Oil Spill Tool Kit

For Citizens Monitoring Emergencies

Photos courtesy of the National Oceanic and Atmospheric Administration (NOAA)

New Jersey Department of Environmental Protection
Delaware Riverkeeper Network

Funding provided by US Environmental Protection Agency, Region 2

Contents

The Story of Athos I and A Message from the Delaware Riverkeeper

On the evening of November 26, 2004, the day after Thanksgiving, the Delaware River was in the midst of suffering its worst oil assault in decades. Venezuelan crude oil, among the heaviest of oils, was spewing into the River from the Athos I, a Greek tanker. As much as 473,000 gallons of oil may have spilled into the river. It began as the oil tanker was maneuvering to come into the dock in Paulsboro, New Jersey. The tanker hit a combination of objects including a 15-foot pump casing, a concrete block and a 7-foot long anchor resting on the bottom of the river. Two gashes ripped open the hull of the tanker. The first being approximately 5-foot by 9 inches and the second approximately 2-foot by 1-foot. Crude oil began spilling out of the breached hull, quickly covering the river. Soon the birds, wildlife and important river and wetland habitats were coated and contaminated by the thick oil.

Although agencies and hired cleanup personnel moved quickly to address the spill, damage was already done. The oil was spreading each day covering more of the river, flowing into and contaminating tributary streams and their sensitive habitats. In addition to the smell of oil, an air of hurt and harm hung heavily over the riverside communities. Twenty, forty, sixty miles on its way down to the Bay and the ocean, it spread in the form of dense slugs of tar, small tarballs, sheen and oil.

Just two weeks from the time the tanker began dumping it's load, 119 miles of shoreline had been impacted by the spill. Of the over 1,000 birds expected to be harmed by the spill, only 190 had been captured alive. By the time the cleanup response was over, the Athos I had exposed it's toxic pollutant to 115 miles of river, 280 miles of shoreline, over 16,000 birds, as well as the river's fish, shellfish, wildlife and many of it's important habitats.

Without the aid of the volunteers and the dedicated citizens concerned about the health of their river, environment and community, the damage would have been worse. More than 100 volunteers helped gather information on the environmental harm being inflicted on the river and its ecosystems as a result of the Athos I oil spill. These volunteers helped determine the areas in immediate need of protective measures, such as booms. They also identified areas where protective measures were failing and required repair. And they located and reported injured wildlife in need of care. Data provided by the volunteers was used by NJDEP professionals to enhance their assessments of what was happening on the ground and to support future enforcement efforts, including cleanup cost recovery and providing for environmental restoration of the river.

When a catastrophic spill happens, citizens have a critical role to play in the response. Citizens banding together and donating their time can dramatically complement, stretch and magnify the resource constraints that our government agencies face. The citizens' singular commitment to protecting their environment and community make them irreplaceable to the process. They have a source of knowledge and information that cannot be duplicated by others who may be distracted by issues of lawyers, liability and limited resources.

You, our citizen monitors, have an important role to play if your community and river is hit with a catastrophe. It is our hope that this manual will help provide the tools and information you can use to strengthen the success of your response.

Sincerely,

Maya K. van Rossum, the Delaware Riverkeeper

Introduction

Inspired by our efforts to engage and support citizen action in response to the Athos I oil spill on the Delaware River, this tool kit was assembled by the New Jersey Watershed Watch Network and the Delaware Riverkeeper Network as a way to help local watershed groups effectively respond to future oil spills that may threaten the health of their waterway, community and environment.

When a catastrophic spill happens, there is a defined role for citizen monitors to play in the response and documentation of the spill. Having trained citizen monitors on the ground when a devastating spill occurs can have a huge impact. An army of trained volunteers can help identify when and where protective measures and/or cleanup are needed. They can also monitor and document the progress of cleanup efforts from the onset to the weeks and months that follow. Information provided by trained volunteers will not only enhance the success of the cleanup response, but can provide an independent, more objective source of information for the public, the press and concerned politicians.

This tool kit is intended to provide ideas and a starting point for your own volunteer response effort. It is not the be all and end all but simply a place to start. Every area and every incident is different. It will be important that you remain committed to learning from your experiences and to adjusting your program as the incident and the regional specifics demand.

The National Response System

(excerpt from US Environmental Protection Agency website)

When a release or spill occurs, the company responsible for the release, its response contractors, the local fire/police departments, and the local emergency response personnel provide the first line of defense. They assess and determine if the spill needs greater response from a higher authority. A variety of state agencies stand ready to support, assist, or take over response operations if an incident is beyond local capabilities.

