# **APPENDIX I**

# **Spring Creek North Ecosystem Restoration Project**

# Appendix I

**Cost Engineering** 

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#### **INTRODUCTION**

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This Appendix presents the supporting cost information used in developing costs for the feasibility level cost estimate for Spring Creek North Ecosystem Restoration Project. The Spring Creek North project is part of the Jamaica Bay restoration project which area is a 47 acre portion of Spring Creek Park located adjacent to the banks of Spring Creek and Ralph's Creek. The project area consists of undeveloped City of New York parkland that straddles the boundary between the Boroughs of Brooklyn and Queens in Kings and Queens Counties respectively, New York City, New York. The restoration provides improvement to environmental quality by increasing ecosystem function as well as storm water capture and reducing runoff to the combined sewer system. It consists of general site work such as excavation, loading and transportation of onsite material along with final grading and planting in the marsh and upland vegetation communities. The Total First Cost is presented in Table C1 below.

#### **Table I1 – First Cost**

#### Spring Creek North

October 2017 Price Level

Feasilibity Report Cost Estimate Summary

Acct.	Description	Qty	UoM		Subtotal	Cont. %	Cont \$\$	Total Cost
	Cost Shared Project Activ	vities (	(75% F	ed	/ 25% Non	I-Fed)		
01	LANDS AND DAMAGES	1	LS	\$	12,595	20%	\$ 2,519	\$ 15,114
06	FISH & WILDLIFE FACILITIES	1	LS	\$	500,000	18%	\$ 89,592	\$ 589,592
16	BANK STABILIZATION	1	LS	\$	7,631,765	18%	\$ 1,367,487	\$ 8,999,253
30	PLANNING, ENGINEERING AND DESIGN	1	LS	\$	780,649	23%	\$ 178,294	\$ 958,944
31	CONSTRUCTION MANAGEMENT	1	LS	\$	650,541	25%	\$ 161,093	\$ 811,634
	Total Cost Shared Project Activities			\$	9,575,551		\$ 1,798,986	\$ 11,374,536
	Non-Federal Enchancement A	ctions	- 100%	No	n-Fed Fund	ing Only		
16	BANK STABILIZATION	1	LS	\$	3,733,766	18%	\$ 669,030	\$ 4,402,796
30	PLANNING, ENGINEERING AND DESIGN	1	LS	\$	358,442	23%	\$ 81,865	\$ 440,307
31	CONSTRUCTION MANAGEMENT	1	LS	\$	298,701	25%	\$ 73,967	\$ 372,668
	Total Non-Federal Enchancement Actions			\$	4,390,909		\$ 824,862	\$ 5,215,771

#### **BASIS OF COST**

The construction cost estimate was developed in MCACES, Second Generation (MII) using the appropriate Work Breakdown Structure (WBS) is based on current estimated quantities provided by the Hydraulics & Hydrology. The cost estimate was developed from these quantities using cost resources such as MII Cost Libraries, historical data from similar construction features, and RSMeans. The construction duration for Spring Creek North was estimated at 11 months with one month allocated to Non-Federal Enhancement actions. The construction schedule shown in Figure I1 was developed based on the crew outputs referenced from RSMeans with the assumption that multiple crews would work simultaneously.

PRING CREEK NORTH					c Schedule Layou									16-Jan-18 11:
tivity Name	Original Start Duration	Finish	Total Float 1, 20			Qtr 1, 2020			Qtr 2, 2020			Qtr 3, 2020		Qtr 4, 2020
SPRNRT SPRING CREEK NORTH	221 02-Dec-19	05 Oat 20	lov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct 05-Oct-2
-			U											1
SPRNRT.1 Construction Phase	221 02-Dec-19		0											05-Oct
SPRNRT.1.1 Mobilization	10 02-Dec-19		0	13-De	c 19, SPRNRT.1	1 Mobilization								
SPRNRT.1.2 Bank Stabilization	182 16-Dec-19		0								÷ · · · ·		25-Aug-20, SPF	
SPRNRT.1.3 Demobilization	29 25-Aug-20 0 05-Oct-20		0										+	05-Oct ▼ 05-Oct
E SPRNRT.1.4 Project Closeout	0 05-061-20	05-061-20	0		1									V 05-0ct

