

PT. MOLATE BEACH PARK MARINE DEBRIS REMOVAL PROJECT

Final Project Report

Ian Wren, September 22, 2014

Summary

In 2012, the Fisheries Habitat Conservation Program Office (HCPO) of the National Oceanic and Atmospheric Administration (NOAA) awarded Baykeeper \$45,500, pursuant to the Community-Based Marine Debris Prevention and Removal Grants Program. The purpose of this grant program is to catalyze the implementation of locally-driven, community-based marine debris prevention, assessment, and removal projects that will benefit coastal habitat, waterways, and NOAA trust resources.

Baykeeper's project involved the removal of 111.3 tons of creosote pilings, concrete, tires, metal, plastic and miscellaneous debris from 0.33 linear miles of beach and sub-tidal habitat along Point Molate Beach Park, a municipal park owned by the City of Richmond, Contra Costa County, CA (*Appendix 1, Site Map*). Approximately 274 contaminated pilings were removed, along with 58 tires, ~20 tons of concrete, several boat hulls, rusted pipes, metal shards and Styrofoam boating debris. Removal of this material was critical to re-opening Pt. Molate Beach Park, which had been closed since 2002 due to budget constraints and safety concerns.

Total project cost was \$91,000. In-kind support, however, represents \$28,500 of the total cost, associated with volunteer support and in-kind disposal services by the City of Richmond. Volunteers from the local community, as well as Baykeeper's network, contributed 650 hours of skilled and unskilled labor.

Project Outcomes

Material removed primarily included creosote-treated pilings, which had dislodged from their footings within historic piers in the vicinity of the project site. Additional material included non-treated pilings, concrete, metal debris, boat hulls, plastic and metal pipe, and miscellaneous trash. Forty-two (42) tires, ranging from small passenger size to large truck tires, were removed from mudflats adjacent to Point Molate Beach Park. Approximately fifteen additional tires were removed from the shoreline.

Categories of debris removed from the site, along with their weights are presented in Table 1. These categories reflect the means of disposal, with concrete taken to a recycling plant; non-treated wood debris, tires, metal and other non-contaminated debris routed to the West Contra Costa Sanitary Landfill; and creosote pilings were taken to Keller Canyon Landfill, in Bay Point, CA, which is authorized to accept such waste.

Table 1. Debris categories and disposal weights

Waste type	Weight
Concrete	20.48
Non-creosote pilings, tires, metal	10.74
Creosote wood, some misc. debris	80.11
Total	111.3 tons

Debris was removed in twelve (12) 30-yard debris bins, as well as trucks operated by the City of Richmond, which disposed of non-contaminated waste to the West Contra Costa Sanitary Landfill and the nearby Dutra Materials concrete recycling plant. The City of Richmond transported eight (8) loads to the landfill and recycling plant.

Pilings varied in thickness and length, since many had broken off in the water. Most pilings had a 10-18" diameter and were approximately 10 feet in length. Based on a sampling of piling sections, piling weight averaged about 50 pounds (lbs) per linear foot, though this varied greatly depending on size, age and wood type. A total of 274 pilings were removed, for an average weight of approximately 600 lbs/piling. This varied widely though, with some pilings estimated at over 2,000 lbs.

Materials and Methods

Summary of Materials and Equipment Used

Below is a list of materials and tools used for debris removal activities:

- Tracked skid-steer with grapple bucket (rented)
- Mini-excavator with grapple bucket (rented)
- Two-man timber carriers (6)
- 4' cant hook with log stand (2)
- Log tong – attaches to chain
- High strength chain (50')
- Shovels
- 8-mm static rope (400 ft.) – tire extraction
- 18" gas-powered chainsaw, sharpener and several chains
- Sawzall and generator for cutting metals bolts connecting pier sections (rented)
- High-strength pulley, carabiners and webbing – directional for tire extraction
- ¼" sheet of plywood – to create surface for walking on mudflats
- Gloves, helmets, high-viz vests
- 30-yard debris bins (max size possible for high weight materials such as pilings)
- misc. hand tools

Piling Removal

Piling removal was completed in phases. First, large debris found along the beach was cut into manageable sections. This included large pier sections connected by up to 6' rusted bolts that required cutting (*Appendix 2, Project Photos*). Longer pilings were cut in-situ using a cant hook with log stand and care was taken to contain creosote-contaminated saw dust. This process was laborious, as the creosote pilings quickly dulled chains and sand had to be cleared from surfaces to avoid dulling. Several volunteer work days were spent with over a dozen volunteers carrying debris to staging areas along the beach. Timber carriers were used to hand carry pilings and contaminated timbers.