Citizen groups and monitors are a vital piece of the puzzle and provide a first line of defense for the local stream. Do not assume that all the bases are covered in an emergency situation. In most cases, if you plan ahead, the agencies and the command center in charge of the emergency will appreciate the extra eyes and assistance.

Who Plans For and Responds to These Emergencies?

Responding to environmental emergencies is complex. Responsibilities are often spread across the federal, state and local sectors, depending on the size and type of emergency. Frequently, the environmental, emergency management, public safety, and public health agencies of all three levels of government are involved. Industry also has a role to play in preparing for and responding to these emergencies.

- The **National Response Center (NRC)** serves as the sole national point of contact for reporting all oil, chemical, radiological, biological and etiological discharges into the environment anywhere in the United States and its territories. In addition to gathering and distributing spill data for Federal On-Scene Coordinators and serving as the communications and operations center for the **National Response Team**, the NRC maintains agreements with a variety of federal entities to make additional notifications regarding incidents meeting established trigger criteria.

- The **U.S. National Response Team (NRT)** is made up of 15 federal agencies with responsibilities for preparing for, or responding to, major oil or hazardous chemical emergencies. The NRT is primarily a national planning, policy and coordinating body and does not respond directly to incidents.

- **Thirteen Regional Response Teams (RRTs)** located around the nation whose responsibilities include:

    - exchange information about their abilities to respond to on-scene coordinators' (OSCs) requests for assistance;

    - develop Regional Contingency Plans to ensure that the roles of federal and state agencies during an actual incident are clear;

    - conduct training to test the abilities of federal, state and local agencies to coordinate their emergency response activities; and

    - identify available resources from each federal agency and state within their regions.

Be sure to ask to review your *Regional and Area Contingency Plans* and *Emergency Response Plans*. Offer to be a part of the process. Your local knowledge may help make these plans more thorough and protective. To view an example of an *Area Response Plan*, visit www.savebuzzardsbay.org/bayinfo/bbgrp.htm

Reporting Pollution Incidents

If you are witness to an oil spill be sure to report it. Don't assume someone else has already undertaken that important job. You may be the first one to see the problem, so take the time to report it.

Important numbers to contact include:

- **For coastal waters/Great Lake spills** - contact the federal government's centralized reporting center, National Response Center at (800) 424-8802
- **For inland spills** - contact your EPA Regional Office. You can find contact information for your regional office at www.epa.gov/epahome/locate2.htm
- **For injured wildlife** - contact the National Wildlife Refuge at (877) 396-NWRA or the National Response Center at (800) 424-8802 to find your area's injured wildlife contact.
- Call your State agency in-charge of environmental protection.

When reporting a pollution incident, be ready with as much of the following information as possible:

- ☐ **Your contact information**
- ☐ **Name and address of responsible party**
- ☐ **Exact location of the incident (use cross roads and landmarks)**
- ☐ **Date and time of the incident**
- ☐ **Source and cause of the oil release**
- ☐ **Type of oil released**
- ☐ **Any dangers or threats**
- ☐ **Any injuries**
- ☐ **Weather conditions at site**
- ☐ **Any other information that may be important for them to know**

- ► **Also, let them know if you are with an environmental group and that the group has been alerted.**
- ► **Be sure to take photos and include the data watermark on the photos.**

Request that you be notified of any response action taken and request a follow-up call from the contact put in charge of the spill. If you do not receive a follow-up call, then call them back at an appropriate time and ask for information about the response.

Volunteer Monitoring Coordinator Role

Tips for Emergency Response Monitoring

The Volunteer Monitoring Coordinator often serves as the organization's "Command Center" during an emergency. Coordinators ensure that urgent pollution information in the field is transmitted to the proper agency and cleanup crews, they create a record of information for long term data use and reporting, and they make sure the organization's hierarchy and spokespersons are kept fully informed of their progress. This list will help you prepare ahead of time and help things run more smoothly during an emergency.

Calling All Volunteers

Send out emails and electronic "Action Alerts" to call your volunteers in for duty. Give them all the facts that you know at that time. Let them know how you will be working with the authorities. Give them a direct line to contact you at any time.

Volunteer Training

Recruit and train citizen monitors throughout your watershed so they can mobilize when an emergency happens before an emergency happens. During training, stress to the volunteers *safety first*. For example, make sure volunteers know that they should work in pairs; that they must never attempt to take samples or touch the substances that they are observing (they should be conducting visual assessments only); that they must never put themselves in dangerous or even questionable situations; and that trespassing for purposes of making observations is never okay. Assign multiple volunteers to particular regions or stretches of river in advance to ease coverage problems when a spill does occur (you may need your volunteers during the weeks and sometimes months after the spill). Have maps ready, or pre-assigned to volunteers, to save time.

