

PROFESSIONAL SERVICES AGREEMENT

This Professional Services Agreement ("Agreement") is dated February 18, 2020 ("Effective Date") and is between the City of Manhattan Beach, a California municipal corporation ("City") and Environmental Science Associates, a California corporation ("Consultant"). City and Consultant are sometimes referred to herein as the "Parties", and individually as a "Party".

RECITALS

A. City issued a Request for Proposals No. 1220-20 on September 6, 2019, titled "Professional Consultant Services for Coastal Resiliency Program". Consultant submitted a proposal dated October 7, 2019 in response to the RFP.

B. Consultant represents that it is fully qualified to perform such services by virtue of its experience and the training, education and expertise of its principals and employees.

C. City desires to retain Consultant as an independent contractor and Consultant desires to serve City to perform these services in accordance with the terms and conditions of this Agreement.

The Parties therefore agree as follows:

1. Consultant's Services.

A. Scope of Services. Consultant shall perform the services described in the Scope of Services attached as **Exhibit A** (the "Services") for the Climate Resiliency Project. The Services include providing project management, scientific analysis, and plans for the City's Climate Resiliency Project ("Project") including the creation of a Climate Action and Adaptation Plan, Sea Level Rise Analyses, and a Local Coastal Program and Land Use Plan (LCP-LUP) Update. The main components of the Project include (1) project management and drafting of SLR Vulnerability Assessment; (2) Multi-hazard Confluence Modeling on Stormwater Infrastructure Report; (3) development of a Climate Action & Adaptation Plan; and (4) development of LCP-LUP Language. The City may request, in writing, changes in the Scope of Services to be performed. Any changes mutually agreed upon by the Parties, and any increase or decrease in compensation, shall be incorporated by written amendments to this Agreement.

B. Party Representatives. For the purposes of this Agreement, the City Representative shall be the City Manager, or such other person designated in writing by the City Manager (the "City Representative"). For the purposes of this Agreement, the Consultant Representative shall be Reema Shakra, Senior Planner (the "Consultant Representative"). The Consultant Representative shall directly manage Consultant's Services under this Agreement. Consultant shall not change the Consultant Representative without City's prior written consent.

C. Time for Performance. Consultant shall commence the Services on the

Effective Date and shall perform all Services by the deadline established by the City Representative or, if no deadline is established, with reasonable diligence.

D. Standard of Performance. Consultant shall perform all Services under this Agreement in accordance with the standard of care generally exercised by like professionals under similar circumstances and in a manner reasonably satisfactory to City.

E. Personnel. Consultant has, or will secure at its own expense, all personnel required to perform the Services required under this Agreement. All of the Services required under this Agreement shall be performed by Consultant or under its supervision, and all personnel engaged in the work shall be qualified to perform such Services.

F. Compliance with Laws. Consultant shall comply with all applicable federal, state and local laws, ordinances, codes, regulations and requirements.

G. Permits and Licenses. Consultant shall obtain and maintain during the Agreement term all necessary licenses, permits and certificates required by law for the provision of Services under this Agreement, including a business license.

2. Term of Agreement. The term of this Agreement shall be from the Effective Date through May 3, 2021, unless sooner terminated as provided in Section 12 of this Agreement or extended.

3. Compensation.

A. Compensation. As full compensation for Services satisfactorily rendered, City shall pay Consultant at the rates set forth in the Approved Fee Schedule. In no event shall Consultant be paid more than \$370,765 (the "Maximum Compensation") for such Services. The Maximum Compensation includes a \$25,000 contingency budget, which can be paid only for services authorized by the City Representative pursuant to paragraph C of this Section.

B. Expenses. City shall only reimburse Consultant for those actual and necessary expenses expressly set forth in Exhibit A. In no event shall reimbursable expenses collectively exceed the total sum of \$1,200.

C. Unauthorized Services and Expenses. City will not pay for any services not specified in the Scope of Services, unless the City Council or the City Representative, if applicable, and the Consultant Representative authorize such services in writing prior to Consultant's performance of those services or incurrence of additional expenses. Any additional services or expenses authorized by the City Council, or (where authorized) the City Manager shall be compensated at the rates set forth in Exhibit A, or, if not specified, at a rate mutually agreed to by the Parties. City shall make payment for additional services and expenses in accordance with Section 4 of this Agreement.

4. Method of Payment.

A. Invoices. Consultant shall submit to City an invoice, on a monthly basis, for

the Services performed pursuant to this Agreement. Each invoice shall itemize the Services rendered during the billing period, hourly rates charged, if applicable, and the amount due. City shall review each invoice and notify Consultant in writing within ten Business days of receipt of any disputed invoice amounts.

B. Payment. City shall pay all undisputed invoice amounts within 30 calendar days after receipt up to the Maximum Compensation set forth in Section 3 of this Agreement. City does not pay interest on past due amounts. City shall not withhold federal payroll, state payroll or other taxes, or other similar deductions, from payments made to Consultant. Notwithstanding the preceding sentence, if Consultant is a nonresident of California, City will withhold the amount required by the Franchise Tax Board pursuant to Revenue and Taxation Code Section 18662 and applicable regulations.

C. Audit of Records. Consultant shall make all records, invoices, time cards, cost control sheets and other records maintained by Consultant in connection with this Agreement available during Consultant's regular working hours to City for review and audit by City.

5. Independent contractor. Consultant is, and shall at all times remain as to City, a wholly independent contractor. Consultant shall have no power to incur any debt, obligation, or liability on behalf of City. Neither City nor any of its agents shall have control over the conduct of Consultant or any of Consultant's employees, except as set forth in this Agreement. Consultant shall not, at any time, or in any manner, represent that it or any of its officers, agents or employees are in any manner employees of City.

6. Information and Documents.

A. Consultant covenants that all data, reports, documents, discussion, or other information (collectively "Data") developed or received by Consultant or provided for performance of this Agreement are deemed confidential and shall not be disclosed or released by Consultant without prior written authorization by City. City shall grant such authorization if applicable law requires disclosure. Consultant, its officers, employees, agents, or subcontractors shall not without written authorization from the City Manager or unless requested in writing by the City Attorney, voluntarily provide declarations, letters of support, testimony at depositions, response to interrogatories or other information concerning the work performed under this Agreement or relating to any project or property located within the City. Response to a subpoena or court order shall not be considered "voluntary," provided Consultant gives City notice of such court order or subpoena.

B. Consultant shall promptly notify City should Consultant, its officers, employees, agents or subcontractors be served with any summons, complaint, subpoena, notice of deposition, request for documents, interrogatories, request for admissions or other discovery request, court order or subpoena from any party regarding this Agreement and the work performed thereunder or with respect to any project or property located within the City. City may, but has no obligation to, represent Consultant or be present at any deposition, hearing or similar proceeding. Consultant agrees to cooperate fully with City and to provide City with the opportunity to review any response to discovery requests

provided by Consultant. However, City's right to review any such response does not imply or mean the right by City to control, direct or rewrite the response.

C. All Data required to be furnished to City in connection with this Agreement shall become City's property, and City may use all or any portion of the Data submitted by Consultant as City deems appropriate. Upon completion of, or in the event of termination or suspension of this Agreement, all original documents, designs, drawings, maps, models, computer files containing data generated for the Services, surveys, notes, and other documents prepared in the course of providing the Services shall become City's sole property and may be used, reused or otherwise disposed of by City without Consultant's permission. Consultant may take and retain copies of the written products as desired, but the written products shall not be the subject of a copyright application by Consultant.

D. Consultant's covenants under this Section shall survive the expiration or termination of this Agreement.

7. Conflicts of Interest. Consultant and its officers, employees, associates and subcontractors, if any, shall comply with all conflict of interest statutes of the State of California applicable to Consultant's Services under this Agreement, including the Political Reform Act (Gov. Code § 81000, *et seq.*) and Government Code Section 1090. During the term of this Agreement, Consultant may perform similar Services for other clients, but Consultant and its officers, employees, associates and subcontractors shall not, without the City Representative's prior written approval, perform work for another person or entity for whom Consultant is not currently performing work that would require Consultant or one of its officers, employees, associates or subcontractors to abstain from a decision under this Agreement pursuant to a conflict of interest statute. Consultant shall incorporate a clause substantially similar to this Section into any subcontract that Consultant executes in connection with the performance of this Agreement.

8. Indemnification, Hold Harmless, and Duty to Defend.

A. Indemnities.

1) To the fullest extent permitted by law, Consultant shall, at its sole cost and expense, defend, hold harmless and indemnify City and its elected officials, officers, attorneys, agents, employees, designated volunteers, successors, assigns and those City agents serving as independent contractors in the role of City officials (collectively "Indemnitees"), from and against any and all damages, costs, expenses, liabilities, claims, demands, causes of action, proceedings, expenses, judgments, penalties, liens, and losses of any nature whatsoever, including fees of accountants, attorneys, or other professionals and all costs associated therewith and the payment of all consequential damages (collectively "Liabilities"), in law or equity, whether actual, alleged or threatened, which arise out of, are claimed to arise out of, pertain to, or relate to the acts or omissions of Consultant, its officers, agents, servants, employees, subcontractors, materialmen, consultants or their officers, agents, servants or employees (or any entity or individual that Consultant shall bear the legal liability thereof) in the performance of this Agreement, including the Indemnitees' active or passive negligence,

except for Liabilities arising from the sole negligence or willful misconduct of the Indemnitees as determined by court decision or by the agreement of the Parties. Consultant shall defend the Indemnitees in any action or actions filed in connection with any Liabilities with counsel of the Indemnitees' choice, and shall pay all costs and expenses, including all attorneys' fees and experts' costs actually incurred in connection with such defense. Consultant shall reimburse the Indemnitees for any and all legal expenses and costs incurred by Indemnitees in connection therewith.

2) Consultant shall pay all required taxes on amounts paid to Consultant under this Agreement, and indemnify and hold City harmless from any and all taxes, assessments, penalties, and interest asserted against City by reason of the independent contractor relationship created by this Agreement. Consultant shall fully comply with the workers' compensation law regarding Consultant and Consultant's employees. Consultant shall indemnify and hold City harmless from any failure of Consultant to comply with applicable workers' compensation laws. City may offset against the amount of any fees due to Consultant under this Agreement any amount due to City from Consultant as a result of Consultant's failure to promptly pay to City any reimbursement or indemnification arising under this subparagraph A.2).

3) Consultant shall obtain executed indemnity agreements with provisions identical to those in this Section from each and every subcontractor or any other person or entity involved by, for, with or on behalf of Consultant in the performance of this Agreement. If Consultant fails to obtain such indemnity obligations, Consultant shall be fully responsible and indemnify, hold harmless and defend the Indemnitees from and against any and all Liabilities at law or in equity, whether actual, alleged or threatened, which arise out of, are claimed to arise out of, pertain to, or relate to the acts or omissions of Consultant's subcontractor, its officers, agents, servants, employees, subcontractors, materialmen, consultants or their officers, agents, servants or employees (or any entity or individual that Consultant's subcontractor shall bear the legal liability thereof) in the performance of this Agreement, including the Indemnitees' active or passive negligence, except for Liabilities arising from the sole negligence or willful misconduct of the Indemnitees as determined by court decision or by the agreement of the Parties.

B. Workers' Compensation Acts not Limiting. Consultant's indemnifications and obligations under this Section, or any other provision of this Agreement, shall not be limited by the provisions of any workers' compensation act or similar act. Consultant expressly waives its statutory immunity under such statutes or laws as to City, its officers, agents, employees and volunteers.

C. Insurance Requirements not Limiting. City does not, and shall not, waive any rights that it may possess against Consultant because of the acceptance by City, or the deposit with City, of any insurance policy or certificate required pursuant to this Agreement. The indemnities in this Section shall apply regardless of whether or not any insurance policies are determined to be applicable to the Liabilities, tax, assessment, penalty or interest asserted against City.

D. Survival of Terms. Consultant's indemnifications and obligations under this Section shall survive the expiration or termination of this Agreement.

9. Insurance.

A. Minimum Scope and Limits of Insurance. Consultant shall procure and at all times during the term of this Agreement carry, maintain, and keep in full force and effect, insurance as follows:

1) Commercial General Liability Insurance with a minimum limit of \$2,000,000.00 per occurrence for bodily injury, personal injury and property damage and a general aggregate limit of \$2,000,000.00 per project or location. If Consultant is a limited liability company, the commercial general liability coverage shall be amended so that Consultant and its managers, affiliates, employees, agents and other persons necessary or incidental to its operation are insureds.

2) Automobile Liability Insurance for any owned, non-owned or hired vehicle used in connection with the performance of this Agreement with a combined single limit of \$2,000,000.00 per accident for bodily injury and property damage. If Consultant does not use any owned, non-owned or hired vehicles in the performance of Services under this Agreement, Consultant shall obtain a non-owned auto endorsement to the Commercial General Liability policy required under subparagraph A.1) of this Section.

