



## PASSIVE RECOVERY

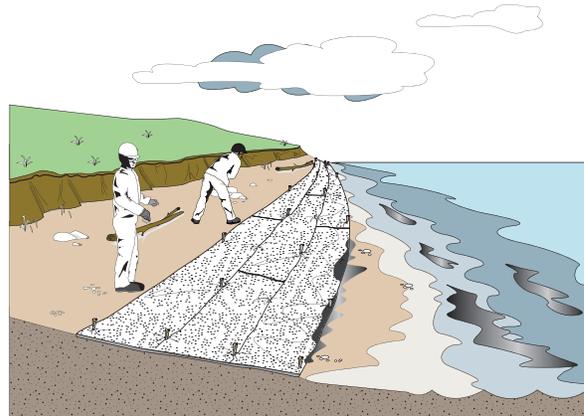
### OBJECTIVE & STRATEGY

PR

The objective of the Passive Recovery tactic is to remove spilled oil by collecting it in a sorbent material. The sorbent material and associated oil are then removed from the environment and disposed of according to an approved Waste Management Plan.

### TACTIC DESCRIPTION

Passive Recovery is performed through the process of adsorption on sorbent materials, such as sorbent pads, rolls, and boom; pom-poms (oil snare); and natural products. Sorbent boom and pom-poms are made from substances like polypropylene, a synthetic material that is oleophilic (oil-attracting) and hydrophobic (water-repelling). When left in an oily water mixture, they can collect many times their own weight in oil while collecting very little water. Their effectiveness depends on the type of oil, how they are placed, and the environmental conditions at the recovery site. The tactic is usually deployed by anchoring rows of sorbent boom or oil snare along the shoreline or in the intertidal zone. A variation for marine mammal haulouts is accomplished by broadcasting natural sorbent material, such as peat moss or sphagnum moss, on the haulout sites (Figure PR-4).



The general strategy is to:

1. Identify the trajectory of the spilled oil and select areas to be protected. Identify natural collection sites where floating debris is usually found.
2. Evaluate access restrictions and select appropriate deployment vehicles.
3. Mobilize and deploy personnel with tools and materials.
4. Secure sorbents with anchors or stakes.
5. Monitor the sorbent on a regular basis for oil content and security of the anchor systems.
6. Replace saturated sorbents as necessary.
7. Store and dispose all recovered sorbents according to the waste management plan.



## Passive Recovery

Passive Recovery can be deployed along shorelines prior to impact to reduce the quantity of oil that might otherwise impact sensitive habitats. The tactic can also be applied to shorelines that have already been oiled to help keep the re-mobilizing oil from refloating and migrating to other non-impacted shorelines. Passive recovery can also be used to line the inside of containment or exclusion boom as an effective collection technique. Likewise, passive recovery can be used with diversion boom in cases where small amounts of oil are anticipated. Sorbents can be used with tidal-seal boom or fences to create an adsorption barrier. In all cases, the sorbent material must be monitored after each tide and replaced as necessary.

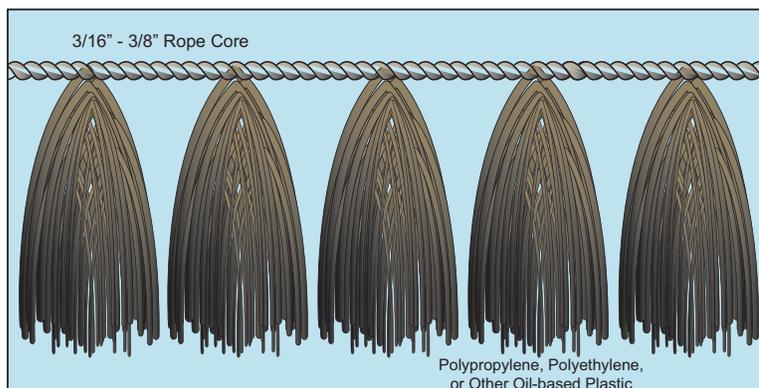


Figure PR-1. Snare line.

Fibrous polypropylene sorbents, such as pads, rolls, and sorbent boom, work well on non-persistent oil such as diesel. These sorbents can recover approximately 15:1 oil to sorbent by weight. Polypropylene strips, such as pom-poms, work best in persistent oil and may recover up to 20:1 oil to sorbent by weight. Natural material, such as peat, are effective sorbents, but are difficult to recover from the environment once oiled.

Passive recovery operations can produce a significant solid waste stream; all wastes generated must be measured, stored, and disposed of according to an approved Waste Management Plan. Logistical support for this waste stream should be mobilized early in the spill event. One way to reduce solid oily wastes is to wring out oil from the sorbents and reuse them.

