EXHIBIT A

SCOPE OF WORK

1. Grantee agrees to expend grant funds provided by the Commission only for and in accordance with project activities as described under the Scope of Work attached hereto as EXHIBIT A.

2. The Project representatives during the term of this agreement, and the person authorized to sign grant amendments and RFFs on behalf of the grantee, will be:

State Agency: California Coastal Commission	**Grantee:** City of Pacific Grove
Name: Kelsey Ducklow ("Grant Manager")	Name: Ben Harvey, City Manager
Address: 455 Market St. Suite 300 San Francisco, CA 94105	Address: 300 Forest Avenue Pacific Grove, CA 93950
Phone: (415) 904-2335	Phone: (831) 648-3174
Fax: (415) 904-5400	Fax: N/A
Email: kelsey.ducklow@coastal.ca.gov	Email: bharvey@cityofpacificgrove.org

3. Primary project contact:

State Agency: California Coastal Commission	**Grantee** City of Pacific Grove
Section/Unit: Statewide Planning Unit	Section/Unit: Community Development Department
Name: Carey Batha	Name: Anastacia Wyatt, Director
Address: 455 Market St. Suite 300 San Francisco, CA 94105	Address: 300 Forest Avenue Pacific Grove, CA 93950
Phone: (415) 904-5287	Phone: (831) 648-3183
Fax: (415) 904-5400	Fax: N/A
Email: Carey.Batha@coastal.ca.gov	Email: awyatt@cityofpacificgrove.org

EXHIBIT A

SCOPE OF WORK

Name of Local Government: City of Pacific Grove

Name of Project: Revised Coastal Hazard Overlay for Pacific Grove

Funding Source: General Fund

Specific Program: Local Coastal Program Local Assistance Grant Program

Federal Tax ID#: 94-6000388

Budget Summary:

CCC funding:	*$100,000*
Other funding:	*$ 37,000**
Total project cost:	*$137,000*

* The City anticipates expending approximately $37,000 in staff time for this effort in FY 2021-22, FY 2022-23, and FY 2023-24. The staff time associated with this effort will be absorbed in the Adopted Budgets for the Community Development and Public Works Departments.

Term of Project: 11.15.2022 (or grant agreement execution date) – 06.30.2024

A. PROJECT DESCRIPTION

This project will provide an updated detailed vulnerability assessment (VA) for the City of Pacific Grove as part of an update of the Local Coastal Program's (LCP) Land Use Plan (LUP) that was certified by the CCC in March 2020. The City of Pacific Grove received funding in one of the first rounds of the CCC LCP program in 2015 to undertake a VA. The VA, conducted by EMC Planning Group, utilized first generation coastal hazard modeling data from the Pacific Institute (2008). This available modeling focused solely on coastal cliff erosion in a very conservative manner and did not include the Asilomar Dunes. Recently, the City has begun using this original erosion hazard data for screening Coastal Development Permits, and these deficiencies have become apparent - placing an unnecessary burden on applicants and stretching City staff. Thus, the City is proposing to update the LCP hazard mapping by conducting a more detailed site-specific coastal hazard analysis that will provide the City with more appropriate data consistent with current state guidance on sea level rise.

The project will create new hazard information for the entire city including the dunes at Asilomar State Beach (SB) that were not previously mapped or included in the hazard assessment. The new hazard results will be based on site-specific modeling of cliff and dune erosion, updated wave flooding elevations and extents and ultimately be used to amend the LCP with a new hazard overlay to allow for more focused requirements for the site-specific sea level rise reports. This will save the City staff time and development applications money in a

EXHIBIT A

transparent fashion. In addition, the more detailed analysis will support the ongoing City Shoreline Master Planning Process and future adaptation work.

B. TASKS

Task 1 – Conceptual Site Model

Task 1 of the study will be a detailed site characterization from which a conceptual site model will be developed. The site characterization will include collecting new data, as well as leveraging existing data and previous studies. The purpose of the site characterization is to 1) provide baseline data, which will be required for the site-specific modeling in Task 2; and 2) gain an enhanced understanding of the physical system that will be impacted by coastal hazards including storm wave flooding, tidal inundation, and erosion of the cliffs, and beach and dunes at Asilomar SB.

Data to be collected will provide a backshore characterization wherein data fall primarily in the categories of geologic and geomorphic information including lithology and thickness of seacliff-forming units, cliff/dune toe and top elevations, and slopes of the beach-cliff system. Part of the data collection will use an unmanned aerial vehicle (UAV- drone) equipped with a camera to collect imagery that will then be processed to derive current topographic elevation data. This step is important, as the most recent available elevation data (lidar) available for this area was collected in 2017, and outcomes of the hazard modeling in Task 2 will have significantly higher confidence if modern, updated topographic data is used. From this topographic data, various geomorphic information can be extracted such as cliff edge elevations, dune crest elevations, beach widths, etc.

