



Donner Lake - Truckee, CA 2024-2025

Final Project Report



PROJECT SUMMARY

The 2022 pilot deep dives in Donner Lake proved that the 35-55 ft zone was heavily littered. For the 2024 project our team worked to circumvent Donner Lake at these depths and remove any and all litter found.

Primary Focuses:

- Collecting litter and marking heavy lift items, hot spots, and unknown or historical objects.
- Identified the presence of **Asian clams** and **crayfish**, both of which are invasive species known to disrupt freshwater ecosystems. These findings match those of other research projects into AIS on the lake.
- Data collection, comparison and analysis of litter to identify specific problem areas and highest contributors to underwater-waste.

PROJECT METRICS

Dive Days: 14

Total Cleanup Dives: 24

Miles Cleaned: 3.535 mi

Weight Removed: 2317.7 lbs

Total Items Removed: 1316

Tires Removed: 106

Plastic Items Removed: 474

Volunteers: 74

Volunteer Hours: 403



DIVE ZONES



LITTER ACCUMULATION TRENDS

Marina & Boat Pier

This zone was chosen for its high recreational use—boating, fishing, and shoreline activity—making it a known hotspot for debris from both historic dumping and ongoing human impact.

- **710.29 lbs** of litter removed over **5 dives**
- This zone accounted for **31%** of total project litter
- **217.78 lbs** of glass removed — **31%** of all glass collected
- This zone was a hotspot for **cinder blocks**, likely used as illegal buoy moorings.



LITTER ACCUMULATION TRENDS

North Shore / Public Piers

The north shore of Donner Lake is easily accessible from the public road and contains 37 public piers along with a high number of unauthorized buoys.

- We discovered a submerged “living room” setup—complete with a vacuum, pillow, and carpet.
- Covered **1.1 miles** – **31%** of total project distance
- Removed **1,107.98 lbs** of litter – **50%** of total weight collected
- **362.24 lbs** of rubber was removed



LITTER ACCUMULATION TRENDS

West End Beach

West End Beach is a popular public recreation area featuring a large swim zone, picnic areas, and boat access. Its high visitor traffic makes it a common site for shoreline and nearshore debris accumulation:

- Collected **91 lbs** of litter – the **lowest** across all zones
- **Southwest winds may push debris to deeper areas**, suggesting more litter may exist beyond typical dive depths



LITTER ACCUMULATION TRENDS

South Side

The south side was selected due to its proximity to residential areas, informal lake access points, and visible debris accumulation. Though less trafficked than the north shore or West End Beach, it showed signs of illegal dumping and legacy litter

- Notable non-recovered items: **stove** and **engine** due to weight
- Collected **408.44 lbs** of litter
- **Lower visibility** and **challenging terrain** made recovery more difficult



GIS INTERACTIVE MAP



Our organization targeted our efforts to the most littered zones of the lake near residential and public access areas and avoided the areas with lesser litter and lesser human presence.

DONNER LAKE 2024 DEEP DIVE CLEAN-UP

— Dive Paths

■ Aquatic Invasive
Species

Non-Collection Items

● Heavy Lift Items

◆ Litter Hotspots

▲ Unknown Items

To access an interactive GIS map showing the exact locations of our itemized dives and what non-collection items were found at each site, please [click here](#).

NON-COLLECTION ITEMS

Aside from removing small litter items our team also identified items/areas of interest called non-collection items using GPS location, photo collection, item description.

Total Non-Collection Items: 30

Heavy Lift: 22

Heavy lift items= Large or heavy items that would require additional equipment to remove safely.

Unknown Items: 6

The item may have historical or cultural significance, which must be verified by a licensed archaeologist. Once assessed, the archaeologist will determine the appropriate next steps regarding its preservation, documentation, or potential recovery.

Aquatic Invasive Species (AIS): 2

Potential AIS sightings are identified and GPS points dropped for future monitoring.



AQUATIC INVASIVE SPECIES

Asian Clams (*Corbicula fluminea*):

- Small, fast-reproducing bivalves
- Found in sediment near high-use zones
- Can outcompete native species, alter nutrient cycles, and clog water infrastructure
- Their presence confirms an **established invasive population** in Donner Lake, covering most of the circumference of the lake.



Crayfish (likely *Pacifastacus leniusculus* – Signal Crayfish):

- Common throughout Sierra lakes but **non-native to Donner Lake**
- Can disrupt food webs, uproot vegetation, and outcompete native aquatic species
- Frequently observed during dives near structure and debris fields

Key Takeaway:

The detection of **both Asian Clams and Crayfish** highlights the importance of continued **AIS monitoring** and **public education**, including signage promoting the **Clean, Drain, Dry** protocol. This also matches other AIS research in the lake.