3) Workers' Compensation Insurance as required by the State of California and Employer's Liability Insurance with a minimum limit of \$1,000,000.00 per accident for bodily injury or disease. If Consultant has no employees while performing Services under this Agreement, workers' compensation policy is not required, but Consultant shall execute a declaration that it has no employees.

4) Professional Liability/Errors and Omissions Insurance with minimum limits of \$2,000,000.00 per claim and in aggregate.

B. Acceptability of Insurers. The insurance policies required under this Section shall be issued by an insurer admitted to write insurance in the State of California with a rating of A: VII or better in the latest edition of the A.M. Best Insurance Rating Guide. Self insurance shall not be considered to comply with the insurance requirements under this Section.

C. Additional Insured. The commercial general and automobile liability policies shall contain an endorsement naming City and its elected and appointed officials, officers, employees, agents and volunteers as additional insureds. This provision shall also apply to any excess/umbrella liability policies.

D. Primary and Non-Contributing. The insurance policies required under this Section shall apply on a primary non-contributing basis in relation to any other insurance or self-insurance available to City. Any insurance or self-insurance maintained by City, its elected and appointed officials, officers, employees, agents or volunteers, shall be in excess of Consultant's insurance and shall not contribute with it.

E. Consultant's Waiver of Subrogation. The insurance policies required under

this Section shall not prohibit Consultant and Consultant's employees, agents or subcontractors from waiving the right of subrogation prior to a loss. Consultant hereby waives all rights of subrogation against City.

F. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by City. At City's option, Consultant shall either reduce or eliminate the deductibles or self-insured retentions with respect to City, or Consultant shall procure a bond guaranteeing payment of losses and expenses.

G. Cancellations or Modifications to Coverage. Consultant shall not cancel, reduce or otherwise modify the insurance policies required by this Section during the term of this Agreement. The commercial general and automobile liability policies required under this Agreement shall be endorsed to state that should the issuing insurer cancel the policy before the expiration date, the issuing insurer will endeavor to mail 30 days' prior written notice to City. If any insurance policy required under this Section is canceled or reduced in coverage or limits, Consultant shall, within two Business Days of notice from the insurer, phone, fax or notify City via certified mail, return receipt requested, of the cancellation of or changes to the policy.

H. City Remedy for Noncompliance. If Consultant does not maintain the policies of insurance required under this Section in full force and effect during the term of this Agreement, or in the event any of Consultant's policies do not comply with the requirements under this Section, City may either immediately terminate this Agreement or, if insurance is available at a reasonable cost, City may, but has no duty to, take out the necessary insurance and pay, at Consultant's expense, the premium thereon. Consultant shall promptly reimburse City for any premium paid by City or City may withhold amounts sufficient to pay the premiums from payments due to Consultant.

I. Evidence of Insurance. Prior to the performance of Services under this Agreement, Consultant shall furnish City's Risk Manager with a certificate or certificates of insurance and all original endorsements evidencing and effecting the coverages required under this Section. The endorsements are subject to City's approval. Consultant may provide complete, certified copies of all required insurance policies to City. Consultant shall maintain current endorsements on file with City's Risk Manager. Consultant shall provide proof to City's Risk Manager that insurance policies expiring during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Consultant shall furnish such proof at least two weeks prior to the expiration of the coverages.

J. Indemnity Requirements not Limiting. Procurement of insurance by Consultant shall not be construed as a limitation of Consultant's liability or as full performance of Consultant's duty to indemnify City under Section 8 of this Agreement.

K. Broader Coverage/Higher Limits. If Consultant maintains broader coverage and/or higher limits than the minimums required above, City requires and shall be entitled to the broader coverage and/or the higher limits maintained by Consultant. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.

L. Subcontractor Insurance Requirements. Consultant shall require each of its subcontractors that perform Services under this Agreement to maintain insurance coverage that meets all of the requirements of this Section.

10. Mutual Cooperation.

A. City's Cooperation. City shall provide Consultant with all pertinent Data, documents and other requested information as is reasonably available for Consultant's proper performance of the Services required under this Agreement.

B. Consultant's Cooperation. In the event any claim or action is brought against City relating to Consultant's performance of Services rendered under this Agreement, Consultant shall render any reasonable assistance that City requires.

11. Records and Inspections. Consultant shall maintain complete and accurate records with respect to time, costs, expenses, receipts, correspondence, and other such information required by City that relate to the performance of the Services. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. Consultant shall provide free access to City, its designees and representatives at reasonable times, and shall allow City to examine and audit the books and records, to make transcripts therefrom as necessary, and to inspect all work, data, documents, proceedings and activities related to this Agreement. Such records, together with supporting documents, shall be maintained for a period of three years after receipt of final payment.

12. Termination of Agreement.

A. Right to Terminate. City may terminate this Agreement at any time, at will, for any reason or no reason, after giving written notice to Consultant at least five calendar days before the termination is to be effective. Consultant may terminate this Agreement at any time, at will, for any reason or no reason, after giving written notice to City at least 60 calendar days before the termination is to be effective.

B. Obligations upon Termination. Consultant shall cease all work under this Agreement on or before the effective date of termination specified in the notice of termination. In the event of City's termination of this Agreement due to no fault or failure of performance by Consultant, City shall pay Consultant based on the percentage of work satisfactorily performed up to the effective date of termination. In no event shall Consultant be entitled to receive more than the amount that would be paid to Consultant for the full performance of the Services required by this Agreement. Consultant shall have no other claim against City by reason of such termination, including any claim for compensation.

13. Force Majeure. Consultant shall not be liable for any failure to perform its obligations under this Agreement if Consultant presents acceptable evidence, in City's sole judgment, that such failure was due to acts of God, embargoes, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or

hostile governmental action, civil commotion, fire or other casualty, or other causes beyond Consultant's reasonable control and not due to any act by Consultant.

14. Default.

A. Consultant's failure to comply with the provisions of this Agreement shall constitute a default. In the event that Consultant is in default for cause under the terms of this Agreement, City shall have no obligation or duty to continue compensating Consultant for any work performed after the date of default.

B. In addition to the right to terminate pursuant to Section 12, if the City Manager determines that Consultant is in default in the performance of any of the terms or conditions of this Agreement, City shall serve Consultant with written notice of the default. Consultant shall have ten calendar days after service upon it of the notice in which to cure the default by rendering a satisfactory performance. In the event that Consultant fails to cure its default within such period of time, City may, notwithstanding any other provision of this Agreement, terminate this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement.

C. In addition to the right to terminate pursuant to Section 12, if the Consultant determines that the City is in default in the performance under this Agreement, including Section 4.B, Consultant may serve City with written notice of the default. City shall have 20 calendar days after service upon it of the notice in which to cure the default by rendering a satisfactory performance. In the event that City fails to cure its default within such period of time, Consultant may, notwithstanding any other provision of this Agreement, suspend performance under this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement. The time for Consultant to perform any service under the Agreement shall be extended for the period of suspension.

15. Notices. Any notice, consent, request, demand, bill, invoice, report or other communication required or permitted under this Agreement shall be in writing and conclusively deemed effective: (a) on personal delivery, (b) on confirmed delivery by courier service during Consultant's and City's regular business hours, or (c) three Business Days after deposit in the United States mail, by first class mail, postage prepaid, and addressed to the Party to be notified as set forth below:

If to City:

Attn: Dana Murray
City of Manhattan Beach
1400 Highland Avenue
Manhattan Beach, California 90266
Telephone: 310-802-5508
Email: dmurray@citymb.info

If to Consultant:

Reema Shakra
Environmental Science Associates
626 Wilshire Blvd., Suite 1100
Los Angeles, CA 90017

With a courtesy copy to:

Quinn M. Barrow, City Attorney
1400 Highland Avenue
Manhattan Beach, California 90266
Telephone: (310) 802-5061
Email: qbarrow@rwglaw.com

16. Non-Discrimination and Equal Employment Opportunity. In the performance of this Agreement, Consultant shall not discriminate against any employee, subcontractor or applicant for employment because of race, color, religious creed, sex, gender, gender identity, gender expression, marital status, national origin, ancestry, age, physical disability, mental disability, medical condition, genetic information, sexual orientation or other basis prohibited by law. Consultant will take affirmative action to ensure that subcontractors and applicants are employed, and that employees are treated during employment, without regard to their race, color, religious creed, sex, gender, gender identity, gender expression, marital status, national origin, ancestry, age, physical disability, mental disability, medical condition, genetic information or sexual orientation.

17. Prohibition of Assignment and Delegation. Consultant shall not assign any of its rights or delegate any of its duties under this Agreement, either in whole or in part, without City's prior written consent. City's consent to an assignment of rights under this Agreement shall not release Consultant from any of its obligations or alter any of its primary obligations to be performed under this Agreement. Any attempted assignment or delegation in violation of this Section shall be void and of no effect and shall entitle City to terminate this Agreement. As used in this Section, "assignment" and "delegation" means any sale, gift, pledge, hypothecation, encumbrance or other transfer of all or any portion of the rights, obligations, or liabilities in or arising from this Agreement to any person or entity, whether by operation of law or otherwise, and regardless of the legal form of the transaction in which the attempted transfer occurs.

18. No Third Party Beneficiaries Intended. This Agreement is made solely for the benefit of the Parties to this Agreement and their respective successors and assigns, and no other person or entity may have or acquire a right by virtue of this Agreement.

19. Waiver. No delay or omission to exercise any right, power or remedy accruing to City under this Agreement shall impair any right, power or remedy of City, nor shall it be construed as a waiver of, or consent to, any breach or default. No waiver of any breach, any failure of a condition, or any right or remedy under this Agreement shall be (1) effective unless it is in writing and signed by the Party making the waiver, (2) deemed to be a waiver of, or consent to, any other breach, failure of a condition, or right or remedy, or (3) deemed to constitute a continuing waiver unless the writing expressly so states.

20. Final Payment Acceptance Constitutes Release. The acceptance by Consultant of the final payment made under this Agreement shall operate as and be a release of City from all claims and liabilities for compensation to Consultant for anything done, furnished or relating to Consultant's work or services. Acceptance of payment shall be any negotiation of City's check or the failure to make a written extra compensation claim within ten calendar days of the receipt of that check. However, approval or payment by City shall

not constitute, nor be deemed, a release of the responsibility and liability of Consultant, its employees, subcontractors and agents for the accuracy and competency of the information provided and/or work performed; nor shall such approval or payment be deemed to be an assumption of such responsibility or liability by City for any defect or error in the work prepared by Consultant, its employees, subcontractors and agents.

21. Corrections. In addition to the above indemnification obligations, Consultant shall correct, at its expense, all errors in the work which may be disclosed during City's review of Consultant's report or plans. Should Consultant fail to make such correction in a reasonably timely manner, such correction may be made by City, and the cost thereof shall be charged to Consultant. In addition to all other available remedies, City may deduct the cost of such correction from any retention amount held by City or may withhold payment otherwise owed Consultant under this Agreement up to the amount of the cost of correction.

22. Non-Appropriation of Funds. Payments to be made to Consultant by City for services performed within the current fiscal year are within the current fiscal budget and within an available, unexhausted fund. In the event that City does not appropriate sufficient funds for payment of Consultant's services beyond the current fiscal year, this Agreement shall cover payment for Consultant's services only to the conclusion of the last fiscal year in which City appropriates sufficient funds and shall automatically terminate at the conclusion of such fiscal year.

23. Exhibits. Exhibit A constitutes a part of this Agreement and is incorporated into this Agreement by this reference. If any inconsistency exists or arises between a provision of this Agreement and a provision of any exhibit, or between a provision of this Agreement and a provision of Consultant's proposal, the provisions of this Agreement shall control.

24. Entire Agreement and Modification of Agreement. This Agreement and all exhibits referred to in this Agreement constitute the final, complete and exclusive statement of the terms of the agreement between the Parties pertaining to the subject matter of this Agreement and supersede all other prior or contemporaneous oral or written understandings and agreements of the Parties. No Party has been induced to enter into this Agreement by, nor is any Party relying on, any representation or warranty except those expressly set forth in this Agreement. This Agreement may not be amended, nor any provision or breach hereof waived, except in a writing signed by both Parties.

25. Headings. The headings in this Agreement are included solely for convenience of reference and shall not affect the interpretation of any provision of this Agreement or any of the rights or obligations of the Parties to this Agreement.

26. Word Usage. Unless the context clearly requires otherwise, (a) the words "shall," "will" and "agrees" are mandatory and "may" is permissive; (b) "or" is not exclusive; and (c) "includes" or "including" are not limiting.

27. Time of the Essence. Time is of the essence in respect to all provisions of this Agreement that specify a time for performance; provided, however, that the foregoing shall not be construed to limit or deprive a Party of the benefits of any grace or use period

allowed in this Agreement.

28. Business Days. "Business days" means days Manhattan Beach City Hall is open for business.

29. Governing Law and Choice of Forum. This Agreement, and any dispute arising from the relationship between the Parties to this Agreement, shall be governed by and construed in accordance with the laws of the State of California, except that any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not be applied in interpreting this Agreement. Any dispute that arises under or relates to this Agreement (whether contract, tort or both) shall be resolved in a superior court with geographic jurisdiction over the City of Manhattan Beach.

