Department of Environmental Conservation

Division of Environmental Health

Tsunami Marine Debris Status Report for Calendar Year 2015

Prepared January 2016

Background

Following the March 2011 earthquake and tsunami, the Government of Japan donated $5 million to the United States to be shared by the states that were expected to be impacted by tsunami debris: Alaska, Hawaii, Washington, Oregon, and California. The funds are administered by the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program and are allocated directly to the states support the collection, removal, and disposal of marine debris.

Since 2012, Alaska has received $2.5 million of the $5 million dollar gift from Japan. These funds have been fully expended, and a request for an additional $950.0 is pending NOAA approval. If received, the $950.0 will be used to support marine debris collection, removal, and disposal in the most affected priority shore segments in the Gulf of Alaska.

Per Administrative Order No. 263 the Department of Environmental Conservation (DEC) is responsible for coordinating Alaska's response to tsunami related marine debris efforts, including administration of the funding received from the Government of Japan through NOAA.

Summary of Past Tsunami Marine Debris Projects (2012-2014)

2012 Aerial Survey

Tsunami-generated debris first started appearing in Alaska in late 2011 and early 2012. The scale and size of Alaska's shorelines made a specific appraisal of the quantity of tsunami-generated marine debris or "normal" marine debris impossible, but it was clear that tsunami-generated marine debris had become a significant component of marine debris on beaches in Alaska.

In 2012, DEC was awarded a $50.0 NOAA grant which was used to fund an aerial survey to collect imagery and data in the Gulf of Alaska and Southeast Alaska. The result of the survey was over 8,000 high resolution, geo-referenced photographs, which were analyzed and tagged with keywords and assigned a rating of 1 to 5 based on debris density.

2013 Shoreline Prioritization

In 2013, DEC and NOAA facilitated a workshop to discuss and prioritize shorelines for future marine debris removal operations in anticipation of the monetary gift from the Government of Japan. Workshop participants included land and wildlife resource managers from Federal, State, and Native

organizations, as well as non-governmental organizations active in the marine debris community. At the workshop, 44 shoreline segments were evaluated based on debris density, potential impacts (biological, habitat, socio-economic, cultural), and logistical feasibility for cleanup and removal. Nine prioritized locations were identified to be the focus of future debris removal efforts.

2014 Clean Up Projects and Updated Aerial Survey

The first $1 million received from the Government of Japan gift supported debris cleanup projects in the nine priority locations identified in the 2013 workshop, as well as an updated aerial survey of the Gulf of Alaska and Southeast Alaska.

While projects in Southeast Alaska benefitted from the availability of local landfills to accept marine debris for disposal, similar options were not available in the Gulf of Alaska and Prince William Sound regions. By the close of the 2014 debris season, while over 20 tons of debris had been removed and recycled, repurposed, or disposed of in landfills, over 252 tons of debris had to be safely cached on shorelines or in storage yards for later removal and disposal.

Two-thirds of the updated aerial survey was completed in 2014, and 5,000 images were analyzed and rated using the same methods as the 2012 survey. The remaining survey area in Southeast Alaska was completed in May 2015, resulting in an additional 3,200 images. All data from the survey, including georeferenced images, debris ratings, and 1-mile and 5-mile segmented shoreline ratings have been posted on DEC's public GIS map at http://dec.alaska.gov/das/GIS/apps.htm.

2015 Tsunami Marine Debris Projects

In 2015, DEC used an additional allocation of $1.5 million from the Government of Japan to fund marine debris collection, removal, and disposal projects in seven priority locations from Kodiak to south of Sitka, as well as removal and disposal of the 252 tons of debris collected and cached in 2014.

An unprecedented, large-scale effort involving state and federal agencies, private industry, and local and international non-profit organizations commenced in July. Super sacks and consolidated marine debris bundles were airlifted by helicopter from shorelines in Kodiak, the Gulf of Alaska, Prince William Sound, and British Columbia. The operation, which lasted approximately three weeks, required 1,176 helicopter trips to sling 3,397 super sacks and 717 consolidated bundles of marine debris from 11 locations onto a barge. The debris included items collected and cached in 2014, debris collected in 2015 cleanup projects, and debris from projects funded by the State of Alaska, the Exxon Valdez Oil Spill Trustee Council, NOAA, the National Park Service, the Government of British Columbia, and non-profit organizations.

