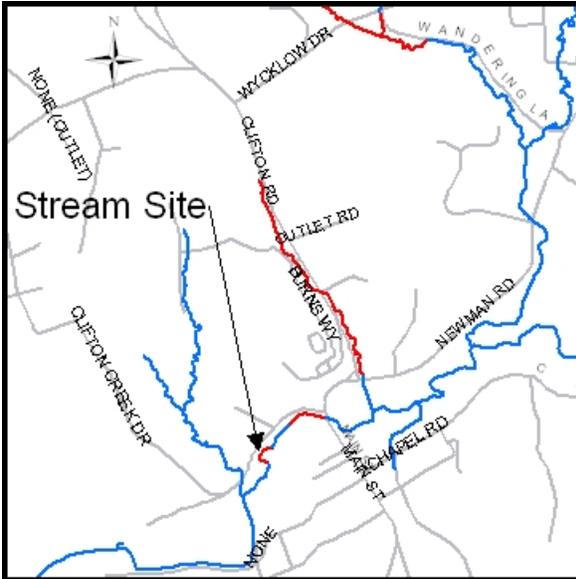


Appendix H: Stream Restoration Projects

Clifton Creek #2 Stream Restoration Project

Stream Project Name: Clifton Creek #2
Project ID: PH9200 (LP-4)
Stream Project Length: 300 linear feet.
Stream Project Location: Along Clifton Creek Drive, west of Wesley Tyler Road



Vicinity Map



Site Overview



Stream adjacent to Clifton Creek Drive

Stream Width:	15'
Stream Restoration Possibilities:	Stabilization bank or minor channel realignment to reduce erosion of bank adjacent to Clifton Creek Drive and prevent road failure. No existing stabilization measures were visible along road edge.
Cost:	Total Cost \$120,000.

Stream Restoration Costs

Site: PH9200 - Clifton Creek #2

Total LF 300 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	300.0	LF	\$ 200.00	\$ 60,000.00
Planting	0	LF	\$ 5,000.00	\$ -

Subtotal Construction Cost = \$ 60,000.00
Mobilization (10%) = \$ 6,000.00
Subtotal 1 = \$ 66,000.00

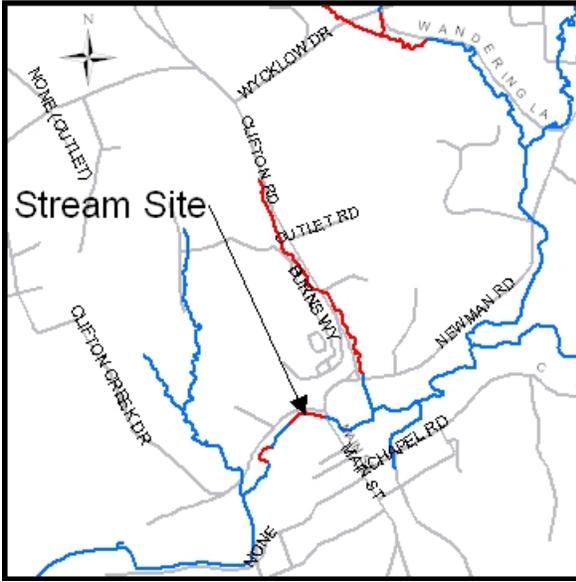
Contingency (25%) = \$ 16,500.00
Subtotal 2 = \$ 82,500.00

Engineering Design, Surveys, Land Acquisition,
Utility Relocations and Permits (45%) = \$ 37,125.00
Total = \$ 119,625.00

ESTIMATED PROJECT COST = \$ 120,000.00

Clifton Creek #1 Stream Restoration Project

Stream Project Name: Clifton Creek #1
 Project ID: PH9201 (LP-3)
 Stream Project Length: 415 linear feet.
 Stream Project Location: Along Clifton Creek Drive, from Main Street to Wesley Tyler Road