30. Attorneys' Fees. In any litigation or other proceeding by which a Party seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing Party shall be entitled to recover all attorneys' fees, experts' fees, and other costs actually incurred in connection with such litigation or other proceeding, in addition to all other relief to which that Party may be entitled.

31. Severability. If a court of competent jurisdiction holds any provision of this Agreement to be illegal, invalid or unenforceable for any reason, the validity of and enforceability of the remaining provisions of this Agreement shall not be affected and continue in full force and effect.

32. Counterparts. This Agreement may be executed in multiple counterparts, all of which shall be deemed an original, and all of which will constitute one and the same instrument.

33. Corporate Authority. Each person executing this Agreement on behalf of his or her Party warrants that he or she is duly authorized to execute this Agreement on behalf of that Party and that by such execution, that Party is formally bound to the provisions of this Agreement.

The Parties, through their duly authorized representatives are signing this Agreement on the date stated in the introductory clause.

City:

City of Manhattan Beach,
a California municipal corporation


Consultant:

Environmental Science Associates
a California corporation

By: _____

Name: Bruce Moe
Title: City Manager

By: _____


Name: Bobbette Biddulph
Title: Senior Vice President

ATTEST:

By: _____

Name: _____
Title: _____

By: _____

Name: Liza Tamura
Title: City Clerk

PROOF OF AUTHORITY TO BIND CONTRACTING
PARTY REQUIRED

APPROVED AS TO FORM:

By:  _____

Name: Quinn M. Barrow
Title: City Attorney

APPROVED AS TO FISCAL CONTENT:

By:  _____

Name: Steve S. Charelian
Title: Finance Director

The following ESA Officers and select other Authorized Contract Signers are authorized to sign contracts, modifications, and subcontracts. Following are the authorized individuals by ESA office.

***Note: Individuals highlighted in BOLD are authorized to sign engineering and design contracts.**

See [Signature Authority Policy](#) for guidance on signature authority levels and [Contract Review FAQs](#)

AUTHORIZED ESA CONTRACT SIGNERS: OFFICERS + CERTIFIED CONTRACT SIGNERS

NORTHWEST REGION	
Seattle Office	<ul style="list-style-type: none"> Molly Adolfson, Sr. VP, NW Water Director Margaret Clancy, VP, NW Regional Director Mike Leech, VP, GIS Director Teresa Vanderburg, VP, NW Biological Resources Director
Portland Office	<ul style="list-style-type: none"> Joe Richards, P.E., NW EH Director* Susan Cunningham, Program Manager, NW Biological Resources Maureen Raad, Landscape Architect*
NORTHERN CALIFORNIA REGION	
Petaluma Office	<ul style="list-style-type: none"> Betty Andrews, P.E., VP, Sr. Program Manager EH* Jim O'Toole, Sr. VP, Water Practice Leader
San Francisco	<ul style="list-style-type: none"> Bob Battalio, P.E., VP, Chief Engineer* Annette Bonilla, VP, HR Director Ann Borgonovo, P.E., VP, EH & Design Practice Leader* Albert Cuisinot, Sr. VP, CFO and Corporate Secretary Eric Haase, Sr. VP, Chief Operating Officer Kate Mirante, VP, NorCal Marketing and Business Development Director Leslie Moulton-Post, President, CEO Gary Oates, Sr. VP, Strategic Client Director Janna Scott, SF Office Leader
Oakland Office	<ul style="list-style-type: none"> Christie Beeman, PE, NorCal EH Director* Jill Hamilton, BA Water Group Deputy Director
Sacramento Office	<ul style="list-style-type: none"> Steve Alverson, Sr. VP, Strategic Client Director Brian Boxer, Sr. VP, NorCal Regional Director Daniel Dameron, VP, NorCal Community Development Director Erich Fischer, Sr. VP Biological Resources Practice Leader Cathy McEfee, VP, Central Valley Water Group Director Dana McGowan, VP, Cultural Resources Practice Leader Gerrit Platenkamp, VP, NorCal Biological Resources Group Director
SOUTHERN CALIFORNIA REGION	
Ventura Office	<ul style="list-style-type: none"> Monica Strauss, Cultural Resources Director
Santa Monica Office	<ul style="list-style-type: none"> Terri Avila, VP, Community Development Practice Leader Jay Ziff, Community Development Program Director
Los Angeles Office	<ul style="list-style-type: none"> Tom Barnes, VP, SoCal Water and Energy Director
Pasadena Office	<ul style="list-style-type: none"> Heidi Rous, Air Quality Services Director
Irvine Office	<ul style="list-style-type: none"> Steve Nelson, VP, SoCal Biological Resources Director
San Diego Office	<ul style="list-style-type: none"> Bobbette Biddulph, Sr. VP SoCal Regional Director
SOUTHEAST REGION	
Orlando Office	<ul style="list-style-type: none"> Mike Arnold, Sr. VP, Airports Practice Leader Julie Sullivan, VP, Southeast Regional Director
Tampa Office	<ul style="list-style-type: none"> Tom Ries, VP, Southeast Biological Resources Director Doug Robison, VP Southeast Biological Resources Director Sandy Scheda, VP, Southeast Transportation Director

EXHIBIT A: SCOPE OF SERVICES, FEE SCHEDULE, & REIMBURSABLE EXPENSES

Climate Resiliency Project: Scope of Services & Project Work Plan

ESA has a long and rich history of preparing local coastal programs, sea level rise adaptation plans, climate action plans, and other relevant studies and projects as described throughout this proposal. Our team has the proven ability to communicate complex technical information to the public which is a critical component of this project. During the outreach effort, which we assume to be led by the City, ESA will support the process and help to balance the ongoing dynamics between a wide variety of competing community interests.

For the purpose of this project, ESA has assembled an integrated team of experts who will be directly responsible for implementing the City's goal to proactively plan for sea level rise in order to protect a wide variety of significant places including natural resources, popular destinations, and local facilities while minimizing impacts to residents, businesses, and visitors.

As outlined in the RFP, the City has identified four roles suitable for project contractors for this project. ESA is proposing to serve as the prime consultant leading a team of experts in the provision of Contractor Roles 1-4. The following scope of work is summarized by contractor role with corresponding subtasks; associated team members, deliverables, timeframes, and number of meetings is provided for each subtask.

ESA will build from the work the City has already completed and will follow the approach outlined below.

Role 1: Project Manager, Drafting SLR Vulnerability Assessment, Tracking/Reporting, Coordinating Project Team and Outreach

Role 2: Multi-hazard Confluence Modeling on Stormwater Infrastructure Report

Role 3: Develop Climate Action & Adaptation Plan

Role 4: Develop LCP- LUP Language

Role 1: Project Manager, Drafting SLR Vulnerability Assessment, Tracking/Reporting, Coordinating Project Team and Outreach

The key to a successful partnership between the City and the consultant team on the project will be strong collaboration and coordination. ESA will provide Project Management duties for the entire project. The project manager will be the day-to-day point of contact for the City and will delegate tasks to technical staff and oversee the completion of tasks and milestones through the life of the project. ESA will schedule activities concurrently to shorten time frames and to allow maximum integration of multi-disciplinary technical tasking and administrative efforts. Cost-effective delivery of products and services is a major component to a successful project and client satisfaction. Our in-house accounting system provides weekly project cost information that is linked to our electronic timesheet and vendor invoice process. Our project manager will review time billed to tasks on a weekly basis, and proactively address any potential problem areas. For purposes of cost-estimating, ESA assumes the project duration would be no longer than 14 months in length. Should the project length exceed 14 months, ESA would require a budget augment for PM Task 1 and PM Task 2 to allow for continued support at biweekly calls and for monthly invoicing. ESA is committed to delivering the work products identified

in our project work plan and will do so within the assumed 14-month project duration, unless circumstances beyond our control lead to project delays.

PM Task 1: Project Team Coordination

ESA's project manager will coordinate with the City's project manager to establish regularly scheduled project management meetings. It is anticipated that these meetings will occur on a bi-weekly basis throughout the planning process, assumed to be 14 months or 60 weeks, in length. The primary intent of these meetings will be for City staff and the ESA team to regularly and efficiently check in on project progress and schedule. This scope/budget assumes the staff meetings and presentations to stakeholders referenced under other contractor tasks would be met via these one-hour calls and are not in addition. Attendance will be limited to one ESA staff member, in most cases the project manager or the task lead in certain cases. Calls will be up to one-hour in length, and held via ESA's conference line which allows video conferencing and screen share; attendance would always be remote.

Optionally, the number and duration of meetings could be reduced to allow for in-person attendance during key milestones of the project. ESA will schedule the meetings, prepare brief agendas, and prepare an itemized list of follow-up action items.

Under this task, ESA will also attend a kick-off meeting with City staff to:

- Acquaint the consultant team with participating staff members
- Discuss the City's objectives for the work program
- Review the scope of work to ensure a common understanding of project deliverables, methodologies, expected outcomes, and responsibilities
- Review the project schedule to confirm pertinent steps, milestones, regular management/progress meetings/calls, and review of work products
- Determine protocols for communications with City staff
- Compile a list of project contacts and responsibilities
- Initiate a data request

Two consultants from the consultant team will attend the kick-off meeting in-person, and up to three will attend by videoconference (preferred) or by telephone. ESA will prepare a brief agenda and an itemized list of follow-up action items in support of the kick-off meeting.

ESA will continually track timelines, budget, deliverables, and reporting. ESA will oversee the completion of specific project deliverables and tasks performed by various ESA Team members within budget and on-time including:

- 1) SLR Risk, Hazards, and Vulnerability Assessment (Contractor Role 1),
- 2) USGS Groundwater-SLR Hazard Analysis (Contractor Role 1),
- 3) Sea Level Rise Vulnerability Assessment – Multi-Hazard Confluence Modeling (Contractor Role 2),
- 4) Climate Action & Adaptation Plan (CAAP) (Contractor Role 3),
- 5) Update to the LCP-LUP language (Contractor Role 4); and,
- 6) Initial preparation to ensure consistency with future Local Hazard Mitigation Plan (LHMP) and General Plan Safety Element updates (Contractor Role 4).

ESA will also coordinate and work with the project team to ensure completion of the Project Team Community Engagement deliverables within budget and on time, including the following:

- 1) Facilitate seven public workshops (attendance and preparation for these workshops are scoped and budgeted under the CAAP Tasks);

- 2) Prepare draft content for up to 7 City social media and website postings on SLR, climate adaptation, and up to 7 workshop announcements. In order to accomplish the scope within budget, ESA assumes City staff will finalize the content provided by ESA, post the content on social media and the City's website, and prepare associated illustrative materials and graphic layouts. ESA will prepare up to one draft per posting or workshop announcement. ESA assumes social media announcements would be up to 280 characters in length and website postings and workshop announcements would be up to 200 words in length.
- 3) Prepare draft content for four advertisements inviting the public to attend workshops. In order to accomplish the scope within budget, ESA assumes City staff will finalize the content provided by ESA, prepare associated illustrative materials and graphic layouts of the four advertisements, and coordinate directly with the local papers on deadlines and ad specifications. ESA will prepare up to one draft per advertisement.

Team Members	Reema Shakra, Project Manager, Jeff Caton, Brian Schuster, Nick Garrity, Amir AghaKouchak
Deliverables	<ul style="list-style-type: none"> • Meeting agendas and action items in tracking spreadsheet • Draft content for 7 social media and website postings • Draft content for 7 workshop announcements • Draft content for 4 advertisements • 30 1-hour bi-weekly meetings • Attendance at 1 kick-off meeting • Attendance at up to 7 workshops (see CAAP Tasks)
Timeframe for Completion	Project Duration (over the course of 14 months)
Number of Meetings	30 bi-weekly meetings 1 kick-off meeting

PM Task 2: Project Reporting and Invoicing Coordination

ESA will provide monthly status reports and invoices, which will include: a progress memo summarizing work completed by the ESA team during the invoicing period, an invoice detailing costs and staff hours by task, and a budget tracking table showing progress and percent-completion by task. Monthly status reports and invoices will include invoicing associated with other sub-consultants on the project. ESA monthly status reports and invoices will be structured in a manner that is conducive for the City to meet the administrative grant requirements required by the CCC.

Team Members	Reema Shakra, Project Manager
Deliverables	Monthly Progress Reports
Timeframe for Completion	Project Duration (over the course of 14 months)
Number of Meetings	None

PM Task 3: Draft SLR Vulnerability and Risk Assessment Report

ESA will take the lead on drafting the SLR Risk, Hazards, and Vulnerability Assessment with the resources and research provided by the City's project team, including USC Sea Grant, USGS, City staff and others, in addition to the Multi-Hazard Confluence Modeling (Role 2) provided by the ESA consultant team. We will adhere to the CCC grant timeline and requirements, as this is a deliverable in the CCC grant.