After pilings were cut and material was staged on the beach a tracked skid-steer (Bobcat) was rented and delivered to the site and used over the course of three weeks in June/July 2013 and for another week in May 2014. The grapple bucket attachment worked well for extracting pilings from the sand and securing two to three pilings at a time while carried to a staging area near the parking area. The tracked skid steer worked well for the sand and was quite maneuverable. Wheeled versions would be ineffective in the soft sand. Chain and a heavy-duty log tong was used to extract buried pilings or those beneath vegetation at the edge of the beach.

Material was stacked by the categories generally represented in Table 1, to facilitate appropriate disposal. After sufficient material was stockpiled a mini-excavator was rented to place the pilings into 30-yard

debris bins. This size was considered the maximum allowable bin size, based on the expected weight of the pilings. The mini-excavator allowed for placement and organization of material in the bin, which was not possible with the skid-steer. Richmond Sanitary is equipped to handle non-contaminated waste, for disposal at to the West Contra Costa Landfill in Richmond, CA, or special waste, such as treated wood, destined for Keller Canyon Landfill in Bay Point, CA. Each bin required containing treated wood required a manifest and extensive coordination with the special waste manager was required, since this was apparently a somewhat rare disposal scenario. Filled debris bins averaged ~7 tons, based on receipts provided by the landfill.

Approximately 20 tons of concrete was removed from an area of the beach where it appeared the material had been dumped and was serving no shoreline protection purpose. The City of Richmond arranged for the pickup and recycled the material at Dutra Materials concrete recycling plant, conveniently located approximately 0.5 miles from the project site. The City also took several loads of non-contaminated waste to the West Contra Costa landfill, including pier sections that had landed on the beach, boat hulls, derelict pipes, etc.

Tire Removal on Mudflats

Forty-two (42) tires, ranging from small passenger size to large truck tires, were removed from mudflats adjacent to Point Molate Beach Park. Approximately fifteen additional tires were removed from the shoreline. Extraction of tires from the mudflats was accomplished using a low-impact technique that proved strenuous yet effective (*Appendix 2, Project Photos*).

A single ¼" sheet of plywood was cut lengthwise and rope handles were fixed at either ends. This allowed for walking on the plywood sections over very soft mud as the sections were exchanged in series. Tires located more than 200 ft. from the shore were collected in this manner. Clusters of tires were collected at once, where possible, with multiple ropes ran through a directional on-shore so that a tracked skid steer could run along the beach and pull the tires to shore. Following removal no signs of the drag marks were visible following a single tide cycle. Larger tires required partial extraction with a shovel in-situ, prior to removal.

Resource Protection

Prior to project initiation, consultation was completed with the Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission, California Department of Fish and Wildlife, and Army Corps of Engineers. This resulted in letters authorizing the project, with minor stipulations. Consultation was also completed with NOAA to complete the National Environment Protection Act (NEPA) process, in which it was determined that the project fell within the scope and effect of activities analyzed in the February 2002 Programmatic Environmental Assessment (PEA) for the Community-based Restoration Program Implementation Plan and the June 23, 2006 Supplement (SPEA).

Mitigation measures associated with the project included wetland avoidance, minimization of vegetation disturbance, and the creation of confined access and staging locations. Effort was taken to avoid native vegetation wherever possible and some non-native vegetation (iceplant) was removed to facilitate recolonization by native vegetation. In areas where over one year has passed since removal efforts ended, areas once invaded by iceplant or covered by debris have begun to be recolonized by native saltgrass (*Distichlis spicata*).