Vicinity Map



Site Overview



Private landowner side with no buffer



Stream adjacent to Clifton Creek Drive

Stream Width: 15'
 Stream Restoration Possibilities: Spot Stabilization of approximately 50% of stream along Clifton Creek Drive side and private landowner side. One location where stream is adjacent to Clifton Creek Drive and further road failure is possible. Three – five locations on private landowner side where bank stabilization is necessary to reduce future property loss. Increase buffer on private landowner side along entire reach length.
 Cost: Total Cost \$90,000. (based on stabilization of 50% of stream length)

Stream Restoration Costs

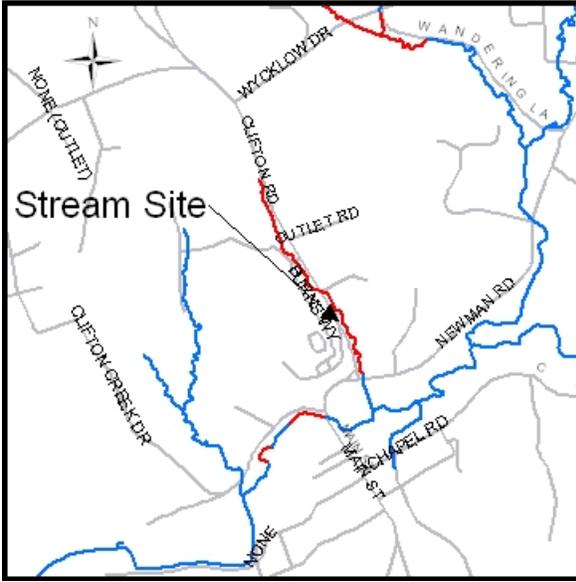
Site: PH9201 - Clifton Creek #1

Total LF 415 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	207.5	LF	\$ 200.00	\$ 41,500.00
Planting	0	LF	\$ 5,000.00	\$ -
Subtotal Construction Cost =				\$ 41,500.00
Mobilization (10%) =				\$ 4,150.00
Subtotal 1 =				\$ 45,650.00
Contingency (25%) =				\$ 11,413.00
Subtotal 2 =				\$ 57,063.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) =				\$ 25,678.00
Total =				\$ 82,741.00
ESTIMATED PROJECT COST =				\$ 90,000.00

Clifton Road Stream Restoration Project

Stream Project Name: Clifton Road.
 Project ID: PH9202 (LP-ST-3)
 Stream Project Length: 2,575 linear feet.
 Stream Project Location: Along Clifton Road from Newman Road to stream daylight location.



Vicinity Map.



Site Overview.



Eroded bank adjacent to Clifton Road.



Stable stream section along Clifton Road.

Stream Width: 2-4'
 Stream Restoration Possibilities: Spot Stabilization of stream as necessary. Several locations where erosion of Clifton Road is possible. Several locations where outfalls to the stream channel are highly eroded. Several locations where the buffer needed to be increased and stream stabilized adjacent to houses.
 Cost: Total Cost \$360,000. (based on stabilization of 35% of stream length)

Stream Restoration Costs

Site: PH9202 - Clifton Road

Total LF 2575 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	901.3	LF	\$ 200.00	\$ 180,250.00
Planting	0	LF	\$ 5,000.00	\$ -

Subtotal Construction Cost = \$ 180,250.00

Mobilization (10%) = \$ 18,025.00

Subtotal 1 = \$ 198,275.00

Contingency (25%) = \$ 49,569.00

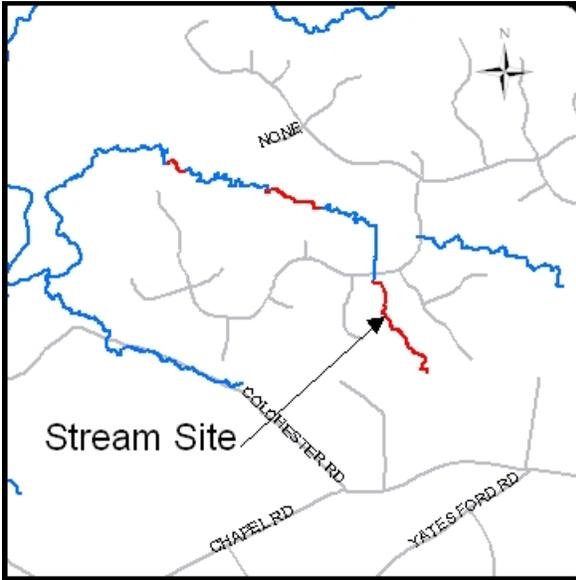
Subtotal 2 = \$ 247,844.00

Engineering Design, Surveys, Land Acquisition,
Utility Relocations and Permits (45%) = \$ 111,530.00
Total = \$ 359,374.00