The Draft SLR Vulnerability and Risk Assessment will document property and assets exposed to flooding and erosion based on the City's Project Team deliverables developed for Task 2.1 SLR

Research Outcome/ Deliverables per Exhibit 1 in the RFP and Task 2.2 of the CCC LCP Grant Work Program. Following the CCC grant requirements, the SLR Vulnerability and Risk Assessment will discuss current conditions and potential future impacts from long-term and storm event coastal flooding and erosion with SLR. Based on Exhibit 1 to the RFP, we understand that the Project Team has already determined the relevant SLR projections, assembled coastal flooding and erosion hazard zones, developed maps and tabulated property and assets that are exposed to SLR-related hazards through 2100. We also assume that the City's project team has or will use the USGS Hazard Exposure Risk & Analysis (HERA) tool to assess the probabilities of future occurrences of events, such as future threats, the magnitude of impacts, timing and certainty, per the City's CCC LCP Grant Work Plan. ESA will document the analysis to create a SLR Vulnerability and Risk Assessment that elaborates on the specific vulnerabilities faced by the City and forms the basis of the SLR Adaptation Plan.

ESA will document vulnerabilities to the coastal erosion and flooding hazards representing storm conditions and chronic (non-storm) conditions for existing conditions and the projected future sea level rise scenarios that have been selected by the City's project team. We assume that the City's project team analyzed the SLR-related coastal hazards, per CCC guidance, using CoSMoS 3.0:

- > **Tidal inundation (non-storm)**
 - Extent of high water such as a “king tide” event with existing topography in the City.
 - Groundwater level response to sea level rise in low-lying areas are being developed by the USGS as part of City's Project Team (to be complete in October 2019). ESA will incorporate the USGS Groundwater-SLR Hazard Analysis results and conclusions into the SLR Vulnerability and Risk Assessment.
- > **Storm flooding from a 100-year event**
 - Coastal flooding, lagoon flooding, wave run-up and overtopping
 - Nearshore wave heights to evaluate pier exposure.
- > **Coastal erosion**
 - Historic shoreline erosion rates and future changes in erosion due to SLR.

We also assume that the City's project team developed corresponding maps for each hazard type above with tables of exposed assets that can be used by the ESA team to assemble a draft Vulnerability Assessment.

We understand that the City's CCC LCP Grant Work Program includes incorporating anticipated changes in beach width under future SLR scenarios and an evaluation of the feasibility and effectiveness of sediment management and beach nourishment. Based on our experience collaborating with the USGS and applying CoSMoS results to vulnerability assessments for a number of other cities, we understand that CoSMoS provides projected shoreline locations with future SLR, but does not provide results for beach width changes due to SLR. Beach width change projections are important to have for assessing effects on beach use and associated economic revenue. We therefore propose to apply ESA's shoreline evolution model, which is a two-line beach width model that applies the Bruun rule and historic shoreline erosion rates using an approach similar to CoSMoS. This model tracks and projects the location of the back of the beach in addition to the shoreline and thereby provides projected beach width change. ESA applied the two-line model for the Los Angeles County shore for AdaptLA¹ and can refine the model for Manhattan Beach with consideration of the CoSMoS 3.0 results to characterize vulnerabilities to coastal recreation. We will also apply ESA's beach width model to

¹ ESA, 2016, Los Angeles County Coastal Hazard Modeling and Vulnerability Assessment: Technical Methods Report, Prepared for City of Santa Monica and AdaptLA consortium, 101 pp, (ESA Ref. D130524.00).

analyze adaptation alternatives in subsequent SLR Adaptation Plan task (Role 3, Task 4) for comparison to the “do nothing” scenario analyzed for the vulnerability assessment. ESA’s approach will provide a consistent quantitative basis for analyzing the economic costs and benefits of an adaptation strategy (e.g., beach nourishment and dune restoration). ESA’s beach modeling will therefore provide an important compliment to the CoSMoS hazards results used for the vulnerability assessment, given that CoSMoS does not provide beach width results or the capability to analyze and compare adaptation measures to the “do nothing” scenario.

For the assets in the City that may be impacted by SLR (based on the City project team’s SLR Research/Outcome Deliverables), ESA will coordinate with City staff to characterize the exposure, sensitivity and adaptive capacity of each asset as well as the consequences of impact. Asset vulnerability will be assessed and mapped based on the exposure mapping of each asset’s sensitivity and adaptive capacity. For each asset category, a sensitivity rating will be assigned that characterizes the degree of impact that would result from a given amount of exposure (inundation or erosion). Higher sensitivity indicates that the asset will have high vulnerability for a given amount of exposure, whereas a lower sensitivity indicates that the asset will incur limited damage or operational interruptions, and hence a lower vulnerability for the same amount of exposure. Similarly, the adaptive capacity is used to indicate the system’s ability to cope with the impacts. The combination of the degree of exposure, the sensitivity, and adaptive capacity yields the asset’s vulnerability. The vulnerability mapping will assess vulnerability to natural resources (e.g., beaches), the built environment (property and infrastructure including utilities and storm drain systems), vulnerable populations, and public access. Based on our review of CoSMoS results, we assume that ESA’s assessment of asset vulnerability will be limited to flooding and erosion of the beach, Marvin Braude Bike Trail, and beach facilities (e.g., Pier and El Porto parking lots, lifeguard facilities, beach restrooms, Surf Food Stand).

ESA will combine the maps, figures, tables and other results developed by the City’s project team with the ESA team’s Multi-Hazard Confluence Modeling (Role 2) and ESA’s risk analysis for coastal resources in the City (described above) into a Preliminary Draft SLR Vulnerability and Risk Assessment for review and comment by the City. The City will provide a set of consolidated comments from its staff for ESA to make one round of revisions to the report. ESA will provide a Draft SLR Vulnerability and Risk Assessment in response to City comments for submittal to the CCC. In response to CCC comments and City staff direction, ESA will provide a Final SLR Vulnerability and Risk Assessment. ESA’s scope and budget assume that City and CCC comments can be addressed with a total of 8 hours of ESA staff time for text revisions and that comments will not require re-analysis of hazards or vulnerabilities by ESA.

Team Members	James Jackson, PE, Lindsey Sheehan, PE, and Nick Garrity, PE
Deliverables	Preliminary Draft, Draft, and Final SLR Risk, Hazards, and Vulnerability Assessment
Timeframe for Completion	<p>Preliminary Draft Assessment: two months from completion of Role 2</p> <p>Draft Assessment: one month from receiving City comments on the Preliminary Assessment</p> <p>Final Assessment: one month from receiving CCC comments on the Draft Assessment</p>
Number of Meetings	Four meetings (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition)

PM Task 4: Outreach and Public Meetings Coordination

ESA will support City staff in facilitating public workshops and will attend and present to the Sustainability Task Force, Planning Commission, City Council, and CCC, as described under this task and other tasks in this work plan. Efforts related to attending and facilitating the following workshops and council meetings are scoped under separate tasks in this work plan and include:

- Three City Council Meetings (CAAP Tasks 2 and 5; LCP-LUP Update Task 7)
- One Planning Commission Meeting (LCP-LUP Update Task 7)
- One CCC Meeting (LCP-LUP Update Task 7)
- Seven Public Workshops (CAAP Task 7)

Under this task, ESA staff will attend up to two Sustainability Task Force meetings during key project milestones to present information prepared as part of Role 2, 3 and/or 4. ESA will prepare draft presentation materials for the City’s review and revised final presentation materials in response to comments. We assume that the content of the presentation materials will be derived from the work products prepared as part of project tasks. Up to one ESA staff member will attend. Sustainability Task Force meetings are assumed to be no longer than two hours in length.

Team Members	Reema Shakra, Project Manager, Jeff Caton
Deliverables	PowerPoint Presentations
Timeframe for Completion	Duration of the Project (over 14 months)
Number of Meetings	Attendance at 2 Sustainability Task Force meetings

Role 2: Multi-Hazard Confluence Modeling (CM) on Stormwater Infrastructure Report

Characterizing frequency and return period of extreme events is fundamental to local level planning, adaptation, and risk management. Coastal cities, like Manhattan Beach, are typically exposed to multiple extreme (and even non-extreme) flooding hazards (or flood drivers) such as ocean water levels, waves, precipitation, and surface runoff. In coastal systems, dependence among the flood drivers (e.g., coastal wave/tide, sea level rise and precipitation/surface flow) can lead to compound events in which the simultaneous or sequential occurrence of extreme or non-extreme events may lead to an extreme impact (e.g., flood inundation, infrastructure failure). Projected future SLR further complicates coastal flood hazard analysis by introducing non-stationarity that will very likely increase the future risk of flooding. Physically, SLR adds to the height of future storm tides, reduces pressure gradients that are important for transporting surface runoff (here, urban flood water) to the ocean, and enables greater upstream wave propagation. Current procedures for local rainfall and flood frequency analysis methods do not consider the effect of dynamic ocean water levels. Similarly, frequency analysis procedures for ocean water levels do not account for terrestrial factors such as surface runoff or direct precipitation into urban areas (also known as pluvial flooding). Ignoring the interactions between these drivers is expected to underestimate the overall flood risk and their impacts on local infrastructure.

ESA team member Dr. Amir AghaKouchak, PE will lead the Multi-Hazard Confluence Modeling (CM) on Stormwater Infrastructure Report and analysis. In the following, we describe our approach for developing multi-hazard scenarios for the study area considering different flood drivers.

CM Task 1: Develop Multi-Hazard Scenarios for The Study Area

We will develop multi-hazard scenarios using the concept of multivariate copulas. Specifically, we will use Multi-Hazard Scenario Analysis Toolbox (MhAST), developed by our team member, Dr. Amir

AghaKouchak. MhAST is a unique software that offers a general framework for obtaining multi-hazard design and risk assessment scenarios and their corresponding likelihoods. MhAST can be used for generating joint return periods using different hazard scenarios. Figure 4-1 shows a sample multi-hazard model developed by Dr. AghaKouchak for Newport Beach, California. In this case, the hazards include river flow and non-tidal residual (NTR, Fig. 4-1a), river flow (Fig. 4-1c) and their multi-hazard flooding (Fig. 4-1b) for events with a return period of 50 years based on the so-called “AND” and “OR” hazard scenarios. The former refers to a case when both river and ocean water levels exceed a critical threshold, whereas the latter (OR scenario) corresponds to cases in which either one or both flood drivers exceed their critical thresholds (e.g., 10-yr, or 50-yr events). In this project, we will use MhAST, historical observations, and climate model simulations of the future to generate different multi-hazard scenarios.

Figure 4-1

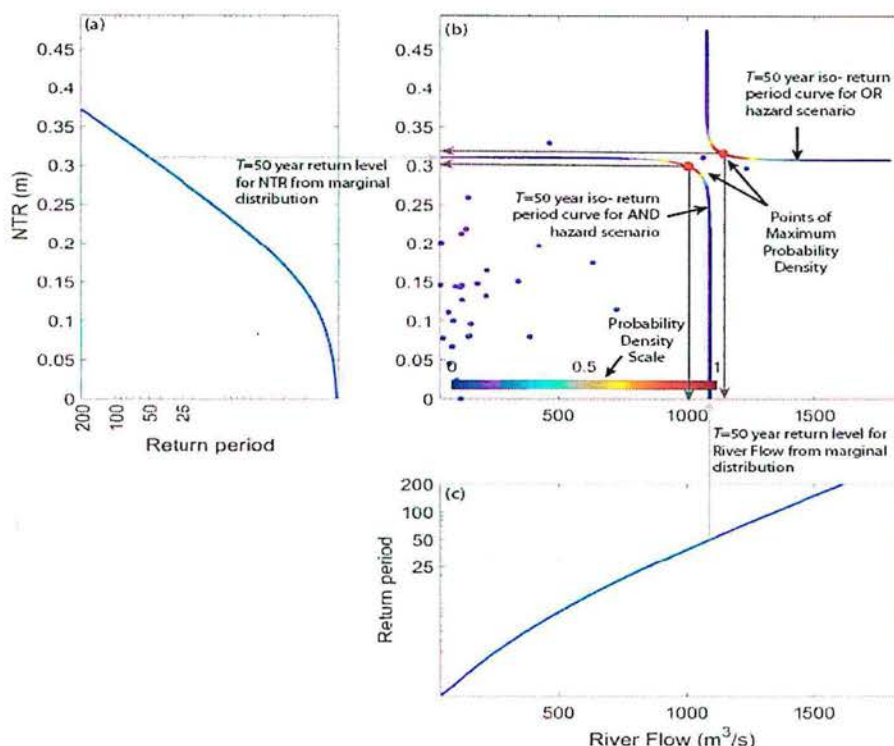


Figure 4-1 – Example distribution for (a) non-tidal residual (NTR) which is a surrogate for ocean water level and (c) River Flow in Newport Beach, CA. (b) Multi-hazard AND OR hazard scenarios for a 50-year event.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	A wide range of multi-hazard scenarios for different flood drivers and return period
Timeframe for Completion	1 month
Number of Meetings	Two meetings (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CM Task 2: Assess Change in The Return Periods of Extreme Precipitation

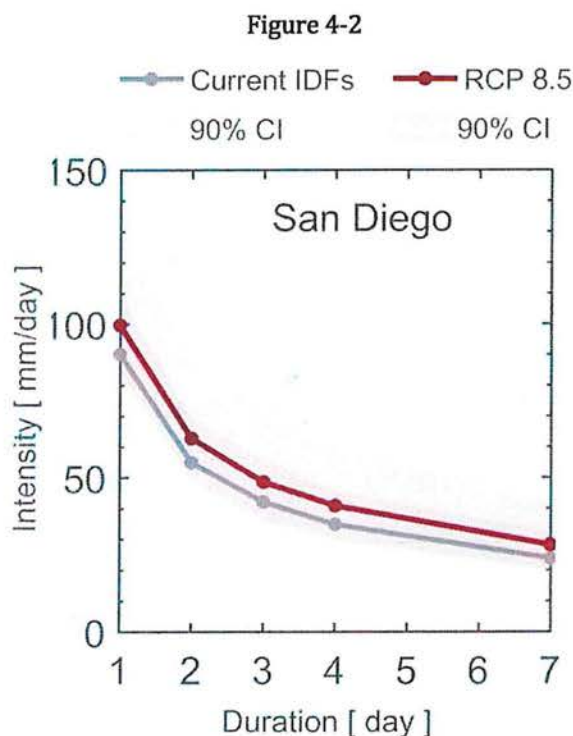


Figure 4-2 - Comparison between current (grey lines) and future climate scenario (red lines) rainfall IDF curves, along with 90% confidence intervals, given an average return interval of 50 years.