#### **Figure I1 – Construction Schedule**

#### CONTINGENCIES

The contingencies were developed based on input to the Abbreviated Cost Schedule Risk Analysis (ARA) (template provided by the Cost Mandatory Center of Expertise, MCX, Walla Walla District), shown in Figure I-3 on page I6. These contingencies were applied to the construction cost estimates to develop the Total Project First Cost. As stated in ER 1110-2-1302, the goal in contingency development is to identify the uncertainty associated with an item of work or task to an acceptable degree of confidence. Consideration must be given to the detail available at each stage of planning, design, or construction for which a cost estimate is being prepared. Contingency may vary throughout the cost estimate and could constitute a significant portion of the overall costs when data or design details are unavailable. Final contingency development and assessment of the potential for cost growth is included in this cost estimate. To develop the Total Project First Cost, contingencies developed in the ARA were applied. The construction cost contingency developed per ARA for Spring Creek North resulted in a factor of 17.92%. The Total Planning,

Engineering & Design contingency and the Construction Management contingency developed per ARA for Spring Creek North resulted in a factor of 22.84% and 24.76% respectively.

#### PLANNING, ENGINEERING AND DESIGN

The cost was developed for all activities associated with the planning, engineering and design effort. The cost for this account includes the preparation of Design Documentation Reports, plans, and specifications for Spring Creek North and engineering support during construction through project completion. It includes all the in-house labor based upon work-hour requirements, material and facility costs, travel, and overhead. The percentage of the total construction cost was provided by the Project Manager to cover these activities as shown in the Total Project Cost Summary (TPCS) on Figure I2 on page I5.

#### **CONSTRUCTION MANAGEMENT**

The cost was developed for all construction management activities from pre-award requirements through final contract closeout. This cost includes the in-house labor based upon work-hour requirements, materials, facility costs, support contracts, travel and overhead. The cost was developed based on the input from the construction division in accordance with the Civil Works Breakdown Structure (CWBS) and includes, but is not limited to, anticipated items such as the salaries of the resident engineer and staff, surveyors, inspectors, drafters, clerical, and custodial personnel; operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; and project office administration, distributive cost of area office and general overhead charged to the project.

#### INTEREST DURING CONSTRUCTION

Interest during construction (IDC) is the amount of interest the construction cost would earn were it invested from the beginning of construction until the accumulation of benefits begins. IDC cost has been added to the project cost to determine investment cost. Average annual cost was determined based on investment cost, which includes IDC. The pre-base year costs were estimated using the Federal interest rate of 2.75 percent (FY18).

#### **OPERATION AND MAINTENANCE**

The Operation and Maintenance (O&M) cost was estimated to represent the anticipated annual costs necessary to maintain the project at full operating efficiency throughout the project life. Following completion of the project, operation and maintenance of project facilities would be the responsibility of the non-Federal sponsor in accordance with Federal regulations and operations manual.

#### ESTIMATED ANNUAL COST

Annual costs are based on an economic period of analysis of 50 years and an interest rate of 2.75%. The annual costs include the annualized investment cost. A detailed breakdown of annual costs for Spring Creek North is presented in Table I2 and Table I3 for the recommended plan and the Non-Federal Enhancement Actions respectively.

#### Table I2 – Annualized Cost for the Recommended Plan

#### Spring Creek North

Recommended Plan

First Cost Sunk Cost	\$ \$	11,374,536 -
Investment Cost Interest During Construction (a)	\$	132,393
Total Investment Cost:	\$	11,506,929
Annual Costs		
Annualized Investment Cost (b)	\$	426,227
Annualized Operation & Maintenance Cost $_{\rm (c)}$	\$	3,600
Total Annual Cost*	\$	429.827

\*October 2017 Price Level

(a) included in this total)

(b) Annualized investment cost only includes the remaining features. For annualized investment cost with the sunk cost, please see the economic appendix. I = 2.75% and n = 50 yrs

(c) Cost provided by the Environmental Branch on August 2016.