In addition to data collected in the field, data and information from existing geologic mapping and reports will be reviewed and used to inform the development of the backshore characterization. This task includes a site visit and mapping review which provides a comprehensive understanding of the physical system and the processes that drive change.

As part of Task 1, and also critical to future modeling, we will compile storm data and historical records that will be used in Task 2 to verify model results. Task 1 will also inventory and compile any parcel and structure footprint data that is new since the previous VA was conducted.

Task 1 Deliverables

- Technical memorandum identifying methods, data sets used and any backshore characteristics.
- All new geospatial data including aerial imagery, elevation data, and backshore characterization.

EXHIBIT A

Task 2 – Coastal Hazard Modeling

Task 2 will be to conduct high fidelity modeling of the primary coastal hazards that drive existing and future coastal hazards in Pacific Grove. The models will be run to evaluate and update the projected coastal hazard responses to specific storm and sea level rise scenarios consistent with state guidance and selected through discussion with City managers and other stakeholders, for current conditions. The models will then be re-run for the same storm scenario for future conditions to include elevated water levels associated with sea level rise. The task will leverage a wave transformation model SWAN (Simulating Waves Nearshore) that was previously developed for the Monterey Bay as part of recent Hopkins Marine station work and refined via a nesting scheme down to the City of Pacific Grove and Asilomar Dunes. The various coastal hazards will then be evaluated on individual transects to be applicable to the parcel-level vulnerability assessment.

Task 2.1 – Cliff Erosion Modeling

The coastal hazard of sea cliff erosion is challenging to forecast because cliffs erode very episodically and are driven by both marine and terrestrial processes. The most robust approach available to date was developed by the USGS as part of the CoSMoS model, and uses a combination of cliff erosion models, or ensemble models, that are run simultaneously to arrive at a prediction of cliff retreat along a transect. The publicly available CoSMoS results however fail to map existing conditions and do not map the hazards at a scale appropriate for planning purposes. The cliff erosion ensemble model incorporates wave and water level time series, historical cliff retreat rates, and use an annual wave energy flux and wave run-up data to arrive at a future likely sea cliff positions for the select sea level rise scenarios. The City will re-evaluate the forecasts of cliff retreat at 10-year increments to improve on the current forecasts in the current LUP, that were based on results from the Pacific Institute (e.g. 2025, 2050, 2100) and that significantly over-predict the inland extent of erosion.

Task 2.2 – Beach and Dune Erosion Modeling

To model dune erosion and beach flooding and retreat, the City will use XBeach which is well suited for use at the Asilomar Dunes. This model can be applied to predict potential morphologic and erosion changes to the beach and dunes, as well as for flooding during future storm and sea level rise scenarios.

XBeach is a numerical model used to predict coastal erosion and accretion, and can be used to model coastal change potential along selected beach and dune profiles under a range of storm wave and future SLR conditions. The model assesses the interaction of waves with bathymetry and topography. XBeach is particularly suited for modeling coastal change of beaches and dunes (e.g., volume, width, elevation) processes on timescales of single storm and wave events; it simulates tidal and wave-driven sediment transport and resulting coastal change, and is a widely accepted free, open-source model.

EXHIBIT A

Task 2.3 – Wave Flooding

Coastal wave flooding extent will be based on a total water level elevation method (tides + wave run up) and will consider a worst-case scenario, like an El Niño-like still water level (SWL) combined with wave run-up calculated for several significant storm wave events. XBeach, which is used in Task 2.2, will be used along all transects including the cliffs. Although XBeach cannot model morphologic changes to the cliffs, it can be used to generate maximum storm wave run-up elevation and inland extents with the added benefit of being able to project the depth of flooding of the modeled events at various locations. This depth of flooding is useful information for more site-specific analysis of individual parcel redevelopment and public infrastructure projects.

Task 2.4 – Tidal Inundation

Increasing frequency of high-water levels associated with extreme mean high-water tides, or king tides, will impact low-lying areas and pocket beaches along the Pacific Grove coast, including the beach at Asilomar SB. Using the most recent state sea level rise guidance we will evaluate an extreme annual high tide (e.g. King tide) and map the extents and depths of inundation at specified future sea level rise scenarios. This will be incorporated along with the other modeled hazards as part of a geospatial database that will be used to conduct the revised vulnerability assessment focused on parcels and structures and as part of the coastal hazard overlay.

