Community Service Project Report

Planning Underwater Cleanup Events

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PHI 360 – Spring 2013

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Ever since man began crossing the seas his trash has been thrown overboard. Divers have been involved with underwater clean up programs ever since scuba diving became a popular recreational activity more than fifty years ago. These underwater explorers get an opportunity to see first hand the debris that is hidden from land-based people. The debris is not only unattractive but many items can harm the environment having direct effects on wildlife.

While one diver cannot clean, all of the world's water ways small groups can have a significant impact on a small area. It just takes a little time, some expertise, and a passion to give back to the environment and to the community that environment serves. We each have a moral and ethical responsibility to the environment and underwater cleanups are an effective way to bring the issues of responsibility to the surface.

Lake Havasu City is dependant economically on its waterways. People travel from the surrounding states to enjoy time on our beautiful lake. The tourists spend millions of dollars in our community each year because of the activities they can do on the lake. Unfortunately, a lot of their trash ends up on our lake bottom. Underwater clean-ups help identify high trafficked areas and can help develop management plans for the minimization of future damage.

Lake Havasu has year round population of approximately 56,000. Each year tens of thousands of young people will spend their spring break at the beach and on the lake here. During March and April, college students, teens, and those that still think they are students travel to Lake Havasu. This town is the sixth best spring break area in the nation (Kuruvilla, 2013). It is an anticipated 35,000 people throw their books to the floor, grab their bikinis, and hit the waterways in Lake Havasu. Where Sunny skies, great spring temperatures, clear waters, active nightlife, and the 45-mile long Lake Havasu beckons spring breakers from Arizona, California, Nevada, and other parts of the nation.

With an additional 35,000 people descending on Lake Havasu during spring break we thought it would be interesting to see what beverage suppliers are contributory to what ends up at the bottom of the lake. Colorado River Distributors, Northwest AZ Distributors, and Romer Distribution are the main beverage suppliers to this area. There are many bars, clubs, and restaurants that border the Bridgewater channel. Although Lake Havasu has a law prohibiting open-containers, (carrying alcohol containers in public) this law at times is not aggressively enforced during spring break. During the party environment many beer cans, malt liquor bottles, beer cups, and soft drink containers end up on the bottom of the lake.

This community service project shows how to plan, organize, and execute a successful underwater clean up. The team, as part of this project conducted a small-area underwater clean up to illustrate the impact these types of events can have.

This report is divided into multiple sections, they include:

- Choosing a Project - Location
- Organizing Volunteers
- Planning operations for underwater teams and topside support
- How to organize, sort, and document recovered trash
- How to report results
- How to obtain press coverage
- Summary of this project.

Choosing a Project

Underwater cleanup projects can range from a small group doing a local cleanup to a larger regional event. Many dive clubs, dive centers, resorts host clean-up events often and encourage volunteers to join in. When selecting a project, choose one that the organizing group feels strongly about. This will allow leaders to stay enthusiastic and motivate others to join in the cause. The clean up project selected should have a demonstrable effect rather than choosing one that is already relatively clean.

The best way to identify an underwater clean up site is to spend some time in the area either on shore or on a boat. Look for areas were people congregate with boats for recreation, or spend time swimming, fishing, etc. Look for a location that needs attention. It's not hard to imagine an area that is highly trafficked and may have debris on the shore line or in the immediate area. Consider doing a sample dive in the area or even a quick surface snorkel swim to see if there is trash and debris underwater. Be realistic about the project, start small and learn how to conduct a clean up. Even the smallest effect is the beginnings of big change.

Some underwater cleanups require the group leader to obtain certain permits or permission from the property owner whose land the waters encroach on if land access will be used. For some projects a permit may be needed from a local municipality and at times a notice to the U.S. Coast Guard is needed as well when boats will involved and when closing off an area may be necessary. These types of permits usually take three to six months to issue.

For this project and report we chose to conduct a sample underwater clean up in relatively small area, however this is an area that historically has high traffic and large amounts of cans, bottles and cups discarded on a regular basis. The location selected was the boat docks and promenade wall at the London Bridge Resort in Lake Havasu City, AZ.