#### Table I3 – Annualized Cost for Non-Federal Enhancement Actions

#### Spring Creek North

Non-Federal Enchancement Actions

First Cost		\$ 5,215,771
Sunk Cost		\$ -
Investment Cost	Total Investment Cost:	\$ -
Interest During Construction (a)		\$ 5,215,771
Annual Costs Annualized Investment Cost <sub>(b)</sub>		\$ 207,551
Total Annual Cost*		\$ 207,551

\*October 2017 Price Level

(a) Based on 1 month of construction @ 2.75% (IDC and E&D calculated separately and included in
 (b) Annualized investment cost only includes the remaining features. For annualized investment cost with the sunk cost, please see the economic appendix. I = 2.75% and n = 50 yrs

#### COST SUMMARY

The Total Fully Funded Project cost is \$12,031,000. The costs are to be 75% federally funded and 25% non-federally. The Total Fully Funded Non-Federal Enchantments Actions is \$5,517,000. The total federal cost of the project is \$9,023,000 as shown in the TPCS on Figure I2.

### Figure I2 – Total Project Cost Summary

PROJECT:	Spring Creek North
PROJECT NO:	P2 110068
LOCATION:	Brooklyn and Queens, NY

#### DISTRICT: NAN New York District PREPARED: 1/10/2018

POC: CHIEF, COST ENGINEERING, MUKESH KUMAR

DISTRICT: NAN New York District POC: CHIEF, COST ENGINEERING, MUKESH KUMAR

PREPARED: 1/10/2018

This Estimate reflects the scope and schedule in report; CAP Feasibility STUDY - SPRING CREEK NORTH

Civ	il Works Work Breakdown Structure		ESTIMATE	D COST					ROJECT FIRST Istant Dollar B				TOTAL PR	OJECT COST FUNDED)	(FULLY
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST _(\$K)_	CNTG _(\$K)	CNTG _(%)_	TOTAL _(\$K)_	ESC _(%)_		fective Price	(Budget EC): e Level Date: REMAINING COST _(\$K)_	2018 1-Oct- 17 Spent Thru: 10/1/2017 _(\$K)_	TOTAL FIRST COST _(\$K)_	ESC _(%)_	COST _(\$K)	CNTG _(\$K)_	FULL _(\$K)_
06 16	FISH & WILDLIFE FACILITIES BANK STABILIZATION CONSTRUCTION ESTIMATE TOTALS:	\$500 \$7,632 \$8,132	\$90 <u>\$1,367</u> \$1,457	18% 18% _	\$590 \$8,999 \$9,589		\$500 \$7,632 \$8,132	\$90 \$1,367 \$1,457	\$590 \$8,999 \$9,589		\$590 \$8,999 \$9,589	5.1% 5.1%	\$526 \$8,024 \$8,550	\$94 \$1,438 \$1,532	\$620 \$9,462 \$10,082
<b>16</b> 30 31	BANK STABILIZATION PLANNING, ENGINEERING & DESIGN CONSTRUCTION MANAGEMENT Non-Federal Enhancement Actions ESTIMATE TOTALS:		\$669 \$82 \$74 \$825	18% 23% 25%	\$4,403 \$440 \$373 \$5,216		\$3,734 \$358 \$299 \$4,391	\$669 \$82 \$74 \$825	\$4,403 \$440 \$373 \$5,216		\$4,403 \$440 \$373 \$5,216	5.1% 8.2% 10.4% 5.8%	\$3,926 \$388 \$330 \$4,643	\$703 \$89 \$82 \$874	\$4,629 \$476 \$411 \$5,517
01	LANDS AND DAMAGES	\$13	\$3	20%	\$15		\$13	\$3	\$15		\$15	4.1%	\$13	\$3	\$16
30	PLANNING, ENGINEERING & DESIGN	\$781	\$178	23%	\$959		\$781	\$178	\$959		\$959	8.2%	\$845	\$193	\$1,038
31	CONSTRUCTION MANAGEMENT	\$651	\$161	25%	\$812		\$651	\$161	\$812		\$812	10.4%	\$718	\$178	\$896
	PROJECT COST TOTALS:	\$13,966	\$2,624	19%	\$16,590		\$13,966	\$2,624	\$16,590		\$16,590	5.8%	\$14,769	\$2,779	\$17,548
		CHIEF, COS		ring, muke	ESH KUMAR						ESTIMATE	D PROJE	CT COST:		\$12,031
		PROJECT N	IANAGER, L	ISA BARON	I						ESTIMATE ESTIMATED NO			75% 25%	\$9,023 \$3,008
		CHIEF, REA	L ESTATE, X	CXX											
		CHIEF, PLAI	NNING, xxx								ESTIMATED BE ESTIMATE				\$5,517
		CHIEF, ENG	INEERING,	XXX						I	ESTIMATED NO	N-FEDEF	AL COST:	100%	\$5,517
		CHIEF, OPE	RATIONS, x	xx						22 - F	EASIBILITY ST	UDY (CAF	studies):		\$17,548
		CHIEF, CON	ISTRUCTION	N, XXX							ESTIMATE ESTIMATED NO				\$9,023 \$8,525
		CHIEF, CON	ITRACTING,	ххх							TED FEDERAL (				\$9,023
		CHIEF, PM-	PB, xxxx												<i>40,020</i>
		CHIEF, DPM	, xxx												