Standardized Protocols

The volunteers should use standardized observations, which helps with reporting as well as data quality concerns. Use template datasheets and protocols, and make them accessible to the volunteers. Make sure volunteers have proper equipment and supplies and, if necessary, organize an equipment drop-off point. Photos and visual assessments are essential. Get in contact with your local, state and federal contacts in advance. Ask them if they have a protocol they use in the field that you could review. Standardizing your protocol's definitions and procedures with theirs will help to insure that the information your program collects is of use and/or value to the agencies to which you will be providing it. Be sure your data is also useful to your spokespeople.

Get in the Know

Many agencies have emergency reporting mechanisms to distribute information to water suppliers and the public. If your organization is on that list, you will be notified when a large spill happens. Advocate to get agencies to include your group in these correspondences and get your efforts into Emergency Response Plans. Meet with officials and show them the resources you can offer when a spill impacts your river and let them know you plan to mobilize as part of the public process. Create an agency contact list of key personnel and call them occasionally to build a relationship.

Get the Word Out

Creating a mechanism to get information to your volunteers will help you mobilize the group quickly. Phone trees, email distribution lists of trained volunteers and members, or a bulletin board on your website are ways your messages can get out. You can use these same tools to provide protocols in a timely fashion. *Google Documents* and *Google Earth* are some great, free online tools that are available to anyone.

Stay Connected

Provide a cell phone number where you or another organization representative can be reached at all times. This is essential for getting information from the volunteers to the cleanup crews when urgent needs are identified in the field. Remind volunteers to save important numbers in their cell phone. Get the Coast Guard Command Center phone and fax numbers so, as the Coordinator, you can communicate urgent matters in the field to the responding cleanup crews and agencies. The Command Center may request that this number may not be distributed to volunteers as agencies usually prefer having one point person from the organization making these calls and faxes. If booms are malfunctioning, oiled wildlife is observed, oiling in unprotected areas is witnessed, or other issues of concern are identified, calls to address these circumstances should be made immediately to the Command Center numbers you have been provided.

Use the Press

During catastrophes, the press will be looking for important information and this will be the time for your organization to shine by speaking about your river. Prepare and distribute a press release to share your observations. Capitalize on this opportunity to share what long-term measures are needed to make sure disasters are not repeated. In many cases, the Coast Guard or other lead entity will be making regular briefings and/or press conferences regarding the spill. Be sure to attend and participate in these briefings. And remember, you have on the ground volunteers with information, observations and a perspective that is different than that of the agency officials and the responsible party. It is important that the press and the public hear from you.

Call for Public Meetings

It is important that the citizens in the impacted areas are informed on the progress of the cleanup and be kept up-to-date. The responsible party and agencies should hold public meetings. Use your voice and the voices of other concerned groups and citizens to call for those meetings. Calling for public meetings is an important role that politicians can play in the process and one that they should be very comfortable playing.

Add Newcomers

Citizens will likely be inspired by the spill and reach out to help. Get them involved! These folks may have local knowledge of the region impacted and work with your core group of trained volunteers to collect important information. You can also develop a new, long-term environmental advocate for your river.

Long-Term Follow-Up

Immediately call for a Natural Resource Damage Assessment (NRDA) to be conducted, or other penalties and fines to be charged to the polluter. It is critical that the assessment process begin immediately and continue throughout the response. If data is not collected from minute one then the evidence necessary to successfully pursue a NRDA claim will be lost. Your data and photo-documentation will be important pieces to include in these investigations. Stay in the process to make sure that the polluter is held accountable and ASK QUESTIONS along the way.

Containment and Recovery

If oil or another substance is on the water, focus on insuring that all efforts are being employed to first **contain**, and then **recover** the pollutant. If booms are not protecting sensitive areas such as wetlands, tributary streams, and coves, then report that the boom(s) need to be installed. Make sure that tides are considered with boom placement.

Review Emergency Response Plans

Something you can do before a spill ever happens is to make sure that your region's Emergency Response Plan is adequate. Check to see that specific measures are outlined to ensure that sensitive areas are prioritized and that a plan on boom placement at different tide stages is available and mapped out for future reference. Work with agencies to incorporate your monitoring efforts into the response plan.

Keep the Momentum Strong

Concern from the public will be high. Keep volunteers active, engaged, and involved and be sure to thank them for their work. This might also be a good time to call for legislation to better protect your river from certain harms, whether it is from singled-hulled tankers or for the need of escorts for vessels. Momentum will be strong, so use it to the advantage of your river. As time passes, involve newcomers in other learning and volunteer opportunities to help their river and invite them to join your watershed association.