Our team will assess change in the return periods of extreme precipitation (including intensity and duration) during 2050-2099 relative to the historical baseline (1950-1999). The periods can be adjusted based on the needs of the City of Manhattan Beach. Our approach will be based on the Process-Informed Nonstationary Extreme Value Analysis (ProNEVA) model developed by Dr. AghaKouchak. This model is specifically designed to evaluate the change in precipitation intensity-duration-frequency (IDF) curves relative to the existing IDF curves available from NOAA. Figure 4-2 shows an example application for the City of San Diego, CA. The figure shows the current NOAA IDF curves (gray line in Fig. 4-2) and the projected future IDF curves for 2050-2099 based on RCP8.5 (for simplicity only the 50-yr return period is shown here). In this project, we will use the latest downscaled and bias-corrected climate model simulations to generate past and future IDF curves for the City of Manhattan Beach. Our team will generate future IDF curves for both RCP8.5 and RCP4.5.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	Past and future IDF curves for different return periods (e.g., 25-, 50-, 100-yr events) for different Representative Concentration Pathways (here, RCP4.5 and RCP 8.5).
Timeframe for Completion	1 month
Number of Meetings	Two meetings (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CM Task 3: Assess Change in the Return Periods of Sea Levels

In this task, our team will assess change in the return periods of sea levels during 2050-2099 relative to the historical baseline (1950-1999) – the periods can be adjusted based on the needs of the City of Manhattan Beach. Current trajectories of SLR cannot rule out an increase greater than 1 m over the 21st century. This rise by changing coastal dynamics characteristics amplifies the design heights and poses further uncertainties in required flood risk allowances. In the greater Los Angeles area, for example, it is likely to experience 4-5 times more frequent extreme water levels in the mid-21st century compared to the past (see Figure 4-1 generated by our team). Based on a wide range of climate model simulations, our team will calculate future return periods of total water levels (TWL) relative to the historical ones. The results will be presented for RCP4.5 and RCP8.5 and different projection

periods. Given that many climate model simulations provide sea level projection, in addition to change in return period, our team will provide uncertainty bounds for different future scenarios.

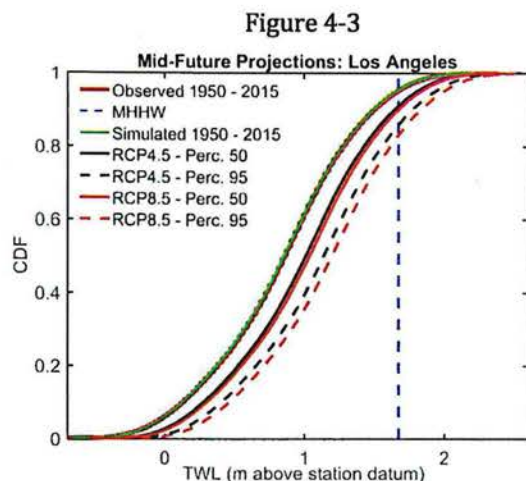


Figure 4-3: Cumulative distribution function of total water level above the station datum for the historical (1950 – 2015) observation/simulations and mid-future projections (2018-2083). For the future projections the curve shows the estimated CDF under the underlying representative Concentration Pathway (RCP) scenarios and the given percentiles of mean sea level rise.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	Past and future sea levels for different return periods (e.g., 25-, 50-, 100-yr events) for different Representative Concentration Pathways (here, RCP4.5 and RCP 8.5).
Timeframe for Completion	One (1) month
Number of Meetings	One (1) meeting (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CM Task 4: Assess Change in the Return Periods of Runoff

Using gridded runoff simulations of the future, available for the State of California, we will assess change in the return periods of surface during 2050-2099 relative to the historical baseline (1950-1999) – the periods can be adjusted based on the needs of the City of Manhattan Beach. The future runoff estimates will be based on the Variable Infiltration Capacity (VIC) land surface model, a macro-scale hydrological model framework that simulates surface and subsurface processes, forced with downscaled global climate model (GCM) simulations.

Climate model simulations are subject to biases and uncertainties and bias correction methods are often used to improve the forcings. The VIC model outputs, we will use in this project, are driven by the high-resolution Localized Constructed Analogs (LOCA) downscaled and bias-corrected minimum and maximum temperature, and precipitation. LOCA method has shown a superior performance to its predecessors including Multivariate Adapted Constructed Analogs (MOCA) for California. The LOCA method calculates the simulated hydrological variable by using a multiscale spatial matching framework in order to select suitable analog days from historical observations for each downscaled point, opposed to using an average of several days to reproduce the downscaled products.

The bias-corrected inputs to the VIC model are based on climate model simulations. We will use models recommended by the Climate Action Team Research Working Group of the 4th California's Climate Change Assessment. The results will be presented in form of change in return period of future events relative to historical simulations.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	Past and future runoff return periods (e.g., 25-, 50-, 100-yr events) for different Representative Concentration Pathways (here, RCP4.5 and RCP 8.5).
Timeframe for Completion	3 weeks
Number of Meetings	One meeting (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CM Task 5: Develop a Hybrid Hydrologic-Hydraulic Model

The compounding effects of different flood drivers significantly contribute to the flood dynamics of urbanized coastal systems. Stormwater drainage systems are typically designed under the assumption of free outlet that can deliver inland fluvial/pluvial flooding to the ocean outlet. With SLR, the community may experience flooding from a design rainfall (or even smaller) events due to the blockage of outlet by a greater than normal coastal water level event (i.e., a King tide), causing significant impacts.

Numerical models have been developed to study the physical interaction of extreme fluvial/pluvial and coastal flooding drivers. Here, we will use a hybrid hydrologic-hydraulic model for simulating compound coastal flooding based on the multi-hazard scenarios developed in CM Task 1. Figure 4-4 shows an example application of hybrid hydrologic-hydraulic modeling, performed by our group, for the City of Newport Beach, CA. In this example, a multi-hazard scenario (Figure 4-4, left) is used as input (CM Task 1). Then two different multi-hazard scenarios are presented relative to the FEMA composite flood profile (panels a and b). In this project, we will also setup a numerical model of Manhattan Beach stormwater drainage system in EPA-SWMM to simulate the dynamical response of drainage system to the proposed compound hazard scenarios. The outcome of such analysis will be fundamental to evaluating vulnerability of the current infrastructure to projected extreme rainfall, SLR, extreme coastal water levels and their compounding effects.

Figure 4-4

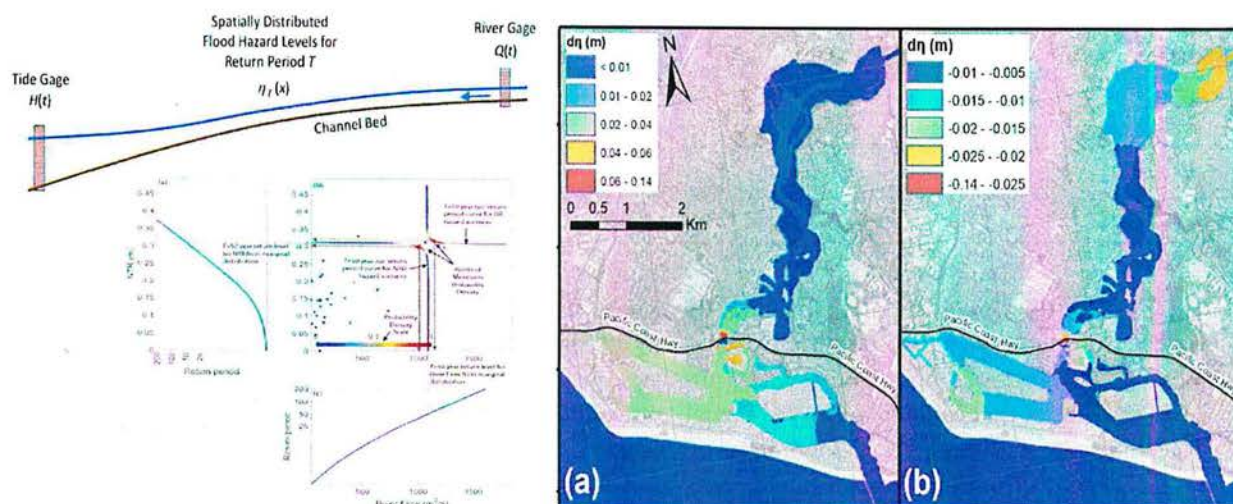


Figure 4-4 – An example of a compound flooding analysis based on multi-hazard scenarios (left panels). Difference in water surface elevations between two different hazard scenarios (a, and b) relative to the FEMA composite profile.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	Hybrid hydrologic-hydraulic simulations of compound coastal flood event and their impacts on the existing drainage systems.
Timeframe for Completion	2 months
Number of Meetings	Three meetings (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CM Task 6: Provide deliverables

Dr. AghaKouchak will prepare a report based on CM Tasks 1-5 as a chapter or appendix for inclusion in the City's SLR Vulnerability Assessment prepared by ESA.

Team Members	Amir AghaKouchak, Hamed Moftakhari
Deliverables	A report (chapter) based on Tasks 1-5
Timeframe for Completion	3 weeks
Number of Meetings	One meeting (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

Role 3: Climate Action & Adaptation Plan and Sea Level Rise Adaptation Plan

ESA has extensive experience preparing Climate Action Plans and SLR Adaptation Plans including those performed for the Cities of Santa Barbara, Richmond, and Del Mar among others. Refer to *Section 2, Relevant Project Experience* for more details on these efforts. Working with the Project Team, Dr. Phil King, the City's Sustainability Task Force, and City staff, we will develop the City's SLR Adaptation Plan to later incorporate as a chapter in the City's CAAP.

CAAP development will include working with the City to identify goals for reducing greenhouse gas emissions and increasing renewable energy use; develop a pathway to reach carbon reduction goals, including a wedge analysis of key City emissions sectors; develop emission reduction measures; and

implementing a robust stakeholder and community engagement strategy including facilitating public workshops, meeting with City staff and stakeholders (as part of PM Task 1), and attending and presenting at City Council meetings.

ESA understands that the existing City of Manhattan Beach Climate Action Plan (2010 CAP) was prepared in April, 2010. We will conduct a review and gap analysis of the 2010 CAP, and interview the City about its implementation (i.e., what the barriers were to implementing, and what is still relevant). We will refer to the 2010 CAP for strategies and policies that remain relevant.

Deliverables of this work include:

CAAP Task 1: Climate Action and Adaptation Research Memo

The plans, policies and documents listed in the RFP, along with any other relevant, readily available studies and data, will be reviewed and summarized including the City's existing GHG emissions inventory and the 2010 CAP. ESA will conduct this task as efficiently as possible and summarize findings of this review into a 2- to 3-page memorandum that identifies key takeaways or trends, potential discrepancies, and/or missing information gaps in the background materials. As new supporting documents and technical studies are prepared and become available during the life of this project, ESA will review and discuss with the City their impact, if any, on the project.

ESA will provide a draft memo for project team and City staff to review and edit, create a final draft memo for Council, and a final memo based on Council input. We will hold two meetings with City staff and stakeholders (as part of the bi-weekly meetings under PM Task 1) to discuss findings, the draft memo, and the final draft memo.

Team Members	Jeff Caton and Brian Schuster
Deliverables	Draft Memo, Final Draft Memo, Final Memo (3 total)
Timeframe for Completion	6-8 weeks
Number of Meetings	Two meetings with City Staff and Stakeholders (assumed to occur as part of the bi-weekly meetings under PM Task 1 and not in addition).