#### PROJECT: Spring Creek North LOCATION: Brooklyn and Queens, NY This Estimate reflects the scope and schedule in report; CAP Feasibility STUDY - SPRING CREEK NORTH

						0				D				
	WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)			
			nate Prepare ate Price Lev		1/10/2018 10/1/2017		m Year (Bud ive Price Lev		2018 1 -Oct-17					
			F	RISK BASED										
WBS <u>NUMBER</u> A	Civil Works <u>Feature &amp; Sub-Feature Description</u> <i>B</i> PHASE 1 or CONTRACT 1	COST _(\$K)C	CNTG _(\$K)	CNTG _(%)_ 	TOTAL _(\$K) F	ESC (%) 	COST (\$K) H	CNTG _(\$K)/ /	TOTAL _ <u>(\$K)</u> _J	Mid-Point <u>Date</u> P	ESC  L	COST (\$K) M	CNTG _( <u>\$K)</u> <i>N</i>	FULL _(\$K) 
06	FISH & WILDLIFE FACILITIES	\$500	\$90	17.9%	\$590		\$500	\$90	\$590	2020Q3	5.1%	\$526	\$94	\$620
16	BANK STABILIZATION	\$7,632	\$1,367	17.9%	\$8,999		\$7,632	\$1,367	\$8,999	2020Q3	5.1%	\$8,024	\$1,438	\$9,462
16	BANK STABILIZATION	\$3,734	\$669	17.9%	\$4,403		\$3,734	\$669	\$4,403	2020Q3	5.1%	\$3,926	\$703	\$4,629
01	CONSTRUCTION ESTIMATE TOTALS: LANDS AND DAMAGES	\$11,866 \$13	\$2,126	17.9%	\$13,992 \$15		\$11,866	\$2,126	\$13,992 \$15	2020Q1	4.1%	\$12,476	\$2,235	\$14,711 \$16
<b>30</b> 9.60% 9.60%	5 5 5	\$781 \$358	\$178 \$82	22.8% 22.8%	\$959 \$440		\$781 \$358	\$178 \$82	\$959 \$440	2020Q1 2020Q1	8.2% 8.2%	\$845 \$388	\$193 \$89	\$1,038 \$476
<b>31</b> 0.08 0.08		\$651 \$299	\$161 \$74	24.8% 24.8%	\$812 \$373		\$651 \$299	\$161 \$74	\$812 \$373	2020Q3 2020Q3	10.4% 10.4%	\$718 \$330	\$178 \$82	\$896 \$411
	CONTRACT COST TOTALS:	\$13,966	\$2,624		\$16,590		\$13,966	\$2,624	\$16,590			\$14,769	\$2,779	\$17,548