Access to selected areas may be accomplished from the water, land, or air. Deployment from the water usually involves using shallow water platforms such as landing craft and skiffs. Access from a land-based response utilizes trucks, ATV's, or other four-wheel drive vehicles, while access from the air may be possible by helicopter.

Passive Recovery is often combined with debris removal, where concentrations of driftwood and other debris are relocated or removed from a likely impact area. The impact area is typically the area between the low and high tide lines in marine areas or the present waterline of the inland water body.



**Operating Environments****PR-O OPEN WATER**

Passive Recovery is not recommended in the open water operating environment due to the likelihood of losing sorbent materials.

**PR-P PROTECTED WATER**

Consider placing sorbents from the shoreside in the protected water environment. Sorbent materials and anchors for protected water passive recovery systems should be able to deploy and operate in seas up to 3 feet and winds up to 25 knots. Vessels setting and tending the sorbents should be able to safely transit seas which exceed the sorbent's operating limitation. Sorbent arrays must be monitored often, due to the forces applied on the anchor systems by wind, currents, and waves.

**PR-C CALM WATER**

Calm water passive recovery systems should be able to deploy and operate in seas of 1 foot and winds up to 15 knots. Vessels setting and tending the sorbents should be able to safely transit seas which exceed the sorbent's operating limitation. Calm water passive recovery systems may be based on small fishing vessels, work-boats, or skiffs. Calm water passive recovery systems typically work in depths as shallow as 3 feet.

**PR-F FAST WATER**

Passive recovery systems are not usually effective in fast water environments, but are often utilized where the currents slow to calm water conditions.

**PR-B BROKEN ICE**

It is difficult to keep passive recovery systems anchored securely in broken ice conditions. As an alternative to anchoring, sorbent materials may be placed in leads and openings in the ice, closely monitored, and retrieved once free from the ice.

**PR-S SOLID ICE**

An effective passive recovery method on solid ice is to use snow as a natural sorbent material.

**PR<sub>mt</sub> MARSH AND TUNDRA**

Sorbents can be an effective recovery technique on wetlands, but care must be taken not to damage sensitive habitat when accessing and working on the recovery site. Minimize travel across tundra and marsh and avoid walking on oil-contaminated soils. Place sorbents to remove small pools of oil and to intercept lightly oiled waters that are migrating away from the contaminated site. Take care to ensure that sorbent material is not blown away by high winds.



## Passive Recovery



**PR-1. OTHER LAND-BASED SPILLS**

Use of sorbents should be minimized because of solid waste disposal problems. Use sorbents when overland flow is minor and terrain has a low slope.

**Deployment Configurations**

Typical configurations are shown below, but responders should consider the actual conditions, and modify their deployment accordingly.

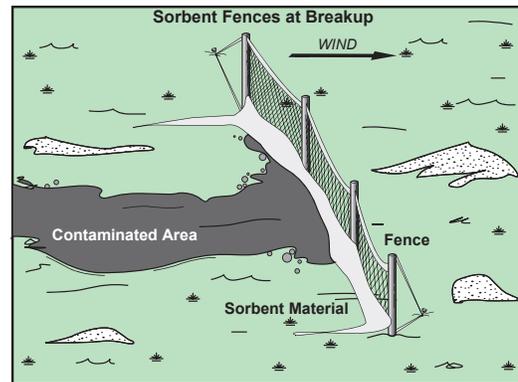


Figure PR-2. Sorbent fence at break-up.

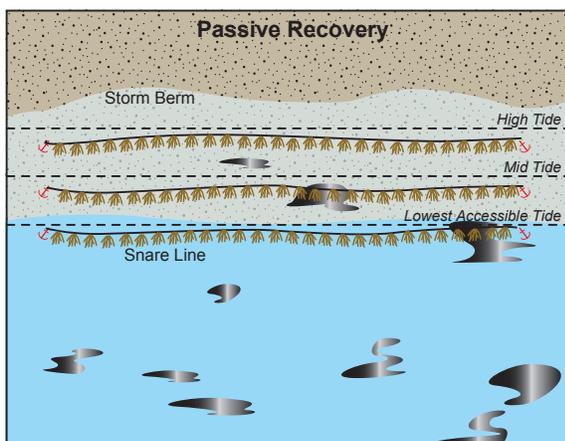


Figure PR-3. Aerial view of a passive recovery general configuration.