CAAP Task 2: Future Emissions Scenarios and Wedge Analysis

Local target setting for GHG emissions is a critical step that is informed by emissions forecasting, analysis of feasible state, regional, and local reduction strategies, and consideration of planning objectives including the need for CEQA streamlining of future development projects in the City. Based on the existing community GHG emissions inventory, ESA will develop up to five (5) GHG Emissions Scenarios and perform a Wedge Analysis of future emissions projections, including business as usual (BAU), 40% reductions by 2030 (SB 32), Carbon Neutrality by 2045 (California Executive Order B-55-18), and Executive Order S-03-05 (80 percent below 1990). Using the Wedge Analysis, ESA will work with the City to select feasible future emissions targets that align with local growth forecasts, planning priorities and CEQA streamlining objectives. Setting community-wide targets consistent with state goals is a key step toward meeting the requirements of CEQA Guidelines section 15183.5 (b) for a qualified climate action plan, which could allow new development projects to determine significance under CEQA by assessing their consistency with such a plan. The targets will also consider GHG reductions expected locally from existing and anticipated state and regional programs (discussed in Task 3 below) and ultimately align with local planning priorities (e.g., create local jobs).

ESA will collaborate with the City and SCAG, as needed, to develop a unified set of socioeconomic data and land use targets (population, dwelling units, households, students, and employment) for the

forecast years of 2030 and 2045. We will undertake this step to ensure that the City's desired assumptions for growth (e.g., General Plan growth projections), if different from SCAG's, are incorporated into the forecasts. We assume that the SCAG will provide us with the VMT forecasts we need for developing the future transportation emissions scenarios.

ESA will hold a meeting with City staff and stakeholders (as part of the bi-weekly meetings under PM Task 1 or the Sustainability Task Force meetings under PM Task 4) to discuss findings and attend one (1) City Council meeting to present findings.

Meeting and Workshop Assumptions:

- One (1) meeting with City Staff and Stakeholders will occur for this work task. This meeting is assumed to occur either as part of the bi-weekly meetings under PM Task 1 or the Sustainability Task Force meetings under PM Task 4 and are not in addition.
- ESA will prepare for and attend one (1) presentation on the Future Emissions Scenarios and Wedge Analysis to the City Council (CC1). ESA will prepare draft presentation materials for the City's review and revised final presentation materials in response to comments. We assume that the content of the presentation materials will be derived from the work products prepared as part of project tasks. Up to one ESA staff member will attend. The Council agenda item related to this task is assumed to run for no longer than two hours in length.

Team Members	Jeff Caton and Brian Schuster
Deliverables	Up to four (5) GHG Emissions Scenarios as described above, a Wedge Analysis, Memorandum with proposed 2030 and 2050 GHG reduction targets (Draft [1] for City review and comment, and Final), a PowerPoint Presentation
Timeframe for Completion	4 months
Number of Meetings	One City Council Meeting (CC1). One (1) meeting with City Staff and Stakeholders (as already captured under PM Task 1 or PM Task 4).

CAAP Task 3: Develop Emission Reduction Strategies

ESA will develop emission reduction strategies so the City can achieve GHG reduction goals under the scenarios of the Wedge Analysis including:

- Analysis of the measures used by each GHG sector under each scenario
- Develop a system for monitoring and reporting the progress of reduction measures (any monitoring or reporting systems must utilize/be applicable to SEEC ClearPath)
- Assist City staff to ensure relevant data is input correctly in the SEEC ClearPath California platform and develop a template for annual reporting that can easily be translated into a variety of media
- Analysis of financial costs and fiscal benefits of mitigation measures under each scenario
- Analysis of "co-benefits", such as air quality, water quality, public health, economic development, etc.
- Hold meetings with City staff and stakeholders to discuss strategies before and after two public workshops.
- Host and work with City staff to hold two public workshops (PW6 and PW7) on CAAP Tasks 1-3 (see CAAP Task 7).

To achieve the GHG reduction targets developed in Task 2, ESA will develop a roadmap for reducing GHG emissions using measures that can be feasibly implemented. The GHG reduction measures will be informed by the analysis conducted in Task 1, and by the community and stakeholder engagement. We

will leverage or enhance existing successful programs and add appropriate policies and strategies to ensure the City's future targets are achievable.

ESA will collect all available data from the City on the implementation of the current 2010 CAP measures. We will also solicit information about existing local policies and programs through public workshops, and through conversations with the City. ESA will work with the City to collect as much data as possible regarding measure progress and performance, and identify how measures should be changed to better reflect local conditions and priorities, how implementation feasibility can be improved, and where there are redundancies with regional and state measures.

ESA will research and recommend enhancements or new reduction measures that will enable attainment of the City's GHG reduction targets. We will evaluate a range of feasible measures in each emissions sector, drawing on tools, ideas and experience from many sources, including International Council for Local Environmental Initiatives (ICLEI), the US Conference of Mayors Best Practices for Climate Protection, CoolCalifornia.org, the CAPCOA, and our experience developing climate action plans for local governments in California and beyond. In particular, we will draw from best practices put forth in exemplary climate action plans that are designed to achieve deep GHG reductions beyond the year 2020. We will consider programs and policies that are both wholly within the City and those that are regional in nature, and that would require collaboration with other jurisdictions and regional organizations.

Based on the review of the 2010 CAP measures and other City sustainability programs, ESA will estimate GHG reductions for the 2010 CAP measures using methods and emissions factors consistent with the GHG inventory and forecasts developed in Task 2. We will build on the 2010 CAP measures to develop a concise suite of local measures, across all relevant emissions sources specific to the City. We will quantify GHG reductions for future target years (e.g., 2030 and 2050) as feasible given data availability and reasonable assumptions regarding implementation.

Prior to developing local measures for reducing GHG emissions, it is important to account for the local impact that state and regional measures are expected to have on community GHG emissions. ESA will adjust the BAU emissions scenario (Task 2) to account for the expected impacts of foreseeable regional, state, and federal actions, based on the latest information from CARB on the implementation of the AB 32 Scoping Plan. These measures include the Pavley vehicle standards, the State's Renewable Energy Portfolio standards (SB 350), California energy efficiency standards (Title 24), and the early action GHG reduction measures (e.g., vehicle fleet efficiency measures) in the existing Scoping Plan developed by CARB and the State's Climate Action Team (CAT). Regional Measures include the SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, regional electric vehicle infrastructure development, transit enhancements and expansions, and improved active transportation network connectivity in the region. We will also incorporate applicable state measures included in the 2017 Climate Change Scoping Plan Update (i.e., 2030 Scoping Plan) and CARB's Short-Lived Climate Pollutant (SLCP) Reduction Strategy as appropriate.

ESA will then develop a suite of local measures that close the gap needed for the City to reach its 2030 target and make substantial progress toward its longer-term target (e.g., 2050). This will include evaluating current actions that should be updated to better reflect local conditions and priorities and to remove redundancies with state and regional measures. It will also include gathering information about potential additional local measures through stakeholder and public outreach and engagement. ESA will help the City prioritize GHG reduction measures using a planning-level cost-effectiveness analysis to determine which measures will achieve the greatest GHG reductions and sustainability co-

benefits at the least cost to the City and the community. Our cost-benefit analysis will assess financial impacts to the City as well as the anticipated environmental, economic, and social benefits. In consultation with the City, ESA will identify criteria for evaluating and prioritizing measures, which will include the ability to measure and monitor effectiveness, synergy with existing City and regional plans and policies, public health benefits, potential for outside funding, implementation timeframes and feasibility, expected participation rates, adaptation co-benefits, educational impacts and potential for demonstrating City leadership.

We know from our experience with other cities that to develop a climate action plan that is consistent with the state’s 2030 target as represented by SB 32 requires major commitments and prescriptive actions in the energy and transportation sectors. Climate action plans that are CEQA-qualified to be consistent with SB 32 typically have deep commitments to green energy (100% renewable goals are typical) and aggressive goals for reducing vehicle trips, expanding transit-oriented development, and accelerating the uptake of plug-in electric vehicles (PEVs) and other low carbon transportation alternatives. We anticipate that similar strategies will be needed for the City to achieve a 2030 target consistent with SB 32. For transportation measures in particular, it will be important to consider influencing factors, such as the private sector impact on vehicle technology (e.g., EV penetration) and shared mobility (e.g., TNCs, eScooters, bike share), legislative influence such as SB 375 and SB 743 that change industry requirements in the region Policy, and local influence such as land use plans, requirements for land development, and regional infrastructure investment.

Meeting Assumptions:

- Four (4) meetings with City Staff and Stakeholders will occur for this work task (before and after the two public workshops described in CAAP Task 7). Coordination with City staff leading up to and after the workshop is assumed to be part of the bi-weekly meetings under PM Task 1 and are not in addition.

Team Members	Reema Shakra, Project Manager; Jeff Caton; Brian Schuster
Deliverables	Candidate GHG Reduction Measure Memo including existing program progress and proposed new measure framework (Draft [1] for City review and comment, and Final); Quantification of proposed GHG Reduction Measures including analysis of financial costs and benefits, and implementation co-benefits.
Timeframe for Completion	4 months (2 months of overlap with CAAP Task 2)
Number of Meetings	Four staff meetings (as already captured under PM Task 1).

CAAP Task 4: Sea Level Rise Adaptation Plan

ESA will utilize the work products of the SLR Vulnerability and Risk Assessment to develop a SLR Adaptation Plan that reduces the City’s risks from flooding and erosion hazards and improves the resiliency of coastal resources through 2100. To begin this task, ESA will formulate a list of adaptation measures that address the specific SLR vulnerabilities that may be faced at Manhattan Beach. These measures will be reviewed with the City, discussed in a public workshop and combined into a preferred adaptation scenario. The prioritized scenario will be developed through 2100, based on the hazard mapping and SLR projections used in the vulnerability assessment tasks above, and evaluated against the baseline “do-nothing” scenario in an engineering cost benefit analysis. The resulting SLR Adaptation Plan will provide the City with a framework for monitoring coastal hazards and a high-level (i.e., general planning-level) understanding of the costs and benefits of SLR adaptation. The SLR Adaptation Plan will provide a basis for more detailed adaptation project planning, design, and cost estimating in future phases of implementing the adaptation plan.

ESA will develop a matrix of adaptation measures (individual tools) that could be employed in Manhattan Beach to alleviate the vulnerabilities of public and private assets in the City through 2100 identified in the SLR Vulnerability Assessment (PM Task 2). We will evaluate each adaptation measure for effectiveness, trade-offs, and relative costs. An example matrix is provided in Section 5 (Communication Samples) from our work on the Pacifica LCP, which lists the pros and cons of various adaptation measures along with high level suitability for the distinct reaches of Pacifica's coastline. Consistent with CCC Guidance, a variety of adaptation measures will be considered, including traditional coastal engineering and nature-based or green infrastructure solutions, and multi-objective measures that incorporate environmental considerations and a holistic approach. Based on our understanding of existing conditions and SLR hazards at Manhattan Beach, we assume that preferred adaptation measures will focus on beach resilience. By focusing on beach resilience, the City could maintain recreation and other benefits, while simultaneously reducing flooding and erosion risks at the backshore. The adaptation measures and plan will address the Manhattan Beach shoreline as a whole. ESA will identify and list adaptation measures and planning-level needs for key assets, such as the Manhattan Beach Pier. Detailed project-level studies and adaptation planning specific to individual assets, including the Pier, are not included and will be deferred to future phases of adaptation plan implementation. Similarly, ESA will identify and list adaptation measures for the City's stormwater drainage system based on the confluence modeling (Role 2), but detailed project-level studies and adaptation planning for the stormwater system are not included and will be deferred to future phases.

ESA will prepare a first draft SLR Adaptation Plan with the adaptation measures matrix that will be discussed in Public Workshop (PW3) (see CAAP Task 7). Based on feedback received during PW3 and discussions with the Project Team and City, ESA will compile the preferred adaptation measures to form the City's prioritized adaptation scenario for analysis. The prioritized adaptation scenario will be developed using a trigger-based adaptation pathway that is based on the hazards mapped for the previous vulnerability assessment tasks. The prioritized adaptation scenario will be documented in the second draft Adaptation Plan that will include a monitoring approach for implementing the preferred adaptation measures.

ESA will evaluate the costs and benefits of the prioritized adaptation scenario with future SLR against baseline (do-nothing) conditions characterized in the vulnerability assessment. ESA will apply its shoreline evolution model (the two-line beach width model described in Role 1, PM Task 3) to analyze the adaptation measures for the prioritized scenario. The beach width and other physical outputs of the shoreline evolution model will serve as the basis for the adaptation economic analyses. The ESA Team's modeling will project beach width at each time horizon, allowing access and recreation outputs to be quantified, while also considering the ecosystem services of shore protection, including accounting for the effects of sand placement to enhance beaches and dunes. Beach width will be used as a physical indicator for recreational benefits in the adaptation economics analysis. The beach width model has been applied previously by ESA for Pacifica, southern Monterey Bay, Santa Barbara, and Los Angeles County as part of the AdaptLA project. This model is a "two line" model developed by ESA to address both the shoreline position and the backshore position (e.g., coastal bluffs) for the purpose of analyzing shoreline adaptation alternatives.