#### Figure I3 – Abbreviated Risk Analysis

Abbreviated Risk Analysis

Construction Management

Project (less than \$40M): Spring Creek North Ecosystem Restoration Feasibility Project Development Stage/Alternative: Alternative Formulation Risk Category: Low Risk: Typical Construction, Simple

District: New York District Alternative: Meeting Date: 9/28/2016

#### Total Estimated Construction Contract Cost = \$ 11,865,531 CWWBS Feature of Work Contract Cost % Contingency \$ Contingency Total 01 LANDS AND DAMAGES Real Estate 20.00% \$ 1 16 BANK STABILIZATION Mob Demob 290,135 17.42% s 50,534 \$ 340,669 2 BANK STABILIZATION Existing Pavement Removal s 511,140 15.70% \$ 80,242 \$ 591,381 3 978,696 21.97% \$ 214,992 \$ 1,193,688 16 BANK STABILIZATION Clearing & Grubbing s 384,548 4 16 BANK STABILIZATION Topographic Survey s 343,425 11.97% s 41,123 \$ 16 BANK STABILIZATION 1,546,647 5 Excavated Material \$ 1,268,085 21.97% \$ 278,563 \$ 2,374,199 527,682 \$ 2,901,881 6 BANK STABILIZATION Clean Fill s 22.23% \$ 6 7 BANK STABILIZATION Marsh Region s 537,384 15.36% \$ 82,542 \$ 619,926.06 8 NK STABILIZATION Maritime Upland s 338,985 17.26% \$ 58,521 \$ 397,505.37 9 Fencing & Gates s 905,478 15.54% s 140,755 \$ 1,046,232.62 6 BANK STABILIZATION 3,733,766 573,503 \$ 10 16 BANK STABILIZATION Non-Federal Enchancement Actions s 15.36% s 4,307,268.79 11 06 FISH AND WILDLIFE FACILITIES Monitoring \$ 500,000 13.54% \$ 67,697 \$ 567,696.68 12 All Other 84,239 0.7% 11.82% \$ 9,957 \$ 94,196 Remaining Construction Items \$ 260,160 \$ 13 30 PLANNING, ENGINEERING, AND DESIGN 1,139,090.99 22.84% \$ 1,399,251 Planning, Engineering, & Design S CONSTRUCTION MANAGEMENT 949,242.49 24.76% \$ 235,060 \$ 1,184,303

XX FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)

14

	Totals								
	Real Estate \$		0.00%	\$	- \$	-			
	Total Construction Estimate \$	5 11,865,531	17.92%	s	2,126,109 \$	13,991,640			
	Total Planning, Engineering & Design \$	5 1,139,091	22.84%	\$	260,160 \$	1,399,251			
	Total Construction Management \$	949,242	24.76%	\$	235,060 \$	1,184,303			
	-								
	Total Excluding Real Estate \$	13,953,865	19%	\$	2,621,329 \$	16,575,194			
			Ba	se	50%	80%			
	Confidence Lev	vel Range Estimate (\$000's)	\$13,95	j4k	\$15,527k	\$16,575k			
				* 50% based on base is at 5% CL.					
Fixed Dollar Risk Add: (Allows for additional risk to									
be added to the risk analsyis. Must include	1								
justification. Does not allocate to Real Estate	1								

Spring Creek North Ecosystem Restoration Feasibility Study
Alternative Formulation
Abbreviated Risk Analysis
Meeting Date: 28-Sep-16



Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
<u>Project Ma</u>	nagement & Scope Growth			Maximum Proje	ct Growth	40%
PS-1	Mob Demob	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-2	Existing Pavement Removal	Potential for scope growth, added features?	Existing pavement quantity is confirmed by H&H. No major impact from management or scope growth expected.	Marginal	Unlikely	0
PS-3	Clearing & Grubbing	Potential for scope growth, added features?	Quantity is based on the project site. Potential of quantity change impact will be addressed under cost and quantity. From management prospective, no impact expected.	Negligible	Unlikely	0
PS-4	Topographic Survey	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-5	Excavated Material	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-6	Clean Fill	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-7	Marsh Region	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-8	Maritime Upland	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-9	Fencing & Gates	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-10	Non-Federal Enchancement Actions	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-11	Monitoring	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-12	Remaining Construction Items	Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0