NON-COLLECTION - HEAVY LIFT

During our deep dive, at least **22 large debris items** were identified but **not recovered** due to weight, entanglement, or limited bottom time. These include:

- **Sailboat hull**
- **Kayak**
- **Stove and boat engines**
- **Illegal buoys**
- **Tires**



Opportunity Ahead:

These items present a strong case for organizing a **Donner Lake Heavy Lift Cleanup**—a focused operation using lift bags, boats, and additional diver support to safely extract these large-scale pollutants and further restore the lake's health.



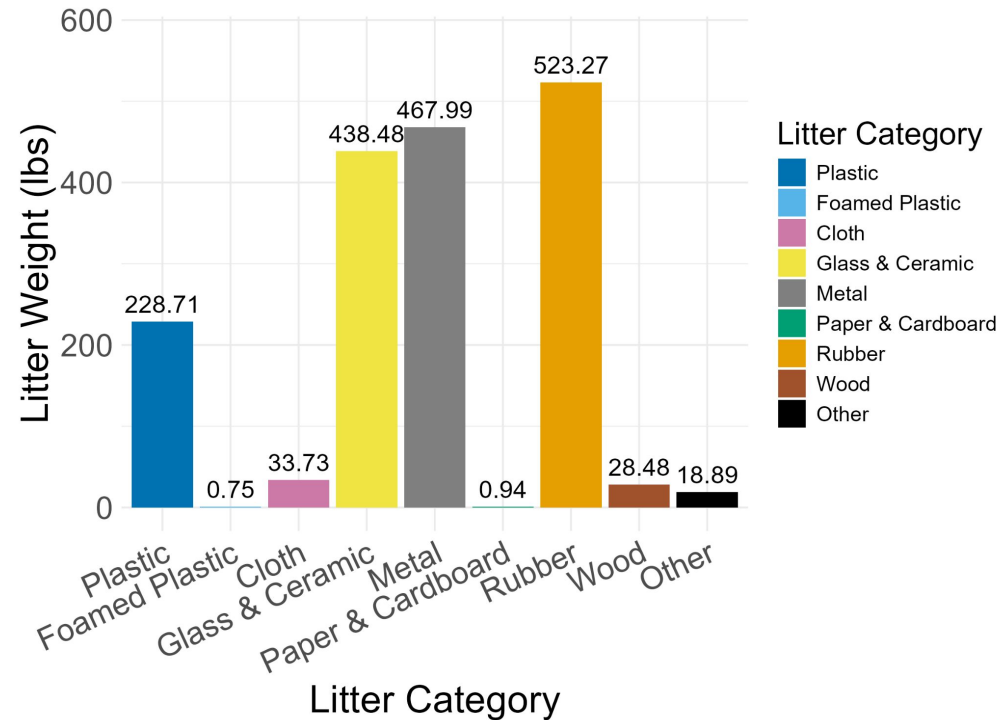
LITTER CATEGORIZATION

To collect impactful data on litter removed from lake environments we have adopted the United Nations Environmental Programme (UNEP) Marine Litter Categorization standard to produce a nationally recognized data set. This method separates litter into 77 different categories. CUTL with help from UC Davis TERC and DRI has adapted this system to freshwater litter and created additional categories for a total of 83 categories.

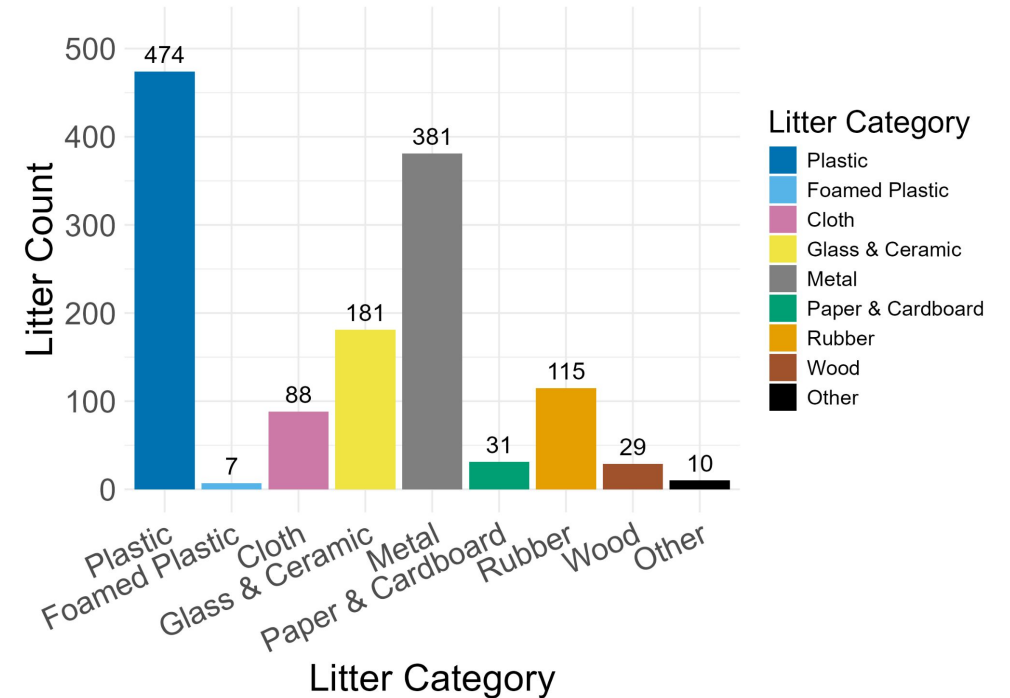
- 9 different **material categories**: plastic, foamed plastic, cloth, glass & ceramic, metal, paper/cardboard, rubber, wood and other.
- Within the material categories there are specific **use categories** which further define the item- there 83 in total. For example- fishing equi
- We have created templates on sorting tarps that outline each category. After the litter is sorted, we photograph, count, and weigh each category.