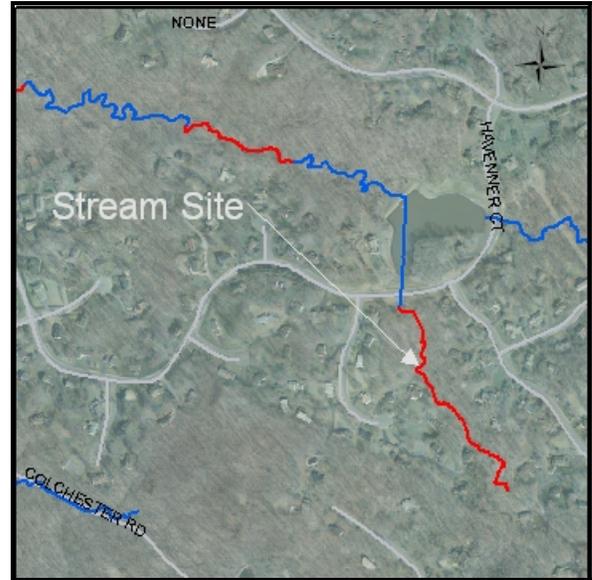
ESTIMATED PROJECT COST = \$ 360,000.00

Young Branch Stream Restoration Project

Stream Project Name: Young Branch.
 Project ID: PH9204 (PH3-ST-2)
 Stream Project Length: 1,375 linear feet and 1,025 linear feet.
 Stream Project Location: Adjacent to Young Branch Drive, from outfall to SWM pond.
 Between Havenner Road cul-de-sac and Sudley Church Court respectively.



Vicinity Map.



Site Overview.



Eroded bank near Young Branch.



40' eroded bank near Havenner Road.

Stream Width: 2-4' adjacent to Young Branch, 4-6' near Havenner Road
 Stream Restoration Possibilities: Stabilize 2-4' tall banks along 85% of reach adjacent to Young Branch. Several areas where landowner mowed to stream edge need buffer restoration. Several locations with 20-40' tall eroded banks adjacent to private homes need stabilization or minor channel realignment near Havenner Road.
 Cost: Total Cost \$1,080,000.

Stream Restoration Costs

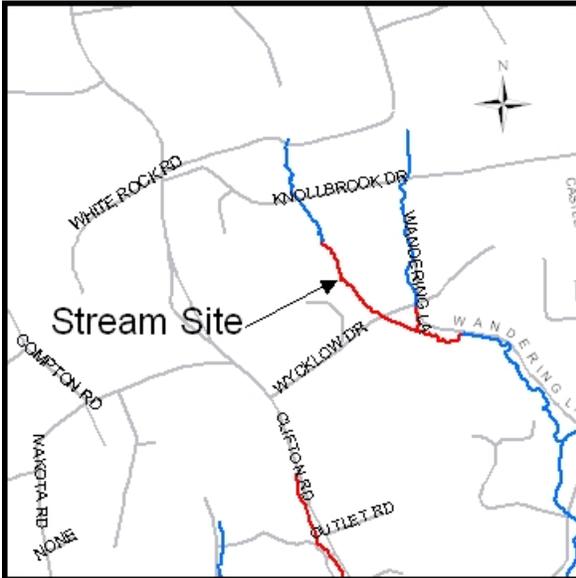
Site: PH9204 - Young Branch

Total LF 2400 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	1200.0	LF	\$ 200.00	\$ 240,000.00
Stream Restoration	600	LF	\$ 500.00	\$ 300,000.00
Subtotal Construction Cost = \$				540,000.00
Mobilization (10%) = \$				54,000.00
Subtotal 1 = \$				594,000.00
Contingency (25%) = \$				148,500.00
Subtotal 2 = \$				742,500.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$				334,125.00
Total = \$				1,076,625.00
ESTIMATED PROJECT COST = \$				1,080,000.00

Wycklow Drive Buffer Restoration Project

Stream Project Name: Wycklow Drive.
 Project ID: PH9210 (CC-ST-1)
 Stream Project Length: 2,550 linear feet.
 Stream Project Location: Wycklow Drive and Wandering Lane.