APPENDIX A: SITE MAP

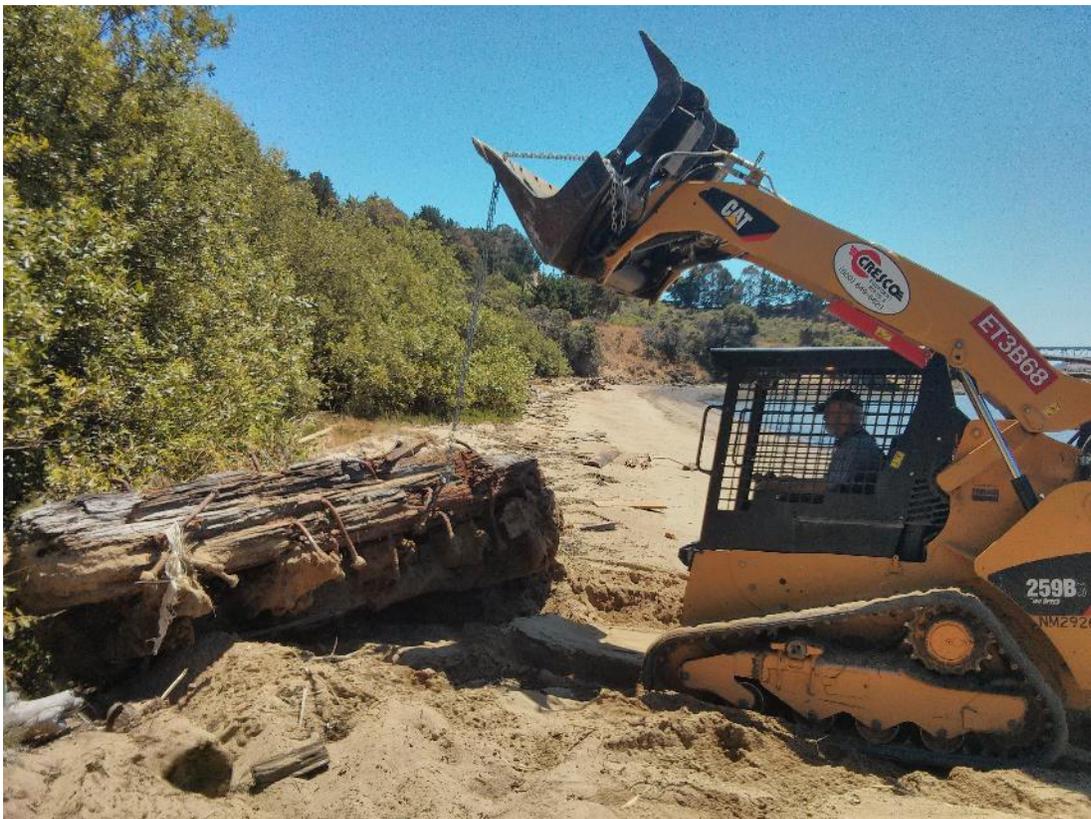


**Marine Debris Removal Project Area,
Point Molate Beach Park, Richmond, CA**

0 0.0175 0.035 0.07 Kilometers

-  Access Lane
-  Staging Area
-  Pt Molate Debris Removal Area

APPENDIX A: SITE PHOTOS



Chain used to relocate non-cresote piling for beach seating (top) and extraction of pier section (bottom)



Chains and log tongs (bottom) proved useful for extracting pilings from sand and underneath bushes



Grapple bucket for the skid steer proved invaluable for moving pilings (top). Accidental delivery of regular bucket limited the ability to move material, such as buried boat hulls (bottom).



Large pier structure had to be sawed into pieces prior to removal



Over 20 tons of concrete was removed for recycling (top) and several large derelict rusted metal storm drain pipes were also removed (bottom)



Sample view of piles of creosote pilings and other debris



Many pilings had to be cut to optimize placement in the debris bins. Sample view of cut creosote piling, showing creosote on the outer edge. On hot days piles of creosote pilings released odors strong enough to prompt public complaints prior to removal.