PS-13	Planning, Engineering, & Design	Potential for scope growth, added features?     Project accomplishes intent?     Funding Difficulties?     Sufficent Staffing/Support?	New York District has worked closely with local sponsor and local agencies and are confident in both the existing condition accuracy and the absence of utilities. The scope of this project is well defined and unlikely to change. Funding for this account is set for a CAP project, which may pose a challenge later on. No Staffing issues expected.	Moderate	Likely	3
PS-14	Construction Management	Potential for scope growth, added features?     Project accomplishes intent?     Funding Difficulties?     Sufficent Staffing/Support?	New York District has worked closely with local sponsor and local agencies and are confident in both the existing condition accuracy and the absence of utilities. The scope of this project is well defined and unlikely to change. Funding for this account is set for a CAP project, which may pose a challenge later on. No Staffing issues expected.	tion oject is Moderate Like		3
Acquisitio	n Strategy			Maximum Proje	ct Growth	30%
AS-1	Mob Demob	Contracting plan firmly established?     Ba or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-2	Existing Pavement Removal	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-3	Clearing & Grubbing	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-4	Topographic Survey	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-5	Excavated Material	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-6	Clean Fill	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-7	Marsh Region	Contracting plan firmly established?     • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-8	Maritime Upland	Contracting plan firmly established?     8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-9	Fencing & Gates	Contracting plan firmly established?     • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-10	Non-Federal Enchancement Actions	Contracting plan firmly established?     ea or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0

AS-11	Monitoring	- Contracting plan firmly established? - 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-12	Remaining Construction Items	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible Uplikely		0
AS-13	Planning, Engineering, & Design	Contracting plan firmly established?     Ka or small business likely?	No Impact expected	Marginal	Possible	1
AS-14	Construction Management	Contracting plan firmly established?     6a or small business likely?	Construction office may need to provide extra attention to the small business contractor as the firm may or may not be familiar with USACE requirements.			2
Constructi	on Elements			Maximum Proje	ct Growth	15%
CON-1	Mob Demob	Special mobilization?     Special equipment or subcontractors needed?	Mob Demob is a % of the total project cost. No special equipment required for the job.	Marginal	Possible	1
CE-2	Existing Pavement Removal	High risk or complex construction elements, site access, in-water?     Potential for construction modification and claims?	PDT feels that the project site is fairly easily accessible. Removing pavement is fairy simple task.	Marginal	Unlikely	0
CE-3	Clearing & Grubbing	Water care and diversion plan?     Unique construction methods?     Potential for construction modification and claims?	PDT feels that the project site is fairly easily accessible. Quantity fairly well established however, large tress and roots may not anticipated may cuase delays to clear site	Moderate	Possible	2
CE-4	Topographic Survey	Accelerated schedule or harsh weather schedule?	There is a possibility that weather can delay survery data. This will impact schedule but no impact on costs	Negligible	Possible	0
CE-5	Excavated Material	Water care and diversion plan?     Special equipment or subcontractors needed?	No issues with water diversion expected, Excavation is simple, however, excavated material may be contaminated that will require additional cost to dispose.	Moderate	Possible	2
CE-6	Clean Fill	Accelerated schedule or harsh weather schedule?	Placement of clean fill may be affected depending on weather. Only schedule delay expected, however contractor may have to take precautions to protect material on site from rain damage.	Marginal	Possible	1
CE-7	Marsh Region	Unique construction methods?     Potential for construction modification and claims?	Planting is very straight forward. Only weather delays may affect schedule.	Marginal	Possible	1
CE-8	Maritime Upland	Unique construction methods?     Potential for construction modification and claims?	Planting is very straight forward. Only weather delays may affect schedule.	Marginal	Possible	1
CE-9	Fencing & Gates	High risk or complex construction elements, site access, in-water?     Potential for construction modification and claims?	Fencing & gate features are normal items to place on site. Only wether delays may affect schedule.	Marginal	Unlikely	0
CE-10	Non-Federal Enchancement Actions	<ul> <li>High risk or complex construction elements, site access, in-water?</li> <li>Potential for construction modification and claims?</li> </ul>	PDT feels that the project site is fairly easily accessible. Removing pavement is fairy simple task.	Marginal	Possible	1
CE-11	Monitoring	Accelerated schedule or harsh weather schedule?	Possible weather delays may affect schedule	Marginal	Possible	1