Vicinity Map.



Site Overview.



Stream downstream of Wycklow Drive.



Stream upstream of Wandering Lane.

Stream Width: 1-2'
 Stream Buffer Restoration Possibilities: Increase buffer along entire stream length to reduce future erosion and decrease pollutants to stream. Small stream with minor erosion that would be minimized with adequate (20-50') buffer. Stream flows through private land, therefore buffer width will be dependent on landowner participation.
 Cost: Total Cost \$60,000.

Stream Restoration Costs

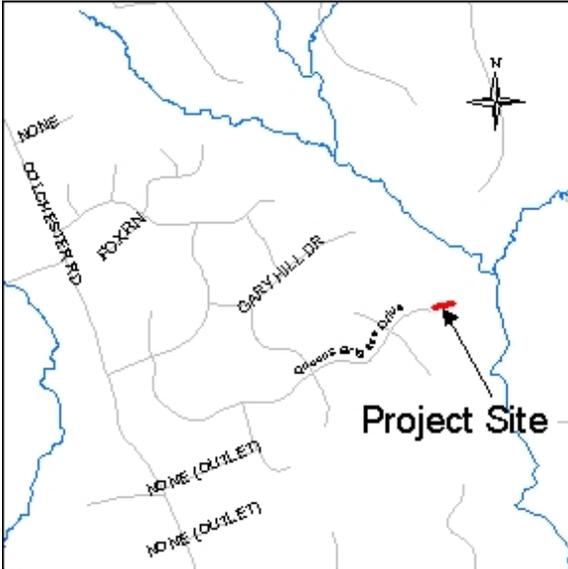
Site: PH9210 - Wycklow Dr

Total LF 2550 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	0.0	LF	\$ 200.00	\$ -
Planting (50' buffer)	2.93	AC	\$ 10,000.00	\$ 29,269.97
Subtotal Construction Cost = \$				29,270.00
Mobilization (10%) = \$				2,927.00
Subtotal 1 = \$				32,197.00
Contingency (25%) = \$				8,049.00
Subtotal 2 = \$				40,246.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$				18,111.00
Total = \$				58,357.00
ESTIMATED PROJECT COST = \$				60,000.00

Queens Brigade Drive Ditch Stabilization Project

Stream Project Name: Queens Brigade Drive.
 Project ID: PH9230 (CC-MN-1)
 Stream Project Length: 260 linear feet.
 Stream Project Location: Queens Brigade Drive.



Vicinity Map.



Site Overview.



Stream just downstream of Queens Brigade Drive.



Stream approx 50 feet downstream of Queens Brigade Drive.

Stream Width: 1-2'
 Ditch Stabilization Possibilities: Ditch is eroded. Investigate local drainage pattern and armor ditch to prevent further erosion.
 Cost: Total Cost \$20,000.