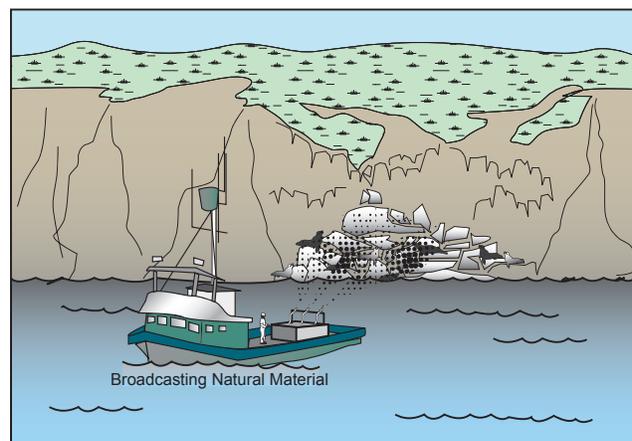


Figure PR-4. Marine mammal broadcast passive recovery.

## DEPLOYMENT CONSIDERATIONS AND LIMITATIONS

**SAFETY**

- Passive recovery teams may require bear guards when working in bear habitat.
- Daily weather evaluation is recommended, and should include distance to safe shelter and transit times.
- Vessels setting and tending the boom should be able to safely transit seas which exceed the boom's operating limitation.
- Vessels, including skiffs, must have a minimum of two crew aboard.
- If possible, vessels in transit to/from an operation or staging area should transit in pairs.
- A communications schedule should be established and followed, between vessels in transit and the Operations Section or Radio Dispatcher.
- Response personnel should wear PPE as required by the incident-specific Site Safety Plan.

Part III  
MECH.





DEPLOYMENT

- Shoreline access may influence deployment platform options.
- Passive recovery materials require periodic tending and replacement.
- Logistics for solid waste transport and disposal need to be considered.
- Contact National Marine Fisheries Service (NMFS) before disturbance of marine mammals.
- If wildlife or historic properties are encountered, see Wildlife Checklist on page A-19 or Historic Properties Checklist on page A-20.
- Take proper measures to prevent sorbents from freezing into (incorporated into) the ice. If this occurs, sorbent recovery will be delayed until break-up.

REFERENCES TO OTHER TACTICS

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Other tactics associated with Passive Recovery include:

- DV** • Diversion Boom
- C** • Containment Boom





# Passive Recovery

## EQUIPMENT AND PERSONNEL RESOURCES

Commonly used resources for this tactic have been defined as personnel with tools, transportation, and sorbent materials. Quantity of units required will be determined by site conditions and resource sets may need to be refined as site-specific requirements dictate.

**PR**

### Typical Passive Recovery System

| Typical Equipment                                     | Function   | Quantity                       | Notes  |
|---|--|--------------------------------|--|
| Sorbent boom, typically 8" diameter by 10' long       | Collect non-persistent oil   | Site-specific                  | Best for diesel and non-weathered crude oil                        |
| Pom-poms attached to a line, typically in 50' lengths | Collect persistent oil   | Site-specific                  | Best for weathered crude, Bunker C, IFO, and other persistent oils |
| Anchor systems, small                                 | Secure sorbent in selected configuration                                   | 1 system per 200' of boom/line | Use in sub-tidal collection  |
| Anchor stakes   | Secure sorbent in selected configuration                                   | 1 stake per 100' line          | Use on land and in inter-tidal areas                               |
| Hand tools: rakes, pitchforks, shovels, sledge hammer | Deploy anchor, stakes, etc.  | Site-specific                  |  |
| Oily waste bags and duct tape                         | Storage of recovered sorbent materials                                     | 4 to 8 bags per 100'           |  |
| Typical Mobilization Options                          | Function   | Quantity                       | Notes  |
| Vessel Class 2, 3, 4, 5, or 6                         | Deploy system to recovery locations accessible from the marine environment | 1 or more                      | Locations with marine access                                       |
| ATV with trailer                                      | Deploy system to recovery location at an off-road location                 | 1 or more                      | Locations with ATV access  |
| Helicopter  | Deploy system to recovery location at an off-road location                 | 1 or more                      | Locations with a helicopter landing zone                           |
| Trucks and other 4-wheel drive vehicles               | Deploy system to recovery location accessible by road                      | 1 or more                      | Locations with road access   |
| Typical Personnel                                     | Function   | Quantity                       | Notes  |
| Field Team Leader                                     | Supervises operations  | 1                              |  |
| Vessel Operators, protected/calm waters               | Operate Response Vessels   | 1 per vessel, optional         | If vessels are required  |
| Skilled Technicians                                   | Lead crews   | 1 or 2                         | Depending on crew size   |
| General Technicians                                   | Work under the direction of skilled technicians or field team leader       | 2 to 15                        | 3 to 5 per crew leader   |

Part III  
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