Several large pier fragments, such as this, were removed from the beach



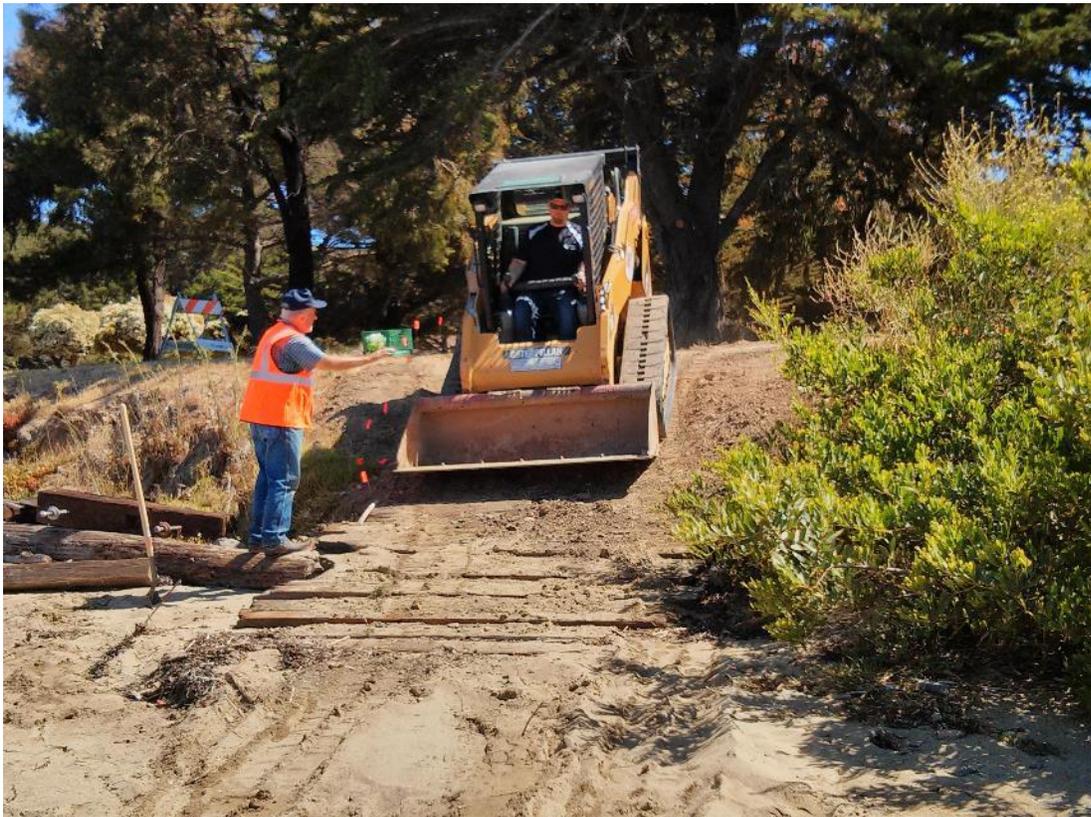
Cresote pilings were stacked in staging areas with a skid steer prior to loading into debris bins with a mini-excavator



Twelve (12) 30-yard debris bins were delivered and filled primarily with creosote pilings for disposal at Keller Landfill (top). The City of Richmond delivered eight (8) truckloads of non-contaminated wood, concrete and tires to the Richmond landfill and a nearby concrete recycling facility (bottom).



Volunteers using timber carriers to move pilings. Cant hooks (4') were helpful to extract pilings from the sand



Volunteers constructing a ramp (Top) to enable skid steer access at the only available access point



Before (top) and after (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2013 (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2014 (bottom). Small boat, metal pipes, pilings and collapsed fence removed



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2013 (bottom)



Before – 2013 (top) and after – 2014 (bottom) Timbers shown above were from the large pier section that required extensive sawing prior to removal.



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Drift wood and some non-treated wood was left on the beach, though many planks had large nails and stakes in them, which were removed in consideration of public safety. Before (top) and after (bottom)



Before – 2012 (top) and after – 2013 (bottom)



Before – 2012 (top) and after – 2014 (bottom)



Before – 2012 (top) and after – 2014 (bottom) Some non-contaminated logs were retained



Volunteer using plywood to walk on mudflats to tie ropes on buried tires for extraction from the shore



View of sample tire ~50m from the shore with rope tied for extraction. Forty-two (42) tires were extracted from the mudflats using a low-impact technique that proved strenuous yet effective. A single $\frac{1}{4}$ " sheet of plywood was cut lengthwise and rope handles were fixed at either ends. This allowed for walking on mudflats using the plywood sections in series. Clusters of tires were collected at once, where possible, with multiple ropes ran through a directional on-shore so that a tracked skid steer could run along the beach and pull the tires to shore. Following removal no signs of the drag marks were visible following a single tide cycle. Larger tires required partial extraction with a shovel in-situ, prior to removal.