The 300-foot barge *Dioskouroi*, assisted by the tug *M/V Billie H*, arrived in Seattle in early August with over 411 tons of marine debris, where it was then transported to Oregon by train for final disposal.

Projects in Southeast Alaska resulted in the collection and disposal of an additional 32 tons of debris, all of which was successfully disposed of in local landfills.

Future Tsunami Marine Debris Efforts (2016)

Evaluation of Methods and Cost Effectiveness

At first impression, removing debris by airlift and barge may seem more costly or logistically difficult than traditional methods, however it has demonstrated to be safer, significantly more efficient, and more cost effective than multiple small vessel-based manual efforts.

For example, landing-craft removal of 30 super sacks and large, loose debris items from Gore Point would take 15 days, while the same debris could be removed in a one-day, 10 hour airlift. Skiff and landing craft trips in open seas and on pounding shores are significantly reduced or eliminated using an airlift and barge method, decreasing the safety risks placed on crew members. Furthermore, because no major landfill in Alaska will accept large quantities of marine debris, even if landing craft were used to remove the debris from shorelines, it must still be transported by barge to a landfill outside Alaska.

Based on the data DEC has collected through contractor reports over the years, the airlift and barge method used in 2015 is not only safer and more efficient (and in some cases, the only option), but it is also the most cost effective way to remove these large quantities of debris from Alaska. Although variables in location, methods, crew experience, weather, and other environmental conditions (i.e. the need for special permits) are difficult to fully account for, DEC estimates the 2015 costs of removal by airlift/barge at $5,280 per ton and 2015 costs by traditional methods (skiff/landing craft and local landfill disposal) at $6,853 per ton.

Future Funding

Despite the huge quantities of debris that have been removed from Alaska shorelines in recent years, industrial quantities are still accumulating. Foam, clearly identifiable as tsunami debris, continues to be a substantial percentage of the debris, and it is critical to remove it quickly before it becomes impossible to collect as it breaks down into small pieces and falls between cracks in nearly impenetrable log piles.

After several years of contracting cleanup operations in several Alaska regions, it is obvious where the main tsunami debris collector shorelines are located. During the 2015 debris removal season, an experienced crew working the Kayak Island and Montague Island segments saw surges of debris rolling in even as they were actively cleaning the shorelines. It is clear that additional collection efforts were necessary to address the debris that accumulates there at rates much higher than in other areas. These two areas alone contributed 1,854 super sacks and 631 consolidated debris bundles to the barge/airlift operation — nearly 2/3 of the total amount collected.

To address this continuing influx of debris, in November 2015 DEC requested $950.0 from NOAA for tsunami marine debris collection, removal, and disposal projects for the 2016 field season. Specifically, this request is intended to support a single project covering Kayak and Montague Islands.

We expect that due to the quantity of debris anticipated in these areas, the difficulty of access due to terrain and surf, and the lack of local landfill disposal options, a barge and airlift operation will again be the preferred method of accomplishing this project.

DEC Japanese Tsunami Marine Debris Program Updates

Staffing

DEC is responsible for coordinating the activities of state agencies relating to tsunami marine debris and is the primary point of contact for NOAA and other federal agencies. All the previously allocated Government of Japan funding that Alaska has received ($2.5 million) has been fully committed to contracts for tsunami marine debris collection, removal, and disposal. From 2013 to 2015, DEC used state general funds for a professional level 1.0 FTE non-permanent position to develop and manage the tsunami debris program.

At this stage, the work to develop protocols, assess priority shorelines, map and analyze aerial photos, and lay the groundwork for the program has been completed. In September 2015, the non-permanent position was not extended. The work to manage the program in the future will be absorbed by an existing permanent position.

Outreach and Education

The subject of marine debris, originating from the Japanese Tsunami or elsewhere, continues to be a topic of interest in Alaska and was again a featured topic at the Alaska Forum on the Environment (AFE) in February 2015. DEC and NOAA staff presented updates, and educational presentations were made by local marine debris organizations including contractors who will worked on projects funded through DEC.

DEC is scheduled to present again at this year's AFE, February 8-12, at the Dena'ina Center in Anchorage.

For Further Information:

http://dec.alaska.gov/das/gis/apps.htm (DEC Japan Tsunami Debris Survey GIS Map)

http://dec.alaska.gov/eh/marine-debris/ (DEC Marine Debris Website)

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