Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY

February 12, 2021

Mr. Jeff Edmonds, P.E.
Director of Engineering Services
City of Corpus Christi
PO BOX 9277
Corpus Christi, Texas 78469-9277

Re: Proposal for North Beach Navigable Canal Project (Phase II)

Dear Mr. Edmonds,

Based on our conversation on February 4th, attached is our proposal for completing Phase II of the North Beach Navigable Canal project. Phase II will be an 8-week process consisting of LAN providing opinions of probable project costs for three options for North Beach. As discussed, Option 1 are improvements to the existing closed conduit/underground system, Option 2 is a new open channel, linear park and greenway, Option 3 (A&B) are the two alternatives for a navigable canal presented in the LAN's Phase I report. Since LAN has not investigated two of the three options in enough detail, some level of effort would be required to review past studies and develop refined layouts for each. Additionally, for LAN to determine in sufficient detail the costs for utility relocations, we have included a small level of effort to investigate existing utilities and catalog and map them for future consideration. Additional details and project assumptions can be found in Attachment A.

We propose to complete these services on a lump sum basis for total contract amount of $**123,745.00**. Please feel free to contact me at 361-792-7225 or by email at SMHarris@lan-inc.com, if you have any additional questions.

Sincerely,

Scott M. Harris, PE
Associate, Regional Manager

Attachments: A – Scope of Services and Summary of Fees

Attachment A

Scope of Services and Summary of Fees

Overview

In December 2019, the City of Corpus Christi City Council passed an ordinance (# 031970) authorizing a $41 Million dollar project on North Beach in Corpus Christi, Texas to design and construct a navigable canal.

LAN recently completed Phase I of this project which advanced the concepts previously developed by the City and finalized the navigable canal's scope and project limits. Phase I's ultimate objective was to investigate the project for its intended use of being navigable and a improve drainage for the North Beach area.

On January 26th, 2021, LAN briefed City Council on the results of the Phase I analysis and it was concluded that three options would be further investigated for cost.

On February 4th, LAN met with the City Manager to discuss three options that LAN would provide cost estimates for and receive direction from staff on how to proceed. The following options were approved:

Option 1 – Closed Conduit / Underground System

Option 2 – Open Channel / Linear Park

Option 3 – Navigable Canal (2 Alternatives)

Alternative A – Canal Exit to North

Alternative B – Canal Exit through Beach

Project Descriptions:

Option 1 – Closed Conduit / Underground System

This project does not provide for a new open ditch or navigable canal at North Beach. It provides for short term improvements to the existing drainage systems. The improvements align with those recommendations made by HDR in their 2018 Feasibility Study. Specifically, they call for a new reinforced box culvert system in Surfside Boulevard, a new Outfall into Corpus Christi Bay at Breakwater Avenue, installation of cross drainage culverts at intersections and driveways where necessary, and grading and construction of roadside ditches including a new open ditch near Dolphin Park. Private properties would not be raised to achieve positive drainage. See Exhibit 1 and additional assumptions below.

Option 2 – Open Channel / Linear Park

This project would provide for a new open drainage channel at North Beach that would include a greenway or linear park along each side of the channel. The channel would not be navigable to boats but would provide for improved drainage against rainfalls and higher than normal tides. This project generally aligns with recommendations made by Urban Engineering in 2019 but adds several features that would

make it a destination for tourists / visitors. The channel will be a concrete lined trapezoidal channel, approximately 20-feet wide at the bottom and 60 to 80-feet wide at the top (bank to bank). Pedestrian facilities, shared use paths, and park amenities would line the channel. The channel would outfall to Corpus Christi Bay near Dolphin Park and the Jetties, would integrate the existing wetlands, and include a culvert on the south end of the project for circulation to the Bay. Streets would be raised along the channel and in areas appropriate for construction of the system and to achieve positive drainage. In addition to rights-of-way, this project would require raising of private properties to achieve positive drainage into the proposed open channel. See Exhibit 2 and additional assumptions below.