Stream Restoration Costs

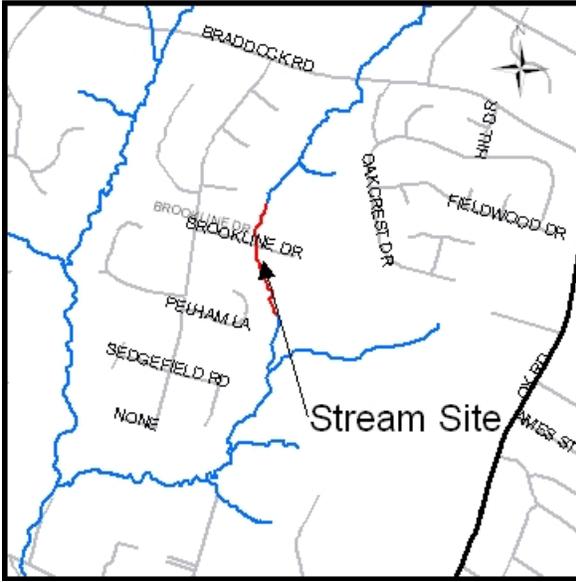
Site: PH9230 - Queens Brigade Drive Dr

Total LF 270 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Grading	40.0	CY	\$ 20.00	\$ 800.00
Outlet Protection	120.00	SY	\$ 46.00	\$ 5,520.00
Seeding and Mulching	900.00	SY	\$ 2.00	\$ 1,800.00
			Subtotal Construction Cost = \$	8,120.00
			Mobilization (10%) = \$	812.00
			Subtotal 1 = \$	8,932.00
			Contingency (25%) = \$	2,233.00
			Subtotal 2 = \$	11,165.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$				5,024.00
			Total = \$	16,189.00
			ESTIMATED PROJECT COST = \$	20,000.00

Brookline Drive Buffer Restoration Project

Stream Project Name: Brookline Drive.
 Project ID: PH9270 (EF-ST-1)
 Stream Project Length: 1,250 linear feet.
 Stream Project Location: Upstream and downstream of Brookline Drive, around the County Club of Fairfax.



Vicinity Map.



Site Overview.



3' eroded bank with no buffer.



3-4' eroded bank with no buffer.

Stream Width: 3-6'.
 Stream Restoration Possibilities: Stream flows out and back into the County Club of Fairfax through private land. Increase the stream buffer as able with landowner participation. Stream has some erosion, but minor and not threatening any structures.
 Cost: Total Cost \$30,000.

Stream Restoration Costs

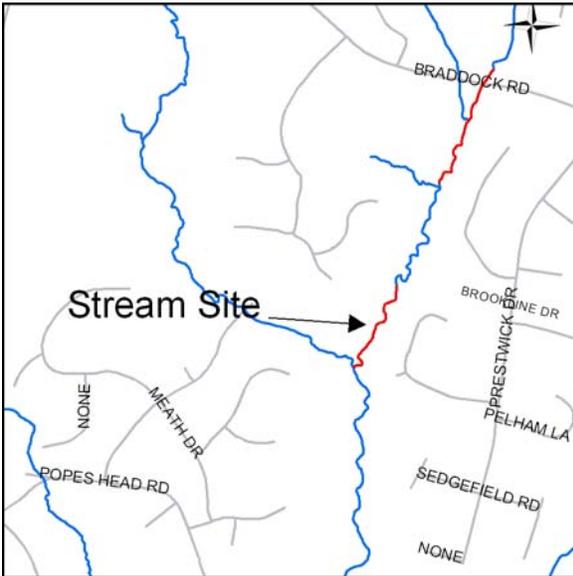
Site: PH9270 - Brookline Dr

Total LF 1250 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	0.0	LF	\$ 200.00	\$ -
Planting (50' buffer)	1.43	AC	\$ 10,000.00	\$ 14,348.03
			Subtotal Construction Cost = \$	14,348.00
			Mobilization (10%) = \$	1,435.00
			Subtotal 1 = \$	15,783.00
			Contingency (25%) = \$	3,946.00
			Subtotal 2 = \$	19,729.00
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$	8,878.00
			Total = \$	28,607.00
			ESTIMATED PROJECT COST = \$	30,000.00

Berwynd Road Stream Restoration Project

Stream Project Name: Berwynd Road.
 Project ID: PH9271
 Stream Project Length: 1,100 linear feet
 Stream Project Location: West of Berwynd Road



Vicinity Map.



Site Overview.



Eroded bank adjacent to mowed lawn.



Large obstruction.

Stream Width:	8-12'
Stream Restoration Possibilities:	Stabilize 2-4' tall banks along 75% of the reach. The landowners have mowed the lawn to the eastern stream banks, therefore buffer restoration is needed to prevent future land loss. Remove large wood debris obstruction from blocking the channel at the south end of the reach.
Cost:	\$330,000.