PROJECT BREAKDOWN - CATEGORY



Total Count: 1316



Total Weight (Dry): 1707.1 lbs

LITTER BREAKDOWN DISCUSSION

Predominant Litter – Donner Lake Deep Dive

Tires

- 523.19 lbs — 31% of total weight
- Legacy debris from past illegal dumping

Plastic Debris

- 474 items — primarily food containers and wrappers
- Ongoing impact from shoreline recreation

Metal Debris

- 467.9 lbs, 381 items
 - 55% of weight from metal anchors
 - 53% of items were metal cans
- Linked to boating and beverage use

Glass & Ceramic Debris

- 438.4 lbs, 181 items
 - 125 glass bottles
 - 400 lbs of ceramic construction material (likely cinder blocks)
- Indicates both recreational litter and dumped construction waste



PROJECT COMPLETION

- **Heavy Lift Items Delayed Progress**

Large debris such as a kayak, stove, sailboat engines, and more slowed operations; **22 heavy items** were left behind for future recovery.

- **Unexpected Volume of Trash**

The density of litter exceeded expectations, prompting a focus on **high-impact zones** rather than full circumnavigation where we left the areas that are least accessible and likely least littered..

- **Cold Water Temperatures**

Low temperatures caused **shortened dive times**. Temperatures hit 36 degrees at depths and below freezing on the surface where divers had to break ice for entry on some days.

- **Strategic Cleanup Focus**

Based on real-time conditions and safety, the team prioritized areas with the greatest environmental return.

CONCLUSION

1. Significant Litter Removal Achieved

- Over **2,300 lbs** of debris removed during the deep dive cleanup
- Heaviest contributors:
 - *Tires*: 523.19 lbs (31%)
 - *Glass & Ceramic*: 438.4 lbs
 - *Metal*: 467.9 lbs (55% of metal was anchors)

2. Most Common Items by Count

- *Plastic debris*: 474 items, primarily food containers
- *Metal cans*: 202 items (53% of metal count)
- *Glass bottles*: 125 items

3. Presence of Aquatic Invasive Species (AIS)

- Observed **Asian Clams** and **Crayfish**, indicating active ecological threats

4. Evidence of Both Legacy and Active Impacts

- Legacy dumping (tires, anchors, cinder blocks from the past) combined with ongoing litter from recreation continues to affect lake health



NEXT STEPS - PROTECTING DONNER LAKE

1. Continue Deep Dive Cleanups

- Expand efforts to cover unassessed areas and deeper zones in the near future on Donner Lake with CUTL.

2. Tire Recycling Strategy

- Partner with local agencies to responsibly dispose of or repurpose large recovered debris

3. AIS Monitoring & Education

- Install updated “Clean, Drain, Dry” signage at boat ramps and marinas, paired with a visual marketing campaign to educate boaters and visitors on preventing the spread of aquatic invasive species.
- Collaborate with regional invasive species task forces
- Installation of a CD3 AIS station at the boat launch to help boaters clean, drain, and dry vessels, reducing invasive species transfer.

4. Recreation-Focused Prevention Campaign

- Promote a “Pack In, Pack Out” ethic for shoreline users
- Distribute trash bags and disposal tips through local businesses and fishing permit programs

5. Long-Term Impact Tracking

- Use year-over-year data to track changes in debris volume and AIS presence
- Share progress through community updates and regional reporting

VOLUNTEERS

- **Data Collectors**

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- **Divers**

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- **Boat Captains**

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PROJECT PARTNERS