Option 3 – Navigable Canals

This project would provide for a new navigable canal at North Beach, as evaluated for technical feasibility in LAN's Phase I Project Report. Two alternatives will be estimated:

Alternative A – Outfall at North Jetties - This Alternative provides for a rectangular channel with a structural bulkhead approximately 8,000 linear feet long. The canal would be 65 to 100-feet wide (max) and 10-feet deep. Alternative A would outfall adjacent to the north jetties and include a box culvert at Breakwater Avenue for circulation. See Exhibit 3A and additional assumptions below.

Alternative B – Outfall thru Beach – This alternative provides for a rectangular canal with a structural bulkhead approximately 5,600 linear feet long. The canal would be 65 to 90-feet wide (max) and 10-feet deep. Alternative B would outfall through the beach adjacent to Burleson, include a box culvert outfall to the wetlands and a box culvert outfall at Breakwater Avenue for circulation. See Exhibit 3B and additional assumptions below.

Project Assumptions:

In addition to the project descriptions above, for the purposes of providing opinions of probable cost for each of the projects, LAN will make the following assumptions:

1. Recommendations for all options will be based on the same design criteria, storms, and provide the same benefit, using City of Corpus Christi Drainage Criteria Manual (DCM).
2. Options 2 and 3 will require to be constructed in two phases: Phase I – North of Burleson, Phase II- South of Burleson, due to the Harbor Bridge construction; However, LAN will deliver Total Project Costs for each and will not split the proposed costs by Phase.
3. Opinions of Costs will be based on 2021 dollars.
4. Phase II excludes maintenance costs associated with drainage structures, streets, and utilities.
5. Phase II excludes costs for jetties, groins, or breakwater structures that may be required for beach erosion or to prevent siltation/sedimentation at canal exits; further study is needed to determine the costs of these structures; LAN assumes that this analysis would be performed once one of the options were chosen to move to preliminary design.

Sitework / Earthwork / Dredging

6. To achieve the greatest benefit from any new stormwater system, properties need to be raised; therefore, LAN will assume a maximum elevation of 6.5-feet at the most upstream end of the drainage basin and assume the site will slope downward towards the proposed stormwater conveyance improvements.

7. Dredging frequency and maintenance costs will be determined based on comparisons with projects of similar nature; detailed modeling to quantify the amounts of siltation or sedimentation occurring at the entrance/exits of the channels or within the channels will not be performed during this phase of the project.
8. For Options 2 and 3 only, earthwork / fill will be costed based on a phased approach; LAN will provide three separate opinions of costs for:
    - Phase I - Public ROW and areas immediate adjacent to the drainage improvements
    - Phase II - Privately owned lots at elevations lower than 3.5-feet
    - Phase III - Privately owned lots at elevations higher than 3.5-feet
9. Option 3 (A&B) will require dredging into Bay to a depth of 10-feet for navigability

Structural

10. LAN will assume 30-foot bulkhead depth for Options 3A and 3B
11. Two costs for bulkhead material options will be provided: structural steel and concrete

Mobility

12. Raising and widening of streets will be estimated based on a phased approach for each option:
    - Phase I - Streets immediately adjacent to or required to be improved to support proposed drainage improvements
    - Phase II - Streets located in those areas that are prone to tidal flooding affects
13. Traffic Improvements (Capacity, Striping, Routing of Traffic) at Beach Avenue and US181 will be included in costs for all options.
14. Option 2 - at-grade crossings / culverts will be assumed at all roadway crossings
15. Only Options 2 and 3(A&B) will include new pedestrian facilities within the drainage easement / ROW
16. Option 3A - two traffic crossings (bridge) will be assumed over the proposed navigable canal at Beach Avenue and Bridgeport; the crossings will have accommodations for pedestrian traffic as well as vehicle traffic
17. Option 3B - one traffic crossing (bridge) will be assumed over the proposed navigable canal at Surfside / Burleson outlet to Bay; Beach Avenue will include a new at-grade/culvert crossing
18. One pedestrian bridge will estimated for Option 3B, at a location to be determined
19. Proposed bridge crossings will be assumed to have a low chord of 20-feet above water surface.