The adaptation economics analysis will be led by ESA team member Dr. Philip King and will provide the information necessary to inform adaptation planning for coastal erosion and sea level rise, and will also provide estimates of potential losses under particular coastal storm and sea level rise scenarios. The Benefit/Costs Analysis provided will help inform decisions about when to adopt key adaptation strategies, and the benefits and costs of those adaptation strategies. The economic analysis will proceed in the following manner:

- 1) Update County assessor's database to reflect current market values for land and for structures on the land. Dr. King will work with the City to value public property. ESA assumes that the City will provide an unadjusted parcel database to compare against the flooding and erosion zones.
- 2) Create a database of property (land and structures) at risk due to erosion or coastal storms utilizing the City's Project Team deliverables listed in Exhibit 1 to the RFP.
- 3) Create an inventory of roads, and other infrastructure (e.g., water, sewage) that are at risk. The ESA team will generate estimates of replacement costs for this infrastructure.
- 4) Estimate the non-market value and economic/fiscal impacts of beach recreation in Manhattan Beach under the baseline scenario and prioritized adaptation scenario. Estimate the potential impacts of beach erosion or loss of access on beach recreation and economic values.
- 5) Write up and results of the economic analysis to be incorporated in the SLR Adaptation Plan.

The results of the prioritized adaptation scenario analysis and corresponding economic cost-benefit analysis will be incorporated into the second draft SLR Adaptation Plan and presented in Public Workshop 4 (PW4) (see CAAP Task 7). The second draft SLR Adaptation Plan will be provided to CCC for review and comment. ESA will review CCC comments with the City during a regularly scheduled bi-weekly meeting and coordinate responses to comments. The final deliverable for this task will be the final SLR Adaptation Plan, with revisions in response to CCC comments, to be provided to the Coastal Commission and incorporated into the City's Climate Action and Adaptation Plan, LCP-LUP, General Plan, and Hazard Mitigation Plan. ESA's scope and budget assume that City and CCC comments can be addressed with 6 hours of ESA staff time for text and minor figure revisions and that comments will not change the preferred adaptation scenario or require re-analysis of the adaptation scenario.

Team Members	Nick Garrity, James Jackson, Lindsey Sheehan, Phil King
Deliverables	First and second Draft SLR Adaptation Plan, Final SLR Adaptation Plan
Timeframe for Completion	First Draft SLR Adaptation Plan: two months from completion of the SLR Vulnerability and Risk Assessment (Role 3, PM Task 3)
	Second Draft SLR Adaptation Plan: two months from PW3 and receiving confirmation from the City on the preferred adaptation scenario for ESA to analyze
	Final SLR Adaptation Plan: one month from receiving City and CCC comments on the Second Draft SLR Adaptation Plan
Number of Meetings	None

CAAP Task 5: Climate Action and Adaptation Plan

ESA will synthesize the research, analysis, and feedback from previous tasks and finalize findings into a comprehensive Climate Action and Adaptation Plan. The CAAP will address both community emissions and emissions from municipal government operations and: will include a description of the process, emissions baseline, future scenarios, emissions reduction target, selected mitigation and adaptation strategies, and an implementation plan for each. The CAAP will draw on existing documents to identify potential climate impacts that will require adaptation strategies. These include the GHG inventory and emissions analysis prepared by ICLEI in 2019 (2016 community; 2017 municipal), SBCCOG draft Climate Action Plan (2017), Manhattan Beach Risk and Adaptation Advisory Report (2018), SBCCOG South Bay Sub-Region Adaptation Plan and Vulnerability Assessment (2019), and the SLR Adaptation Plan (CAAP Task 4).

The CAAP will summarize the latest climate change science and include an updated regulatory setting and discussion of policies implemented since the 2010 CAP was drafted. It will provide a summary of

the City's relevant General Plan goals and policies, and explain the importance of updating the 2010 CAP to include climate change adaptation and resilience. The CAAP will present the calculated GHG emission reductions for all state, regional, and local community measures, including a summary of the measures needed to achieve the 2030 target. It will also include discussion of costs and co-benefits, describe the implementation actions and performance indicators associated with each measure, and include recommendations and strategies for how best to incorporate GHG reduction efforts and CAAP measures into existing City decision making processes and operations. Content will be presented using well-designed tables and graphic elements, making it easy to navigate and understand.

The adaptation plan component of the CAAP will include discussion of the climate impacts of concern for Manhattan Beach and will include trigger-based adaptation and monitoring strategies to effectively adapt to climate change. It will include a compendium of current plans, studies, policies, and databases that are relevant to the City's adaptation planning efforts. To inform the CAAP, ESA will assess the City's physical, environmental, and socioeconomic vulnerabilities to climate change based on the best available public data and technical studies, and identify priority actions for increasing resilience and adapting to climate change. The assessment process will examine the exposure and vulnerability of the City's critical assets (e.g., water supply) to climate change impacts, assess the City's current adaptive capacity to address those impacts, identify the City's adaptation planning gaps, and outline priority strategies for improving resilience to include in the CAAP. Included in the CAAP will be a set of visually compelling asset exposure maps using GIS that will help stakeholders visualize the vulnerability of the City's critical assets to climate hazards, across a range of feasible climate change scenarios. Potential impacts and complications related to disadvantaged communities will be highlighted. The CAAP will also include recommendations and strategies for how best to incorporate climate adaptation considerations into existing City decision making processes and operations.

The CAAP will be written in simple language with infographics and graphically well-designed. The CAAP will clearly communicate the City's strategies and actions to the public and guide the implementation of the GHG reduction and adaptation measures within the community. The City will require up to 30 days for review and comment of the Preliminary Draft CAAP. ESA will provide a Draft CAAP in response to City comments for public distribution and comments. In response to public comments and City staff direction, ESA will provide a final CAAP. ESA's scope and budget assume that City and public comments on the Draft CAAP can be addressed with a total of 8 hours of ESA staff time for text revisions and that comments will not require the addition of new strategies or re-quantification of costs and benefits.

Meeting Assumptions:

- Meeting with City Staff and Sustainability Task Force on Preliminary Draft and Draft CAAP will occur as part of our bi-weekly meetings identified in PM task 1.
- ESA will give a presentation and lead a Sustainability Task Force meeting (as captured under PM Task 4). ESA will also attend a City Council meeting (CC2) to present the Final CAAP. ESA will prepare draft presentation materials for the City's review and revised final presentation materials in response to comments. We assume that the content of the presentation materials will be derived from the work products prepared as part of project tasks. Up to one ESA staff member will attend. The Council agenda item related to this task is assumed to run for no longer than two hours in length.

Team Members	Reema Shakra, Jeff Caton
Deliverables	Preliminary Draft CAAP / Draft CAAP / Final CAAP
Timeframe for Completion	Six (6) months
Number of Meetings	One (1) City Council meeting (CC2) to present Final CAAP and staff meetings as captured under PM Task 1 and PM Task 4.

CAAP Task 6: CEQA Analysis

Adoption of the Climate Action Adaptation and Resiliency Plan will require environmental clearance under CEQA. ESA will prepare the appropriate CEQA document to allow adoption of the CAAP.

ESA has extensive experience in assisting lead agencies in understanding the potential issues, concerns, and risks needed to determine the most legally defensible level of CEQA documentation. Therefore, ESA in consultation with the City, will determine the appropriate level of CEQA documentation needed. For the purpose of this proposal we are assuming the preparation of an Initial Study and a Negative Declaration (ND)/Mitigated Negative Declaration (MND) will be required.

ESA will initiate the preparation of an Initial Study once the CAAP is developed to a level to provide sufficient information for such preparation. The Initial Study will address the Appendix G checklist questions (as revised in December 2018) to identify whether or not the CAAP could result in potentially significant environmental impacts. Assuming that no significant impacts would result from the adoption and implementation of the CAAP, a Negative Declaration or Mitigated Negative Declaration would be appropriate. ESA will work with the City to develop a comprehensive scope of work for the Initial Study/MND and all CEQA compliance tasks.

It is possible that in the process ESA might identify a different level of environmental documentation that would be appropriate. For example, a categorical exemption or Addendum to the certified EIR for the City's General Plan Update might provide sufficient environmental clearance. If so, the process for these types of documents is different than that for a ND/MND. Alternatively, if it is determined in the process that the CAAP could result in potentially significant environmental impacts, an EIR would be necessary to provide further evaluation.

The project budget assumes preparation of an initial study and an ND/MND for CEQA analysis for the CAAP. ESA assumes that the CAAP would generally provide beneficial changes and that the CAAP would not result in substantive changes to land uses, such as intensification in areas, or changes to infrastructure, such as transit or trails, that would warrant substantial analyses. In addition, ESA assumes that public comment on the ND/MND will be low given the beneficial nature of the CAAP. Should it be determined that the CAAP requires an alternative form of CEQA analysis ESA would prepare a new scope of work and budget depending on which form of CEQA analysis is needed. Section 8 of this proposal provides a range of potential options for alternative CEQA analysis including estimated budget ranges.

Meeting Assumptions:

- Two (2) meetings with Planning Commission and City Council assumed to be part of the meetings under CAAP Task 5 and LCP-LUP Task 7 and are not in addition.

Team Members	Luci Hise-Fisher, Janelle Firoozi
Deliverables	<ul style="list-style-type: none"> - Administrative Draft IS/MND - Public Draft IS/MND - Notice of Availability (Draft and Final) - Notice of Completion - Responses to Comments Memorandum (if desired) (Draft and Final) - Notice of Determination
Timeframe for Completion	Initial Study (4 months)
Number of Meetings	Attendance at two public hearings as captured under CAAP Task 5 and LCP-LUP Task 7

CAAP Task 7: Public Workshops, Meetings, and Stakeholder Engagement

Task 7A: Public Workshops, Meetings, and Stakeholder Engagement

The ESA Team will assist the City in preparing a public involvement plan that establishes the overall strategy for public engagement throughout the project. The public involvement plan will include the purpose and objectives for public engagement, a preliminary schedule with outreach opportunities, type and number of community engagement events and activities (e.g., Dine 'N Discover), guidance for soliciting community input at events, identification of tools to be used and how they will be managed (e.g., Virtual Reality Application), an initial draft stakeholder list, identification of community partners for engagement (e.g., USC Sea Grant, Sustainability Youth Council), and an initial draft media strategy. The public involvement plan will incorporate the Virtual Reality Engagement Strategy to be prepared by Climate Access as part of a separate contract with the City. City staff will provide ESA with a list of the stakeholders, community engagement events and activities, and community partners. City staff and ESA will work together to prepare the preliminary outreach schedule. The plan will indicate which entity (ESA, City, community partners) is responsible for managing and accomplishing each action. The intent for the public involvement plan is to engage diverse segments of the community through multiple participation avenues. The City will implement the public involvement plan with limited assistance from the ESA team as stipulated below.

The ESA team will attend up to five public workshops to present information and materials. The timing of ESA's attendance at public meetings will be based on discussions with City staff and in coordination with ongoing outreach. One ESA team member will attend each public meeting.

ESA will work closely with City staff to conduct public workshops during CAAP Task 4 to provide opportunities for community input at critical points in the process. ESA will design the workshops such that they engage interest, solicit specific and meaningful input, and send a clear message to the public that they have been heard and considered in the planning process. ESA will work with City staff to refine the public workshop objectives and identify expected outcomes and the techniques that can most effectively be used to stimulate interest and input. ESA will prepare a PowerPoint presentation, agenda, meeting plan, and meeting summary; set up, manage, and facilitate the workshops; and summarize the input received. City staff would be responsible for reproducing materials, confirming the workshop locations, and advertising the workshops to the community. Workshops can be structured with interactive presentation formats (for example, with the use of PollEverywhere, an online real-time polling tool), with an open house format with stations for attendees to visit, or with breakout groups that involve facilitated discussions.

The workshop topics are as follows:

- 1) Public Workshops 1 and 2 (PW1 and PW2) –Project Kick-off. The purpose of these workshops will be to introduce the project and discuss the goals and objectives of the Climate Resiliency Project.
- 2) Public Workshops 3 and 4 (PW3 and PW4) – Draft SLR Adaptation Plan. The purpose of these workshops will be to generate community input to inform the development of the SLR adaptation strategies and to present the draft SLR Adaptation Plan and results of the corresponding economic cost-benefit analysis.
- 3) Public Workshop 5 (PW5) –Final SLR Adaptation Plan. The purpose of this workshop will be to present the Final SLR Adaptation Plan

In order to accomplish the scope within budget, ESA would attend up to 5 workshops. *Optionally, the number of workshops could be further reduced by combining workshops to allow for more consultant support, such as having more than one ESA consultant in attendance, preparation of workshop materials, complex workshop formats, etc.*

ESA will prepare a 2-page brochure that would provide background information on the Climate Resiliency Program project, describe key program elements, identify how the public can get engaged, and provide City contact information. The brochure will be designed to be visually engaging and would be intended for use throughout the life of the project. This brochure can be used by staff during their informal outreach tasks, can be incorporated onto the City's website, and distributed at public workshops and community events.