Stream Restoration Costs

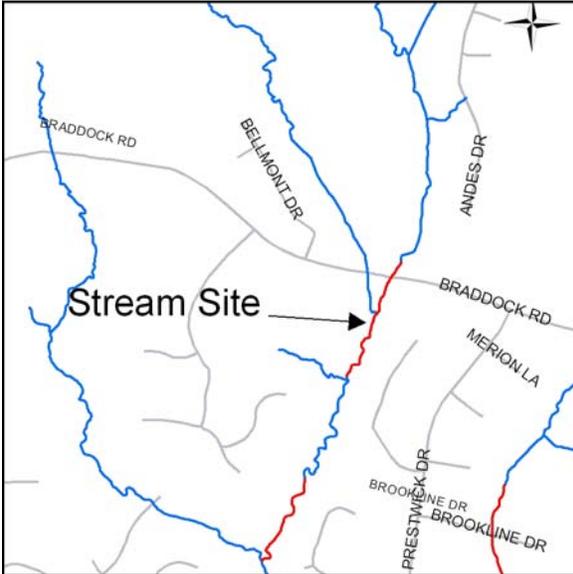
Site: PH9271 - Berwynd Rd

Total LF 1100 lf

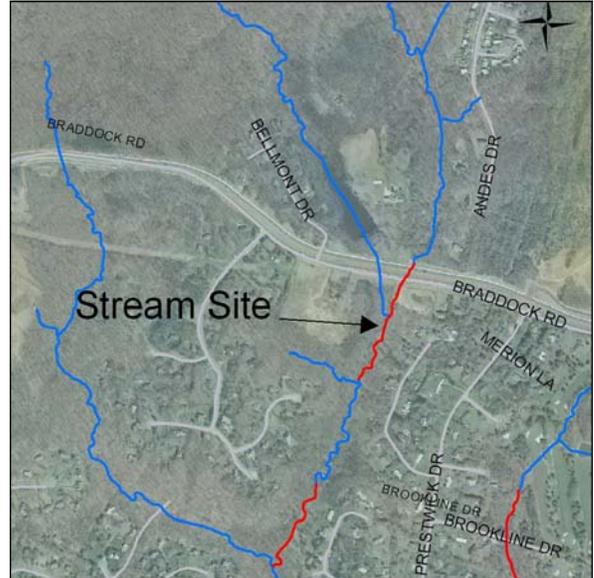
DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	825.0	LF	\$ 200.00	\$ 165,000.00
Stream Restoration	0	LF	\$ 500.00	-
Subtotal Construction Cost = \$				165,000.00
Mobilization (10%) = \$				16,500.00
Subtotal 1 = \$				181,500.00
Contingency (25%) = \$				45,375.00
Subtotal 2 = \$				226,875.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$				102,094.00
Total = \$				328,969.00
ESTIMATED PROJECT COST = \$				330,000.00

Fox Chapel Road Stream Restoration Project

Stream Project Name: Fox Chapel Road.
 Project ID: PH9272
 Stream Project Length: 1,028 linear feet
 Stream Project Location: West of Fox Chapel Road



Vicinity Map.



Site Overview.



Eroded bank adjacent to mowed lawn.



Stream erosion along outside bend.

Stream Width:	8-12'
Stream Restoration Possibilities:	Stabilize 2-4' tall banks along 75% of the reach. The landowners have mowed the lawn to the eastern stream banks, therefore buffer restoration is needed to prevent future land loss.
Cost:	\$310,000.

Stream Restoration Costs

Site: PH9272 - Fox Chapel Rd

Total LF 1028 lf

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Stream Restoration	771.0	LF	\$ 200.00	\$ 154,200.00
Stream Restoration	0	LF	\$ 500.00	\$ -
Subtotal Construction Cost = \$				154,200.00
Mobilization (10%) = \$				15,420.00
Subtotal 1 = \$				169,620.00
Contingency (25%) = \$				42,405.00
Subtotal 2 = \$				212,025.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%) = \$				95,411.00
Total = \$				307,436.00
ESTIMATED PROJECT COST = \$				310,000.00