Utilities

20. Options 2 and 3 will include relocations of three existing wastewater lift stations
21. Wastewater collection lines and force main within the drainage easements / ROW that conflict with the proposed improvements (all options) will be relocated
22. Water - 12-inch PVC water main along east side of Surfside will remain in place but will require to be lowered under canal for Option 3
23. Water distribution and laterals within the drainage easements / ROW that conflict with the proposed improvements will be relocated for all options
24. Three underground city gas lines crossing the Timon Surfside corridor must be lowered below the proposed drainage structures - all options

Real Estate and ROW

25. Options 2 and 3 assume that approximately 25 acres of private property will be required to be acquired prior to construction of the drainage improvements south of Burleson.
26. Real Estate costs are not based on appraisals but typical local costs/acre for similar tracts of land.

Environmental

27. Assume that coordination with USACE will be necessary for wetlands mitigation / avoidance for all Options.
28. Assume an Individual Permit will be necessary
29. Assume no conflicts with cultural resources or threatened and endangered species
30. Assume Option 3 will require a lease from the GLO for submerged lands in the path of the dredged navigable canal

Basic Services (Phase II – Project Costs)

Phase II will consist of all efforts required to estimate the costs of each of the three options above:

Task 100 – Data Collection & Project Management
Task 101 – Conceptual Layouts & Existing Utilities
Task 102 – Opinions of Probable Project Costs
Task 103 – Technical Memorandum

Task 100 – Data Collection & Project Management

1. Data Collection
   LAN will gather and review readily-available reports and City-provided planning documents including long and short-range plans, area development plans, capital improvement plans, GIS data bases including streets and utility master plans. This will include a detailed review of HDR's 2018 North Beach Report and Urban Engineering's 2019 Report.

2. Meetings
   a. Kickoff Meeting – LAN will conduct one (1) kick off meeting with the client to discuss the clients' vision for the project, scope of work, schedule, budget, change management plan, and deliverables.
   b. Client Review Meeting – LAN will conduct one (1) client review meeting with the City to present results from the various analyses and modeling, conceptual designs/layouts and discuss opportunities and/or scope of project going forward.
   c. Phase II Presentation - LAN will conduct one (1) presentation to City Council to present results from the various analyses and modeling, conceptual designs/layouts and discuss opportunities and/or scope of project going forward.

Task 101 – Conceptual Layouts & Existing Utilities

1. Conceptual Layouts
   LAN will utilize the information gathered in Task 100 to develop conceptual level layouts for each of the three options including improving those layouts presented for Options 3A and 3B in LAN's Phase I report according to discussion with the City staff.

   Because two of the three options were not part of LAN's Phase I Report, these options will require exhibits to be made that align with the previous consultants recommendations and the vision / direction of the City of Corpus Christi.

   Conceptual site layouts will show proposed stormwater / drainage improvements (open channels, ditches, underground conveyance systems), areas that will require to be raised to achieve positive drainage and prevent routine tidal influence and ponding, street improvements, structures, pedestrian facilities and park amenities. Layouts will delivered on 11x17 plan sheets with one (1) typical cross section for each option. Options 3A and 3B cross sections presented in Phase I will not change.

2. Existing Utilities Maps
    a. Third-Party Utility Research – LAN will complete an 811 ticket to identify third-party utilities that may be in conflict with proposed project improvements and include the locations of those utilities on the existing utilities maps. This work will not include subsurface utility engineering (SUE) or identifying the depth of existing utilities using pot-holing or other SUE methodologies. LAN will complete one (1) phone call or virtual meeting with each of the third-party utility owners to ask or answer questions about the locations of their utilities.

    b. LAN will utilize the GIS data collected from the City of Corpus Christi (Task 100) and develop existing utility base maps for water, wastewater, stormwater, and gas utilities using ARC-GIS software.

    c. LAN will tabulate all existing utilities in a matrix spreadsheet. This tool could be used to track conflicts and relocations as the project develops further.