Task 2 Deliverables

- A technical memorandum describing the modeling methods and geospatial data for each of the coastal hazards and each of the sea level rise scenarios.
- One meeting/coordination with City managers, CCC staff, and other stakeholders to review modeling results.

Task 3 – Revised Vulnerability Assessment

The model outputs and flood extents from Task 2 will be integrated in GIS with existing asset and resource data. The asset data will be focused on parcels and structures. The coastal hazard model projections will be overlain with the asset inventory in GIS to produce a revised vulnerability assessment of the parcels and structures. Different mapped assets will be color-coded to clearly show what is impacted, when the impact is likely, and by which hazard(s). Resulting data will be tabulated and used to generate statistics and tables of risk that identify the parcels that would be subject to the revised coastal hazard overlay.

An optional subtask will be to conduct an economic analysis that will estimate the economic value of assets (parcels and structures) identified to be risk from coastal hazards. Historical assets and locations threatened by coastal hazards will also be identified and valued where it is feasible and culturally appropriate.

EXHIBIT A

The results of the modeling and vulnerability assessment and economic analysis will be presented in a series of maps and a technical memorandum that integrates the outcomes and findings of the work undertaken for the project. The report will summarize the impacts from each coastal hazard on each parcel and structure over time, from existing conditions through 2100. Within the report, for each resource sector there will be a description and qualitative discussion of the relative risk, exposure, and adaptive capacity of the resource.

Task 3 Deliverables

- Revised Vulnerability Assessment Report sent to Commission staff for review
- Maps of parcels and structures at risk over time and other geospatial data
- One meeting with City managers and other stakeholders to review.

Task 4 – Public review

The City will seek public review and comment on the results of the technical work of Task 1-3 with feedback incorporated into revisions of the hazard zones as necessary to inform the Task 5 work. The City will make a particular effort to set the meeting time and location to encourage participation from disadvantaged and low-income communities.

Task 4 Deliverable

- A public presentation and solicitation of input of the findings
- A revised draft VA, as necessary, to incorporate City manager, CCC staff, and public comments

Task 5 - LCP amendment for the revised coastal hazard overlay

The City using staff resources will prepare an LCP amendment for incorporating the revised coastal overlay, including changes to the text of Land Use Plan Chapter 2.1 (Coastal Hazards) and Implementation Plan Section 23.90.140 (Coastal Hazards). City staff will coordinate with Coastal Commission staff throughout the development and finalization of the LCP amendment.

Task 5 Deliverable

- Draft LCP amendment incorporating the revised coastal hazard overlay
- Final, locally-adopted LCP amendment to be submitted to the Coastal Commission for certification

EXHIBIT A

C. SCHEDULE

Project start/end dates: 11.15.2022 – 05.15.2024

Task 1. Conceptual Site Model	**Projected start/end dates: 11.15.2022 – 01.16.2023**
Outcome/Deliverables: a. Technical memorandum identifying methods, data sets used and any backshore characteristics b. All new geospatial data including aerial imagery, elevation data, and backshore characterization	a. 01.16.2023 b. 01.16.2023
Task 2. Coastal Hazard Modeling	**Projected start/end dates: 01.16.2023 – 04.14.2023**
2.1 Cliff Erosion Modeling	1.16.2023 – 04.14.2023
2.2 Beach and Dune Erosion Modeling	1.16.2023 – 04.14.2023
2.3 Wave Flooding	04.14.2023 – 07.14.2023
2.4 Tidal Inundation	04.14.2023 – 06.15.2023
Outcome/Deliverables a. Technical memorandum describing modeling methods and geospatial data for each coastal hazard and sea level rise scenario b. Meeting/coordination with City managers, CCC staff, to review modeling results	a. 07.14.2023 b. 07.31.2023
Task 3. Revised Vulnerability Assessment	**Projected start/end dates: 07.14.2023 – 09.29.2023**
Outcome/Deliverables a. Draft Revised Vulnerability Assessment Report including maps of parcels and structures at risk over time and other geospatial data sent to Commission staff for review b. Meeting with City managers and other stakeholders to review	a. 09.15.2023 b. 09.29.2023
Task 4. Public Review and Outreach	**Projected start/end dates: 08.2023 through 12.2023**
Outcome/Deliverables	a. 08.15.2023 b. 12.01.2023