The ESA team can also help the City to collaborate with other regional planning efforts that have outreach programs such as the University of Southern California Sea Grant Program (USC Sea Grant) and the Coastal Resilience network. Note we collaborated with USC Sea Grant on the AdaptLA project.

Meeting Assumptions:

- Up to one ESA staff member will be in attendance (a total of 5 workshops).
- ESA would prepare a draft and final PPT for each workshop. Graphic content included in the presentation will be already produced as part of CAAP Task 4. No new graphics or maps will be produced.
- Workshop materials are limited to a 2-page fact sheet and materials already produced as part of CAAP Tasks 4. No new poster content will be developed.
- City staff would be responsible for production of workshop materials.
- Workshop assumed to be no longer than two hours in length
- Coordination with City staff leading up to and after the workshops is assumed to be part of the bi-weekly Project Management calls

Team Members	Reema Shakra, James Jackson, PE, Nick Garrity, PE, Janelle Firoozi
Deliverables	Draft public involvement plan Draft and final double-sided brochure, 8 ½ x 11 Draft and final PowerPoint presentations
Timeframe for Completion	Project Duration (over the course of 14 months)
Number of Meetings	Five public workshops (PW 1-5) and staff meetings as captured under PM Task 1.

Task 7B: Public Workshops, Meetings, and Stakeholder Engagement for CAAP

The ESA team will attend up to two public workshops to present information and materials. The timing of ESA's attendance at public meetings will be based on discussions with City staff and in coordination with ongoing outreach. One ESA team member will attend each public meeting.

ESA will work closely with City staff to conduct public workshops during CAAP Task 1-3, and 5 to provide opportunities for community input at critical points in the process. ESA will design the workshops such that they engage interest, solicit specific and meaningful input, and send a clear message to the public that they have been heard and considered in the planning process. ESA will work with City staff to refine the public workshop objectives and identify expected outcomes and the techniques that can most effectively be used to stimulate interest and input. ESA will prepare a PowerPoint presentation, agenda, meeting plan, and meeting summary; set up, manage, and facilitate the workshops; and summarize the input received. City staff would be responsible for reproducing materials, confirming the workshop locations, and advertising the workshops to the community. Workshops can be structured with interactive presentation formats (for example, with the use of PollEverywhere, an online real-time polling tool), with an open house format with stations for attendees to visit, or with breakout groups that involve facilitated discussions.

The workshop topics are as follows:

- 1) Public Workshops 6 and 7 (PW6 and PW7) – GHG Reduction Measures and Draft CAAP. The purpose of these workshops will be to solicit input from the public to inform the development of the GHG emission reduction strategies and to present the Draft CAAP (CAAP Task 5)

In order to accomplish the scope within budget, ESA would attend up to two workshops and City staff would lead the preparation and facilitation of one more workshop as part of CAAP Task 5. *Optionally, the number of workshops could be further reduced by combining workshops to allow for more consultant support, such as having more than one ESA consultant in attendance, preparation of workshop materials, complex workshop formats, etc.*

The ESA team can also help the City to collaborate with other regional planning efforts that have outreach programs such as the University of Southern California Sea Grant Program (USC Sea Grant) and the Coastal Resilience network. Note we collaborated with USC Sea Grant on the AdaptLA project.

Meeting Assumptions:

- Up to one ESA staff member will be in attendance (a total of 2 workshops).
- ESA would prepare a draft and final PPT for each workshop. Graphic content included in the presentation will be already produced as part of CAAP Tasks 1-3 and 5. No new graphics or maps will be produced. No new poster content will be developed.
- City staff would be responsible for production of workshop materials.
- Workshop assumed to be no longer than two hours in length

- Coordination with City staff leading up to and after the workshops is assumed to be part of the bi-weekly Project Management calls

Team Members	Reema Shakra and Jeff Caton
Deliverables	Draft and final PowerPoint Presentations
Timeframe for Completion	Project Duration (over the course of 14 months)
Number of Meetings	Two public workshops (PW 6 and PW 7) and staff meetings as captured under PM Task 1.

Role 4: Develop Local Coastal Program-Land Use Plan Language

Since the CCC first adopted the Sea Level Rise Policy Guidance document in 2015, there have been limited examples of certified LCPs that address these new guidelines. However, ESA is on the frontlines of providing the technical and policy bases for the handful of LCPs undertaking such updates including those performed for the Cities of Oceanside, Pacifica, and Del Mar among others. Refer to *Section 2, Relevant Project Experience* for more details on these efforts. In order to accomplish the scope within the budget, ESA assumes City staff will take the lead in amending the City's existing LUP to address SLR.

ESA will review existing land uses and LCP land use designations to determine whether land use designations should be amended to account for the risks associated with SLR impacts, as shown in PM Task 3 (Vulnerability Assessment Report). ESA will prepare a draft and final annotated outline identifying key policy themes that would need to be addressed in the LCP Amendment to address sea level rise based on the adaptation strategies identified in the SLR Adaptation Plan prepared under CAAP Task 4. The outline will identify sea level rise policy themes that relate to planning and new development; hazards/shoreline development; public access and recreation; coastal habitats; coastal resources; water quality; archaeological/paleontological resources; scenic resources; energy, industrial, and other coastal development uses. Once City staff review and agree to the final annotated outline, ESA will identify example model policies based on relevant draft and certified LCPs prepared by other communities. Based on City staff comments, ESA will refine the model policies for incorporation into the LUP amendment. ESA will identify recommended changes to the local hazard mitigation plan and General Plan Safety Element to ensure consistency with the LUP amendment and Senate Bill 379.

ESA will prepare a draft and final PowerPoint and support City staff in presenting the draft LUP to the City's Planning Commission, City Council, and the CCC. ESA will provide technical content for City staff reports. ESA assumes technical content would be limited to 3 pages in length. ESA assumes City staff will finalize and compile the staff reports for inclusion in Planning Commission and City Council packets.

Meeting Assumptions:

- ESA assumes no more than one meeting each with City Council, Planning Commission and California Coastal Commission (a total of 3 meetings) as part of the LCP-LUP Update (scoped in LCP-LUP Task 7). Up to one ESA staff member will attend. The agenda item related to this task is assumed to run for no longer than two hours in length at each meeting.

Deliverables of this work include:

LCP-LUP Update Task 1: Draft Annotated LCP-LUP Outline

ESA will prepare a Draft Annotated LCP-LUP Outline to be reviewed with Project Team and City staff and will incorporate their edits.

Team Members	Reema Shakra
Deliverables	Prepare Draft Annotated LCP-LUP Outline
Timeframe for Completion	2 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1

LCP-LUP Update Task 2: Create Final Annotated LCP-LUP Outline

ESA will create the Final Annotated LCP-LUP Outline to send to CCC.

Team Members	Reema Shakra
Deliverables	Final Annotated LCP-LUP Outline
Timeframe for Completion	2 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1

LCP-LUP Update Task 3: Review and Coordination

Review and coordination with City staff and CCC staff.

Team Members	Reema Shakra
Deliverables	N/A
Timeframe for Completion	2 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1. Public outreach as captured under PM Task 4.

LCP-LUP Update Task 4: Identify New Policies and Ordinances

ESA will identify model policies to implement the adaptation measures included in the SLR Adaptation Plan. City staff will provide comments on the model policies.

Team Members	Reema Shakra, Mary Laux
Deliverables	Model policies, Revised Policies
Timeframe for Completion	6 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1

LCP-LUP Update Task 5: Final LCP-LUP Amendments

ESA will revise the model policies in response to City comments for incorporation into the final LCP-LUP amendments.

Team Members	Reema Shakra, Mary Laux
Deliverables	Comments on final LCP-LUP amendments
Timeframe for Completion	2 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1

LCP-LUP Update Task 6: Ensure Consistency with Future LHMP and General Plan Safety Element Updates

The City will achieve compliance with SB379 through their update of the LHMP and General Plan Safety Element. ESA will prepare a memorandum identifying recommended changes to the LHMP and General Plan Safety Element to ensure consistency with the LUP Amendment and Senate Bill 379. City staff will review the LUP for consistency with other City planning documents.

Team Members	Reema Shakra, Mary Laux
Deliverables	Memo re: LUP policies and consistency with SB 379
Timeframe for Completion	2 weeks
Number of Meetings	Bi-weekly staff meetings as captured under PM Task 1

LCP-LUP Update Task 7: Create Materials for Public Meetings

ESA will prepare a draft and final PowerPoint presentation to support the public meetings on the Final LCP-LUP amendments. The presentations created for previous City Council meetings can be repurposed for the meetings associated with this task. ESA will provide up to 3 pages of draft and final technical content to support City staff's preparation of staff reports.

ESA will give presentations at Planning Commission, City Council, and CCC as described in the meeting assumptions for Role 4.

Team Members	Reema Shakra, Mary Laux
Deliverables	Draft and Final PowerPoint presentation
Timeframe for Completion	Captured during LCP-LUP Tasks 1-6
Number of Meetings	One meeting each with City Council (CC3), Planning Commission (PC1) and California Coastal Commission (CCC1) as part of the LCP-LUP Update; a total of three meetings.

Climate Resiliency Project: Fee Schedule & Reimbursable Expenses

The cost proposal for the scope of work is included below. We have provided our best estimate for a rigorous technical analysis, clear presentation of results, and a high-level of public engagement. ESA understands that the City has a fixed allocated amount of \$365,000 for the project in total for services, inclusive of contractor expenses. The following table provides our budget assumptions for this project.

Task	Cost Estimate
Role 1 – Project Management	\$48,190
1 Project Team Coordination	\$19,370
2 Project Reporting and Invoicing Coordination	\$4,340
3 Draft SLR Vulnerability and Risk Assessment Report	\$20,060
4 Outreach and Public Meetings Coordination	\$4,420
Role 2 – Multi-Hazard Confluence Modeling on Stormwater Infrastructure Report	\$91,355*
1 Develop Multi-Hazard Scenarios for The Study Area	\$15,170
2 Assess Change in the Return Periods of Extreme Precipitation	\$12,140
3 Assess Change in the Return Periods of Sea Levels	\$9,260
4 Assess Change in the Return Periods of Runoff	\$12,590
5 Develop a Hybrid Hydrologic-Hydraulic Model	\$27,710
6 Provide Deliverables	\$14,485
Role 3 – Climate Action and Adaptation Plan and Sea Level Rise Adaptation Plan	\$78,999 Sea Level Rise Adaptation (4 & 7a) \$99,796 Climate Action and Adaptation (1-3; 5-6; 7b)
1 Climate Action and Adaptation Research Memo	\$10,800
2 Future Emissions Scenarios and Wedge Analysis	\$11,440
3 Develop Emission Reduction Strategies	\$11,440
4 Sea Level Rise Adaptation Plan	\$39,160+
5 Climate Action and Adaptation Plan	\$37,380
6 CEQA Analysis	\$14,960
7a Public Workshops, Meetings, and Stakeholder Engagement	\$39,839
7b Public Workshops, Meetings, and Stakeholder Engagement for CAAP	\$13,776
Role 4 – Develop Local Coastal Program-Land Use Plan Language	\$26,225
1 Draft Annotated LCP-LUP Outline	\$1,600
2 Create Final Annotated LCP-LUP Outline	\$310
3 Review and Coordination	\$ --
4 Identify New Policies and Ordinances	\$8,860
5 Final LCP-LUP Amendments	\$4,480
6 Ensure Consistency with Future LHMP and General Plan Safety Element Updates	\$2,480
7 Create Materials for Public Meetings	\$8,495
Subtotal Roles 1-4	\$344,565

Subtotal Roles 1-4	\$344,565
Subtotal Reimbursable Expenses	\$ 1,200**
GRAND TOTAL	\$345,765
Contingency budget	\$25,000
Maximum Compensation	\$370,765

* Dr. AghaKouchak, PE represents \$89,915 of this total

+ Dr. Phil King represents \$15,000 of this total

** Reimbursable expenses are assumed to include transportation costs, not to exceed \$1,200. ESA assumes that the City will be responsible for all reprographic charges.

Optional Tasks

The project budget assumes preparation of an Initial Study and an ND/MND for CEQA analysis for the CAAP. Should it be determined that the CAAP requires an alternative form of CEQA analysis ESA would prepare a new scope of work and budget depending on which form of CEQA analysis is needed.

In order to satisfy the request in the RFP, ESA is providing the following range of potential options for alternative CEQA analysis including estimated budget ranges:

Categorical Exemption: \$4,000-\$6,000

Addendum to the Certified EIR for the General Plan: \$8,000-\$10,000

Focused EIR: \$100,000 - \$115,000

These budget ranges are only estimates at this time and would be refined in a future scope of work and budget estimate, as needed.