CE-12	Remaining Construction Items	Water care and diversion plan?     Special equipment or subcontractors needed?	No Impact expected	Negligible	Unlikely	0
CE-13	Planning, Engineering, & Design	High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	Access to the site might be challengin. The proximity to water could increase the difficulty of work causing modifications.	Marginal	Possible	1
CE-14	Construction Management	High risk or complex construction elements, site access, in-water?     Potential for construction modification and claims?	Access to the site might be challengin. The proximity to water could increase the difficulty of work causing modifications.	Marginal	Possible	1
Specialty (	Construction or Fabrication			Maximum Proje	ct Growth	50%
SC-1	Mob Demob	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-2	Existing Pavement Removal	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-3	Clearing & Grubbing	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-4	Topographic Survey	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-5	Excavated Material	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-6	Clean Fill	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-7	Marsh Region	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-8	Maritime Upland	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-9	Fencing & Gates	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-10	Non-Federal Enchancement Actions	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0

SC-11	Monitoring	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-12	Remaining Construction Items	Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-13	Planning, Engineering, & Design	Atypical construction elements, unusual material or equipment manufactured or installed?	No Impact expected	Negligible	Unlikely	0
SC-14	Construction Management	Atypical construction elements, unusual material or equipment manufactured or installed?	No Impact expected	Negligible	Unlikely	0
Technical	<u> Design &amp; Quantities</u>			Maximum Proje	ct Growth	20%
T-1	Mob Demob	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	It is a LS item based on the total construction cost. This cost will be affected if other costs change.	Marginal	Possible	1
T-2	Existing Pavement Removal	Level of confidence based on design and assumptions?     Appropriate methods applied to cativate quantities?     Sufficient investgations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-3	Clearing & Grubbing	- Level of confidence based on design and assumptions? - Appropriate methods applied to calculate quantifies? - Sufficient investgatons to develop quantifies?	H&H developed and updated the quantities in 2015-2016. Design is fanity set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
T-4	Topographic Survey	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investgatons to develop quantities?	No Concern	Negligible	Possible	0
T-5	Excavated Material	- Level of confidence based on design and assumptions? - Appropriate mothods applied to calculate quantities? - Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is fanily set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
T-6	Clean Fill	- Level of confidence based on design and assumptions? - Appropriate methods applied to calculate quantities? - Sufficient investgatons to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is fanily set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
Т-7	Marsh Region	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1

T-8	Maritime Upland	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.			1
T-9	Fencing & Gates	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	s Marginal Possible		1
T-10	Non-Federal Enchancement Actions	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-11	Monitoring	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	No concerns	Marginal	Possible	1
T-12	Remaining Construction Items	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is fanity set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-13	Planning, Engineering, & Design	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	No Impact expected	Negligible	Unlikely	0
T-14	Construction Management	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	No Impact expected	Negligible	Unlikely	0
<u>Cost Estim</u>	ate Assumptions			Maximum Project Growth		25%
EST-1	Mob Demob	Site accessibility, transport delays, congestion?	Cost is developed based on historical data and construction methodology practice for this item.	Marginal	Possible	1
EST-2	Existing Pavement Removal	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-3	Clearing & Grubbing	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-4	Topographic Survey	No Concerns	No Concerns.	Negligible	Unlikely	0