EXHIBIT A

a. Public presentation and solicitation of input b. A revised Vulnerability Assessment, as necessary, to incorporate City manager, CCC staff, and public comments	
Task 5. LCP Amendment	**Projected start/end dates: 01.2024 through 05.2024**
Outcome/Deliverables a. Draft LCP amendment incorporating the revised coastal hazard overlay b. Submittal of LCP amendment incorporating revised coastal hazard overlay	a. 01.15.2024 b. 05.15.2024

D. <u>BENCHMARK SCHEDULE</u>

ACTIVITY	COMPLETION DATE
Conceptual Site Model technical memorandum	**01.16.2023**
Coastal Hazard modeling technical memorandum	**07.14.2023**
Draft Revised Vulnerability Assessment Report	**09.15.2023**
Revised Vulnerability Assessment Report (with comments incorporated)	**12.01.2023**
LCP Amendment submittal	**05.15.2024**

EXHIBIT A1

DEFINITIONS

1. The term “Agreement”; this Grant Agreement.

2. The term “Budget Act”; the annual enacted version of the Budget Bill which makes appropriations for the support of the government of the State of California.

3. The term “Chief Deputy Director”; the Chief Deputy Director of the Commission.

4. The terms “Commission” or “Coastal Commission” and the acronym “CCC” all refer to the California Coastal Commission.

5. The term “Executive Director”; the Executive Director of the Commission.

6. The term “Grant” or “Grant Funds”; in the case of LCP grants, the money provided by the California Climate Investments program or, in the case of Public Education grants, sales and renewals of the WHALE TAIL® Specialty License Plate, or California’s Voluntary Tax Check-Off Program, and administered by the Coastal Commission to the Grantee pursuant to this Agreement.

7. The term “Grant Manager”; the representative of the Commission with authorization per the Executive Director to administer and provide oversight of the Grant.

8. The term "Grantee"; an applicant who has a signed agreement for Grant Funds.

9. The term "Project"; the activity described under the Scope of Work, attached as EXHIBIT A, to be accomplished with Grant Funds.

10. The term “Project Budget”; the Commission approved cost estimate submitted to the Commission’s Grant Manager for the Project. The Project Budget shall describe all labor and material costs of completing each component of the Project. The Project Budget shall contain itemized amounts permissible for each item or task described in the Scope of Work. The Project Budget must include the set administrative and indirect costs agreed upon by the Parties if applicable.

11. The term “Public Agency”; any State of California department or agency, a county, city, public district or public agency formed under California law.

12. The term “Scope of Work” refers to EXHIBIT A, including the approved Project Description, Tasks, and Schedules.

13. The term “Termination Date”; the date by which all activity for the project must be concluded, as specified in the signature page of this Agreement. Work performed after this date cannot be reimbursed.

EXHIBIT B

BUDGET

Jurisdiction Name	***CCC Grant Total***	***Match/Other Funds***	***Total (LCP Grant Funds + Match/ Other Funds)***
LABOR COSTS[1]			
County/City Staff Labor			
Task 4 – Public Review and Outreach		**$15,000**	**$15,000**
Task 5 – LCP Amendment		**$20,000**	**$20,000**
Project Management		**$ 2,000**	**$ 2,000**
Total Labor Costs		**$37,000**	**$37,000**
DIRECT COSTS			
County/City Staff Project Supplies			
A			
B, etc.			
Total			
County/City Staff Travel in State[2]			
Mileage			
Hotel, etc.			
Total			
Consultants[3]/Partners			
Consultant			
Task 1 – Conceptual Site Model	**$25,000**		**$25,000**
Task 2 – Coastal Hazard Modeling	**$65,000**		**$65,000**
Task 3 – Vulnerability Assessment	**$10,000**		**$10,000**
Consultants Total	**$100,000**		**$100,000**
Total Direct Costs			
OVERHEAD/INDIRECT COSTS[4]			
Total County/City Staff Overhead/Indirect Costs		**$37,000**	**$137,000**

[1] *Amount requested should include total for salary and benefits.*

[2] *Travel reimbursement rates are the same as similarly situated state employees.*

[3] *All consultants must be selected pursuant to a bidding and procurement process that complies with all applicable laws.*

[4] *Indirect costs include, for example, a pro rata share of rent, utilities, and salaries for certain positions indirectly supporting the proposed project but not directly staffing it. Amount requested for indirect costs should be capped at 10% of amount requested for "Total Labor."*

EXHIBIT B

Jurisdiction Name	***CCC Grant Total***	***Match/Other Funds***	***Total (LCP Grant Funds + Match/ Other Funds)***
TOTAL PROJECT COST	**$100,000**	**$37,000**	**$137,000**