\$10,000.00	\$10,000.00
Bales of Hay for Erosion Control	EA	2,680	\$13.00	\$34,840.00	EA	3,070	\$13.00	\$39,910.00
			Subtotal	\$318,540.00			Subtotal	\$588,860.00
Embankment & Path Construction								
Earth Excavation	CY	385	\$26.00	\$10,010.00	CY	1,285	\$26.00	\$33,410.00
Earth Excavation Rehandled and Reused	CY	385	\$15.00	\$5,775.00	CY	1,285	\$15.00	\$19,275.00
Ordinary Borrow	CY	3,065	\$25.00	\$76,625.00	CY	3,145	\$25.00	\$78,625.00
Fine Grading , Compacting and Finishing	SY	8,635	\$5.00	\$43,175.00	SY	14,670	\$5.00	\$73,350.00
Dense Graded Crushed Stone (Towpath)	CY	815	\$44.00	\$35,860.00	CY	1,130	\$44.00	\$49,720.00
			Subtotal	\$171,445.00			Subtotal	\$254,380.00
Drainage and Utilities								
Cleaning Drainage Structures	EA	4	\$250.00	\$1,000.00	EA	3	\$250.00	\$750.00
			Subtotal	\$1,000.00			Subtotal	\$750.00
Interpretive Elements								
100' Wet Canal Restoration	EA	2	\$20,000.00	\$40,000.00	EA	2	\$20,000.00	\$40,000.00
Illustrative Signage	EA	3	\$1,000.00	\$3,000.00	EA	3	\$1,000.00	\$3,000.00
			Subtotal	\$43,000.00			Subtotal	\$43,000.00
			Construction Subtotal	\$533,985.00			Construction Subtotal	\$886,990.00
			25% Construction Contingency	\$133,496.25			25% Construction Contingency	\$221,747.50
			Subtotal	\$667,481.25			Subtotal	\$1,108,737.50
			Survey and Design	\$80,097.75			Survey and Design	\$133,048.50
Design and Construction Total					Design and Construction Total			
\$747,579					\$1,241,786			

* This estimate for budgeting purposes only

A = Acre, EA = Each, CY = Cubic Yard, LF = Linear Feet, LS = Lump Sum, SY = Square Yard, TON = Ton

The Middlesex Canal Restoration

Program Study: Conceptual Cost Estimates

August 15, 2007

Segment 19

Rt. 3 to Mt. Pleasant Golf Course

Item	Unit	Quantity	Unit price	Total
Site Preparation				
Clearing and Grubbing	A	0.55	\$5,000.00	\$2,750.00
Removal of Canal Debris (Wet Segment)	LF	175	\$50.00	\$8,750.00
Tree Removed - Dia. Under 24 Inches	EA	54	\$750.00	\$40,500.00
Tree Removed - Dia. 24 Inches and Over	EA	50	\$1,500.00	\$75,000.00
Mobilization	LS	1	\$5,000.00	\$5,000.00
Bales of Hay for Erosion Control	EA	353	\$13.00	\$4,589.00
			Subtotal	\$136,589.00
Embankment & Path Construction				
Ordinary Borrow	CY	3,860	\$25.00	\$96,500.00
Fine Grading , Compacting and Finishing	SY	7,750	\$5.00	\$38,750.00
Dense Graded Crushed Stone (Towpath)	CY	865	\$44.00	\$38,060.00
			Subtotal	\$173,310.00
Interpretive Elements				
100' Wet Canal Restoration	EA	1	\$20,000.00	\$20,000.00
Illustrative Signage	EA	1	\$1,000.00	\$1,000.00
			Subtotal	\$21,000.00
			Construction Subtotal	\$330,899.00
			25% Construction Contingency	\$82,724.75
			Subtotal	\$413,623.75
			Survey and Design	\$49,634.85
<i>* This estimate for budgeting purposes only</i>				
Design and Construction Total				\$463,259

A = Acre, EA = Each, CY = Cubic Yard, LF = Linear Feet, LS = Lump Sum, SY = Square Yard, TON = Ton

Appendix C

Restoration Priority Matrix

The Middlesex Canal Restoration

Program Study: Restoration Priority Matrix

August 15, 2007

	Segment 1 - Sandy Beach	Segment 2 - Wildwood Cemetery	Segment 3 - Winn St to Lowell St	Segment 4 - Lowell St to Middlesex Park	Segment 5 - Alfred St to School St	Segment 6 - Main St to Burlington Ave	Segment 7 - Shawsheen Ave to Richmond St	Segment 8 - Richmond St to Lake St	Segment 9 - Lake St to Nichol St	Segment 10 - Grace Dr to Melody Ln	Segment 11 - Shawsheen River Aqueduct	Segment 12 - George Brown St to Dignon Rd	Segment 13 - Kitchen Ave to Staples St	Segment 14 - Gray St to Pond St	Segment 15 - Pond St to High St	Segment 16 - High St to Rogers St	Segment 17 - Fire Station to Brick Kiln Rd	Segment 18 - Brick Kiln Rd to Riverneck	Segment 19 - Rte 3 to Golf Course
Ownership	5	5	5	5	4	5	5	4	1	1	5	5	3	1	3	2	3	3	1
Condition	5	1	3	4	5	4	3	3	3	4	5	3	2	3	2	4	3	3	1
Continuity	1	1	5	5	5	5	3	3	4	1	1	4	4	3	1	5	5	5	1
Visibility	5	1	5	4	5	3	5	3	5	5	5	4	1	3	2	4	5	3	1
Facilities Nearby	5	1	3	3	5	4	1	1	1	1	3	1	1	1	1	1	3	1	1
Average	4.2	1.8	4.2	4.2	4.8	4.2	3.4	2.8	2.8	2.4	3.8	3.4	2.2	2.2	1.8	3.2	3.8	3	1
Priority Level	H	L	H	H	H	H	MH	ML	ML	ML	MH	MH	ML	ML	L	MH	MH	M	L