Task 102 – Opinions of Probable Project Costs

1. Cost Determination
   LAN will utilize the information gathered and research available databases such as the RSMeans, TXDOT Statewide Monthly Construction Cost Averages, and CIVCAST, to develop conceptual level opinions of probable costs for each of the options listed above. Project costs for each option will be separated into the following major categories:
    - Permitting / Regulatory
    - Land / Right-of-Way
    - Design / Surveying / Testing (10% of Construction)
    - Construction
    - Project / Program Management (4% of Construction)
    - Project Continency (25% or total)

   Construction Costs will include the following sub-categories:

    - General
    - Sitework / Earthwork / Dredging
    - Stormwater Conveyance
    - Structural / Bridge
    - Mobility / Transportation
    - Utilities

2. Cost Validation / Quality Control
   LAN will perform an internal quality control review of the opinions of probable projects costs in accordance with LAN Quality Control / Assurance Best Management Practices.

Task 103 – Technical Memorandum

1. Draft Memorandum
   LAN will complete a Draft Technical Memorandum that includes the results and determinations made in the tasks above. The report will include descriptions of the features and improvements recommended for each option, summarize the data used and resources to determine unit costs, and summarize project costs for each option. The report Appendices will include project exhibits, existing utility data, and the detailed opinions of probable costs for each option.

2. Final Report - LAN will receive review comments from the client and incorporate those into a final, signed, and sealed technical memorandum.

Summary of Fees / Schedule

LAN proposes to complete Phase II of this project on a lump sum basis for a total contract amount **$123,745.00**.

The following table summarizes the fees associated with each task under this proposal:

Task	Proposed Fee
Task 100 – Data Collection & PM	$ 9,319.00
Task 101 – Conceptual Layouts & Existing Utilities	$ 52,636.00
Task 102 – Opinions of Probable Project Costs	$ 41,210.00
Task 103 – Technical Memorandum	$ 20,580.00
Phase II Total	**$ 123,745.00**

The work detailed above will be substantially complete in **8-weeks** from Notice to Proceed.

Labor Rates:

The following are LAN's labor rates for the personnel assigned to this project:

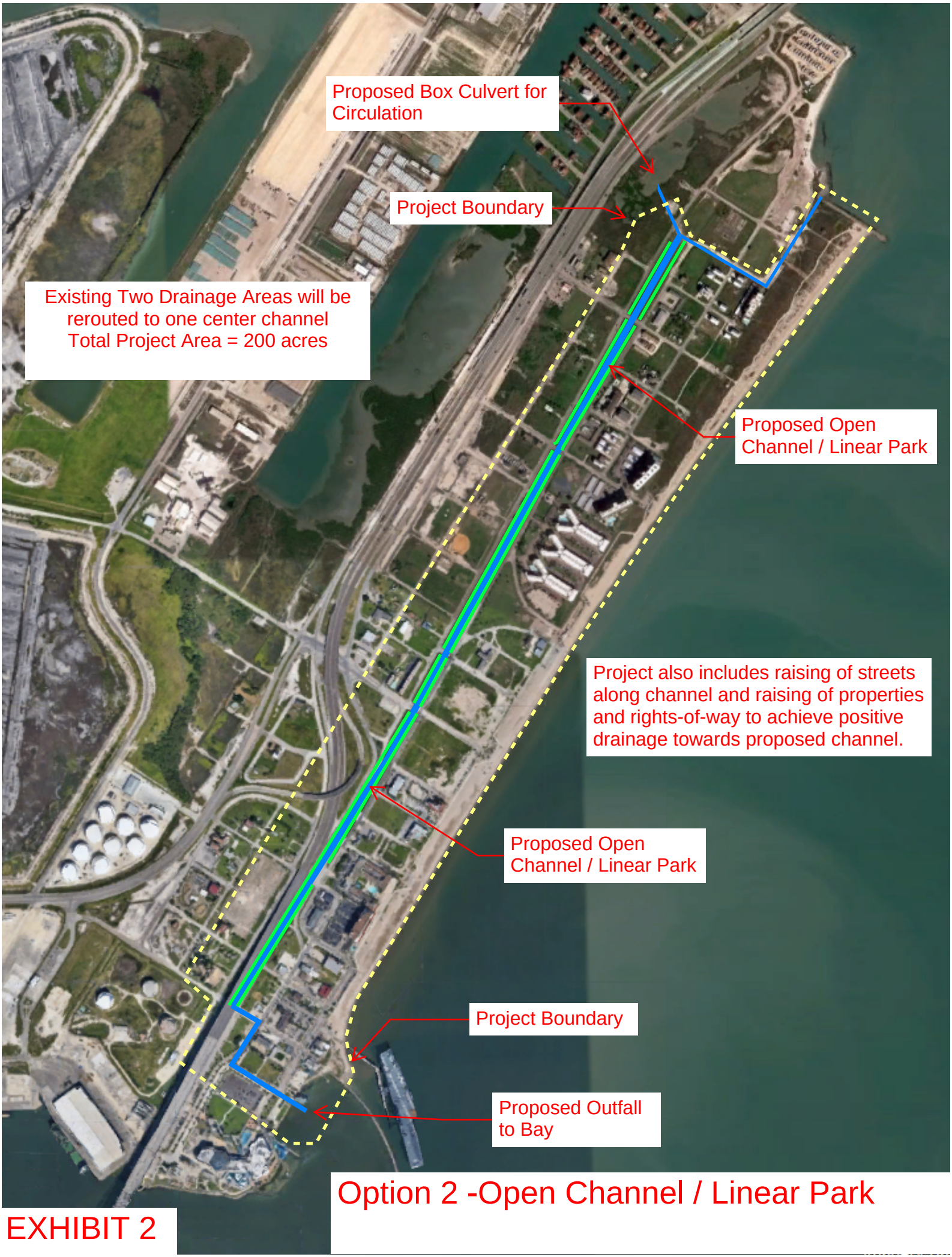
Personnel	Rate / Hr
Principal-in-Charge / Regulatory Support	$ 267.00
Senior Project Manager	$ 240.00
Quality Control Manager	$ 234.00
Project Manager	$ 205.00
Right-of-way Manager	$ 256.00
Senior Bridge Engineer	$ 240.00
Utility Coordinator	$ 212.00
Structural Engineer	$ 190.00
Engineer VI	$ 186.00
Right-of-way Agent	$ 163.00
Senior Designer	$ 160.00
Engineer II	$ 108.00
Engineer I	$ 102.00
CAD /GIS	$ 119.00

Level of Effort:

			Labor Category														
		897	7	12	16	66			48		40		156		64	152
		Total	PIC	Sr PM	QCM	PM	ROW Mgr	Sr Bridge	Util Coord	Structural	Engr VI	ROW Agent	Engr II	Engr I	Designer	CADD
Phase and/or		Hours	$ 267.00	$ 240.00	$ 234.00	$ 205.00	$ 256.00	$ 240.00	$ 212.00	$ 190.00	$ 186.00	$ 163.00	$ 108.00	$ 102.00	$ 160.00	$ 119.00
Task Code	Task Description															
100.1	Data Collection	44				8			4				16	16		
100.2	Meetings	15	3	6		6										
101.1	Conceptual Layouts	205		1		12									64	128
101.2	Third-Party Utility Research	96							16				40	40		
101.2	Develop Utility Maps	64				4			4				16	16		24
101.2	Utility Matrix	38				2			4				16	16		
102.1	Cost Determination	266	1	1		8	12	8	12	8	24	12	20	160		
102.2	Cost Validation / Quality Control	23	1	2	8	8			4							
103.1	Draft Technical Memorandum	116	1	1	4	16			2		12		40	40		
103.2	Final Technical Memorandum	30	1	1	4	2			2		4		8	8		
	Total	897	7	12	16	66	12	8	48	8	40	12	156	296	64	152

Exhibit 1

Option 1 - Closed Conduit / Underground System Improvements



Option 2 -Open Channel / Linear Park

EXHIBIT 2

EXHIBIT 3A

Option 3A -Navigable Canal (Outfall at North Jetties)

Option 3B -Navigable Canal (Outfall thru Beach)

EXHIBIT 3B