				-		
EST-5	Excavated Material	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-6	Clean Fill	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-7	Marsh Region	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Negligible	Unlikely	0
EST-8	Maritime Upland	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-9	Fencing & Gates	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	No change expected as the site area is unlikely to change.	Moderate	Unlikely	1
EST-10	Non-Federal Enchancement Actions	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Unlikely	0
EST-11	Monitoring	No Concerns	No concerns	Negligible	Unlikely	0
EST-12	Remaining Construction Items	Level of confidence based on design and assumptions?     Appropriate methods applied to calculate quantities?     Sufficient investigations to develop quantities?	No concerns	Negligible	Unlikely	0
EST-13	Planning, Engineering, & Design	Changes or modifications during construction	This cost is for project design. It is highly unlikely that Modification will be excuted for this project	Marginal	Unlikely	0
EST-14	Construction Management	* Changes or modifications during construction	No major concerns	Marginal	Unlikely	0
External P	roject Risks			Maximum Proje	ct Growth	20%
EX-1	Mob Demob	Political influences, lack of support, obstacles?     Potential for market volatility impacting competition, pricing?	No concerns	Marginal	Unlikely	0
EX-2	Existing Pavement Removal	<ul> <li>Political influences, lack of support, obstacles?</li> <li>Potential for market volatility impacting competition, pricing?</li> </ul>	This is a demo item. No major concerns.	Marginal	Unlikely	0
EX-3	Clearing & Grubbing	<ul> <li>Political influences, lack of support, obstacles?</li> <li>Potential for market volatility impacting competition, pricing?</li> </ul>	The risk of severe inflation in the near-term (< 3 years) appears low. However, the outlook for a horizon over three years can not be predicted with confidence. No major opposition from the local sponsors has been received,	Marginal	Possible	1
EX-4	Topographic Survey	Political influences, lack of support, obstacles?     Potential for market volatility impacting competition, pricing?	No Concerns.	Marginal	Unlikely	0
EX-5	Excavated Material	Potential for severe adverse weather?     Potential for market volatility impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-6	Clean Fill	Potential for severe adverse weather?     Potential for market volatility impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have moderate affect.	Moderate	Possible	2
EX-7	Marsh Region	Potential for severe adverse weather?     Potential for market volatility impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-8	Maritime Upland	Potential for severe adverse weather?     Potential for market volatility impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-9	Fencing & Gates	Potential for severe adverse weather?     Potential for market volability impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-10	Non-Federal Enchancement Actions	Potential for severe adverse weather?     Potential for market vokality impacting competition, pricing?     Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
		Political influences, lack of support, obstacles?	No concerns	Negligible	Unlikely	0
EX-11	Monitoring	Potential for market volatility impacting competition, pricing?	No concerns			
EX-11 EX-12	Monitoring Remaining Construction Items	Potential for market volatility impacting competition, pricing?		Negligible	Unlikely	0
		Potential for market volatility impacting competition, pricing?     Political influences, lack of support, obstacles?	Project delays due to lack of political support can cause schedule delays. No concerns for E&D	Negligible Negligible	Unlikely Possible	0
EX-12	Remaining Construction Items		Project delays due to lack of political support can cause			

MII

Print Date Thu 11 January 2018 Eff. Date 1/10/2018	U.S. Army Corps of Engineers Project : Spring Creek North Ecosystem Restoration				Time 16:33:03		
	Spring Creek North			Pro		ect Cost Page 1	
Description		Quantity	UOM	ContractCost	Contingency	ProjectCost	
Project Cost				11,865,531.17	0.00	11,865,531.17	
Spring Creek North		1.0000	LS	11,865,531.17	0.00	11,865,531.17	
06 FISH & WILDLIFE FACILITIES		1.0000	EA	500,000.00	0.00	500,000.00	
16 BANK STABILIZATION		1.0000	EA	7,631,765.12	0.00	7,631,765.12	
16 Non-Federal Enchancement Action: #2 (Upland Restora	tion G &F)	1.0000	EA	3,733,766.05	0.00	3,733,766.05	

Labor ID: NLN2016 EQ ID: EP16R01

Currency in US dollars

TRACES MII Version 4.2

DQC Comments