Organizing Volunteers

The most important aspect in doing any underwater cleanup is to have enough volunteers. While it is possible to conduct a cleanup with just a few people groups quickly, learn that more hands are always better than fewer. The volunteers have to have a goal, not necessarily the same goal, but a goal nonetheless. Divers want to dive and find things. During the dive as they sift through the bottom and pick up trash, they may find a treasure. Topside volunteers want to see the treasures when divers empty their bags, but they also get a feeling of accomplishment when they help. All volunteers want to feel their time is valued in addition to helping the environment. People feel good helping

Volunteers need to be invited to the event with ample lead time. They are to be recognized for their efforts every step of the way. Without volunteers underwater clean up projects never materialize. Volunteers can come from; local dive club, dive center, parks and recreational facilities, community service organizations, like yacht clubs, Kiwanis, Rotary etc. In addition to seeking adult volunteers getting children and teens involved can be even more rewarding by helping today's youths begin to develop their own civic duty. Seek out volunteers from scout groups, both Boy Scouts and Girl Scouts. Some of these teens can also participate as divers (with parental permission) if they are certified divers. If not they can get excited about earning environmental and community service badges while helping. Consider volunteers from local high schools, colleges, and universities. Ecology, conservation, and sustainability programs are very popular in schools and underwater cleanups are a great place for students to learn.

Planning Operations

For an underwater cleanup to be effective, it needs to be well organized. Many details need to be handled by a primary team of organizers to ensure that the activity is successful. Volunteers can help with phone calls, recruiting sponsors, gathering supplies, safety and crowd control, recording data and anything that may need attention. Ideally, the following roles need to filled and tasks need to be accomplished with enthusiastic and safety minded individuals.

- General Organizer
    - Oversees general operations and keeps the project focused
- Dive Operations Coordinator
    - Ensures safety procedures are put in effect, and will conduct dive briefing prior to divers entering the water. These briefings discuss hazards, recovery procedures, and accident prevention. The DOC also establishes dive time limits.
    - Dive Masters – assist with volunteer divers to ensure safe entry and exit from water. Assist with removal of larger objects.
- Scuba Divers & Snorkelers (shallow water)
    - Conduct the dives to collect underwater trash using collection bags.
- Collectors & Sorters
    - Retrieve the bags from divers to sort and classify recyclables and trash.
- Data Recorders
    - Document the trash that is being removed. This data can be helpful for future cleanups in the same or similar area.
- Photography
    - Photograph and video the event. This is useful for presentations, press releases, and to recruit volunteers for the next project.
- Sponsor Recruitment
    - Seeks out sponsors for prizes, beverages, food, etc for volunteers and participants. Sponsors improve their corporate image by supporting clean-up events.

How to Obtain Press Coverage

To enhance the project, recognize participants, obtain sponsors, and notify the public about the clean up efforts press releases should be sent to local newspapers, radio and television stations. When possible request a reporter to cover the event. Have pre-printed press releases with necessary facts and names associated with the event to help reporters have accurate information. A post project release is helpful as well, this gives the project twice as much exposure if both get printed and more than likely get at least one exposure. This project did not require press coverage.

How to Organize, Sort & Document Trash

Organizing, sorting, and documenting trash is a critical step in the process of underwater cleanups. When doing so you must be accurate and safe. It is a good idea to have a boat on site or a land location to serve as a base of operations for divers. The divers equip themselves with the proper gear and thermal protection for the environment. This includes all safety measures as well as gloves for picking up sharp objects. The divers enter the water with mesh bags and bring them back to the surface when filled. It is also important to have a knowledgeable supervisor to oversee diving operations on the boat and dock who maintain a zone of safety for the divers. Topside volunteers will receive the bags from divers, then empty them, and start the sorting and complete the documentations. Each item retrieved is recorded and placed in the proper sorting zone. For example, one bag is for metal objects, another for cans, plastic, glass and general trash. After items are sorted and documented each bag will be transferred to the proper location for recycling or disposal.

Safe Handling

Debris is only one of the problems that affect oceans, rivers, and lakes. Some debris remains floating, while other items sinking into the silt on the bottom. With this influx of marine debris, volunteers selflessly dedicate their time and energy to clean the areas they love. It is important to know what is safe and how to handle the debris that ends up in our water. There are the obvious items like oil drums, gas cans, car batteries or other potentially hazardous items that should be avoided by amateur divers and clean-up volunteers. When these items are found they require professional clean. These items should be noted and marked for future recovery.

Less hazardous obvious items, such as plastic, boxes, bottles, or bags can be handled with care. They can be picked up, sorted, recycled or thrown away in similar ways to handling household trash. It is important to carefully look at items to make sure they do not display any hazard symbols and labels, and do not touch any item that displays these or similar labels (Barnea, 2013).

