



KĀ'ANAPALI BEACH REPLENISHMENT PROJECT

ENVIRONMENTAL SAFEGUARDS

Kā'anapali Beach restoration is a nature-based, science-backed solution to chronic erosion and sea-level rise — restoring habitat and long-term coastal resilience by returning sand to the shoreline.

The project's protective measures were developed over more than seven years of environmental study and consultation with state and federal agencies, scientists, and community members.



WATER QUALITY

Containment barriers to minimize turbidity, water quality testing, and monitoring, including third-party testing.



CORAL REEFS

The timing of the project will avoid the coral reef spawning season, and multi-layered protection for the reefs during sand collection. Kā'anapali will also implement reef safe landscaping.



MARINE WILDLIFE

On-site observers and special protections for endangered species, Kona crab, and nabeta, including pre surveys and ongoing monitoring.



SHORELINE HABITAT RESTORATION

Protodune creation and native planting will create more a more resilient shoreline and habitat.



LONG-TERM MONITORING

Up to 10 years of beach, water quality, and reef tracking after construction ends.



PROTECTING WATER QUALITY

SILT CURTAIN

A silt curtain, a floating turbidity containment barrier, surrounds the active beach sand placement area in the Hanaka'ō'ō Littoral Cell for as long as that work continues.

TURBIDITY LIMITS

Turbidity outside the containment barriers cannot exceed the baseline turbidity level. If it does, work stops immediately until conditions return to normal and equipment is inspected.

INDEPENDENT MONITORING

Active monitoring by trained marine science professionals and a community member during work and water quality testing, including third-party testing.





PROTECTING CORAL REEFS

RECOVERY METHOD

Sand is collected offshore using a moored crane barge with an environmental clamshell bucket, engineered to minimize water intake, maximize precision on each scoop, and reduce sediment released into the water column

ANCHOR VERIFICATION

Anchor placement follows a multi-step verification process, including satellite imagery analysis, LiDAR-based depth assessments, diver inspections by ocean engineers, and biological verification by marine biologists, to prevent any anchor or chain from touching coral. Anchors are placed once and stay in position for the duration of the project, with divers confirming they sit on sandy bottom.

REEF MONITORING

Coral reef monitoring stations will be established throughout the project area to document conditions before work begins. Photographs at each station, comparable to those from the initial marine assessment, are repeated before, during, and after construction to detect any changes in reef health, sedimentation, or cover.

DROP-CAMERA SURVEYS

As an additional layer within this monitoring program, periodic drop-camera surveys of the sand recovery area may also be conducted, visibility permitting, to document seafloor conditions.

REEF SAFE LANDSCAPING

The properties along Kā'anapali will implement reef safe landscaping practices.



PROTECTING MARINE WILDLIFE

TIMING

The project window (October through December) was selected because it falls outside peak coral spawning and marine animal nesting and birthing seasons identified by the National Marine Fisheries Service and U.S. Fish and Wildlife Service and falls during the transition from summer to winter swell, reducing the risk of large wave events during restoration.

ON-SITE OBSERVERS

At least one protected species observer is stationed on the sand recovery barge, and at least one on the beach where equipment is operating. In addition, a community member will be engaged to monitor the work on the ocean and on the land.

VISUAL SURVEYS

Visual surveys for Endangered Species Act-listed species, including green sea turtles, hawksbill sea turtles, and Hawaiian monk seals, are conducted before each work day begins and after any work break longer than 30 minutes.

WORK STOPPAGE

If a protected species is sighted within 50 yards of the work area, work halts and does not resume until the animal voluntarily leaves, or 30 minutes pass since the last sighting.

KONA CRAB

A pre-recovery dive survey will identify any visible Kona crab habitat or other sensitive conditions in the sand recovery area. Identified areas will be marked using surface GPS coordinates and excluded from recovery. Recovered sand will be visually inspected before transport; any Kona crabs collected inadvertently are returned to the recovery area before the sand moves to shore. Sand recovery is scheduled for October through December, outside the species' May–August spawning season. Drop camera surveys will also be used.

NABETA

Sand recovery will proceed progressively across the recovery area rather than through dispersed excavation patterns, maintaining adjacent undisturbed habitat as a pathway for these mobile fish to relocate away from active work. Drop camera surveys will also be used.



RESTORING SHORELINE HABITAT

FOOTPRINT LIMITS

Sand is placed only within the beach's previous footprint or active beach profile. No expansion beyond the historical shoreline, and no new sand-stabilizing structures.

PROTODUNES

In the Hanaka'ō'ō Littoral Cell, the plan adds protodunes along the mauka edge of the sand placement area. With the State's permission, the protodune will be planted with native, salt-tolerant vegetation to hold sand in place and create new coastal habitat.

NAUPAKA REMOVAL

Existing naupaka on the active beach face will be cut to ground level to restore the natural beach and dune profile, and artificial erosion-protection materials along Kā'anapali Beach will be removed.

REEF-FRIENDLY LANDSCAPING

Separately, property owners are adopting recognized reef-friendly landscaping practices throughout Kā'anapali as a companion effort.

LONG-TERM ENVIRONMENTAL MONITORING

Monitoring will take place before, during, and after construction across three programs: beach topography, water quality, and coral reef and marine biology. Together, they provide a continuous effort to protect the environment and measure changes over time.

PROGRAM	DURING CONSTRUCTION	POST-CONSTRUCTION
BEACH TOPOGRAPHY	Ongoing surveys throughout construction	Within 72 hours of sand placement to measure as-built conditions; then at 30 days, 6 months, and 12 months post-construction, for 3 years, with an option to extend up to 10 years
WATER QUALITY	Ongoing monitoring throughout construction, including by an independent third party	At 30 days, 6 months, and 12 months post-construction; then annually for 3 years, with an option to extend up to 10 years
CORAL REEF AND MARINE BIOLOGY	Ongoing monitoring at established baseline stations throughout construction	At 30 days, 6 months, and 12 months post-construction; then annually for 3 years, with an option to extend up to 10 years

ADDITIONAL CONSTRUCTION SAFEGUARDS

The project also includes a series of best management practices and construction-phase controls for safety, access, noise, dust, and air quality, including restricted equipment hours, required mufflers, and dust suppression methods.

ABOUT THE PROJECT

The Kā'anapali Beach Restoration and Berm Enhancement Project is led by the Pilikahakai Foundation and the Kā'anapali Operations Association to address beach loss driven by human-induced climate change and sea-level rise. The plan proposes carefully collecting compatible offshore sand and returning it to widen and raise the beach to its healthy 1988 footprint. The project is currently seeking the required permits to proceed.