How to Report Results

Reporting results is an important step to quantifying the clean up process. Accurately reporting results shows the difference these projects can make. In addition, the data can be extrapolated to create impact studies. Goals and new policies can be set when accurate results are given. For example, one could assume the channel is clean if no trash was found in a given area, however, given the substantial amount of trash reported, we know something needs to change and that this group of divers is making a distinct difference in the cleanliness of the channel.

Project Summary and Results

For the sample underwater clean up we chose to use a location that is highly trafficked, but also manageable for a small scale clean up. The location selected was the docks at the London Bridge Resort. These docks are used by boats throughout the year. This location also borders on the promenade walk in front of the Kokomos club, a highly popular location for Spring Breakers.

For safety purposes, we used the forty-two foot dive vessel R/V Explorer to block off the entranceway to the dock area for a period of 90 minutes. This allowed divers to enter the water, conduct an initial survey, and then complete a 45-minute dive to retrieve trash. The area fifteen feet deep at the outside with the shallowest part being only two feet deep.

The bottom composition consists of soft, muddy, silt. The bottom gets stirred up on a regular basis when boats run propellers. This washing effect tends to silt over many items. The years of debris go at least 18-24 inches below the surface of the silt. For the purposes of this, clean up we only removed items that were clearly visible on the bottom. No excavating or dredging was conducted

The area covered was approximately 2,500 square feet. It is only a small portion of the Bridgewater Channel. Despite its small size it is representative of the items that can be found along the entire length of the channel. From this small sampling we can extrapolate and calculate the magnitude of the trash problems in these waters.

Eleven people including four divers and seven volunteers (including principal investigators) were on site for the clean-up event. Two additional people assisted with equipment preparation and video editing. Diver volunteers came from the Lake Havasu Divers Association and sorting and documenting volunteers came from the Lake Havasu Sea Scouts.

Trash Collected

Surprisingly the collection of the sample area was less than was expected considering the traffic that these particular docks have seen since the Lake Havasu Divers Association conducted its annual channel clean up in October 2012. Never the less given the short dive time, and small team these recoveries show a clear example of the quantity of trash that is in the lake.

Items	Quantity	Beverage Brands	Quantity
Aluminum	76	Assorted Soda	10
Glass	11	Bud	6
Plastic	38	Bud Light	9
Sub total	**125**	Coors	8
		Coors Lite	19
Anchor	1	Keystone	3
BBQ Grill	1	Miller	1
Camera	1	Miller Lite	4
Fish in Can	1	Non-definable	14
Flashlight	1	Rockstar	4
Shot Glass	1		
Student ID	1		
Swim Mask	4		
Towels	1		
Traffic Cone	1	45 Min Dive Time	
		Items Per Diver	34.50
Total Items	**138**	Items Per minute	3.07

Imagine for a moment if we increased both the time in the water and the number of divers collecting trash. For example if we increased the dive time to four hours and the divers to sixty. This would provide 240 diver hours that would increase the collection to approximately 8,280 pieces of trash. Consequently divers and the more time, the more trash is collected. It is clear that underwater clean up projects have a significant ecological and environmental impact. More than 75% of the earth is covered with water. Imagine how much trash is down there!

Participants

Joel Silverstein, Principal Investigator / Diver

Travis Foley, Investigator, Sorter

Taylor Harrison, Investigator, Sorter

Volunteers

Capt. Kathy Weydig, Lake Havasu Sea Scouts, Safety Coordinator, Photographer

Capt. John Fuller, Scuba Training and Technology Inc., Dive Master

Jane Silverstein, Lake Havasu Sea Scouts, Sorter, Recorder

Joey Kasper, Lake Havasu Sea Scouts, Sorter

Jona Silverstein, Lake Havasu Boys Scouts, Surface Collector

Nathan Adler, video editing, post production

Divers

David Cotner, Lake Havasu Divers Association

Stephen Brown, Lake Havasu Divers Association

Lynn Shcafer, Lake Havasu Divers Association

Project time:

36 person hours for clean up

14 person hours for report and presentation preparation

References

Barnea, N. (2013, feb 13). *Smart handling of marine debris*. Retrieved from http://marinedebrisblog.wordpress.com/2013/02/07/handling-debris/

Kuruvilla, C. (2013, march 12). *Magazine ranks the 15 trashiest places to spend spring break read more: http://www.nydailynews.com/news/national/15-trashiest-spring-break-destinations-article-1.1286625*