Thank Your Volunteers

Thank your volunteers for monitoring in any kind of weather, for driving from site to site, for filling out and faxing the many reporting forms and for calling the hotlines when they find injured wildlife or malfunctioning equipment. They provide valuable assistance in protecting our precious resources. Remember, you can't do it without them, or at least not as well, and make sure they know that.

Report Out

Let your volunteers and others involved know what you documented. Documenting areas of concern and areas of no oiling is important. Letting those involved know what you did with their information is critical to any monitoring program. This information can also be used as a red flag to inform Natural Resource Damage Assessment Teams if this type of assessment is required.

Appendices

The oil spill protocols and datasheets that follow were used on the tidal Delaware River and it's tributary streams for the Athos I oil spill, as well as two other smaller spills that occurred after the Athos I. This protocol was also used during a smaller freshwater oil spill and worked well with some modifications. Please modify these datasheets for your own river and region. Areas in red can be modified for your organization.

Appendix I - Tip Sheets

Oil Assessment Tips for Initial Oil Evaluation

Oil Spill & Wildlife Assessment

Thank you for your help!

Your goal is to assess a specific section of a waterbody to determine if it has been impacted by the oil spill as well as other areas of the waterbody and nearby ponds where oiled birds may take refuge and be in distress. You will do this by visiting public access points along the sections of the waterbody from which you can perform a visual assessment for oil and injured wildlife. If you do not find oil, you should note this information on the datasheet. Be aware that waterways look different at different stages of tide. **Try to visit your site after high tide and approaching low tide. By doing this, you may be able to observe oil stains along the high tide mark as well as oil that has accumulated on the bottom and will remain as the tide goes out.** (Heavy oil tends to sink in cold weather). You can obtain a tide schedule at www.saltwatertides.com

Before you head out to your stream, review the *Oil Spill Assessment Datasheet* and *Oil Spill Wildlife Assessment Form* and use an aerial map or other local map of your study area to identify locations where you can safely and legally access the stream. First, drive to the furthest downstream location to begin documenting the conditions on your waterway. Ideally, you will be able to begin monitoring at the mouth of your stream. Work upstream systematically, visiting each public access point until you reach the head of tide for your tributary. "Head of tide" is the point where a dam or other obstacle stops tidal exchange (e.g., Fairmount Dam in Philadelphia marks the head of tide on the Schuylkill River). Use the datasheet to assist you with documentation. **Document stations consecutively rather than skipping around.** This will better help with mapping the impacted area. **In addition, visit non-tidal areas and ponds upstream where injured waterfowl may congregate.**

Consider that in some cases, places that are not oiled at your initial visit could potentially be oiled in the future depending on weather and tides. Frequent visits to locations are encouraged if you have time to follow-up after your initial visit, particularly if you are in an area that has been oiled or where birds or other wildlife gather. **As cleanup efforts diminish, animals may return and become oiled.**

If possible, include a copy of a map marked with your public access points with your datasheet and send to our office as soon as possible. Photos and video are also appreciated and encouraged. Be sure to make a copy of your datasheet for your records and/or future follow-up monitoring. If you have any questions about monitoring, contact your coordinator, name, at (XXX) XXX-XXXX.

What You Should Take Into the Field

- A partner - sample in pairs
- Clipboard and pencils
- Several copies of the datasheet & this protocol
- Camera/video camera
- Binoculars
- ADC map or other local map
- Cell phone

Tips to Help You Collect Effective Data to Help the River

Make initial observations from a safe distance. Remember, your safety and welfare take precedence over data collection. Please, when collecting your information:

- Do not trespass
- Do not touch anything covered in oil. Oil is toxic and can cause health hazards.
- If strong odors from the oil are present, do not linger in the area for a long period of time.
- Avoid low-lying areas where vapors may concentrate.
- **Do not put yourself in harm's way.**

To Report Injured Wildlife:

If you find injured wildlife, call the wildlife hotline at (call the National Wildlife Refuge at (877) 396-NWRA or the National Response Center at (800) 424-8802 to find your area's hotline #) for assistance and instruction on how to proceed. **Do not approach wildlife yourself.** Note number of birds oiled, degree of oiling, and status of birds on the Oil Spill Wildlife Assessment Form. **Be sure to visit favorite waterfowl spots not in the immediate impact or tidal zone.** Injured birds have been found miles from the spill & your vigilance can help detect these birds that may otherwise go unnoticed.

Appendix I - Tip Sheets

Oil Assessment Tips for Initial Oil Evaluation

Oil Spill Containment

Booms are the first line of defense against oil spills. Two types of booms are used: **containment booms** are made of a durable plastic material (usually orange or yellow) that also has air or foam at its top to help the boom stay afloat; and buoyant **sorbent booms** (usually white) soak up the oil from the waters surface. Both booms work together to contain and absorb the oil.

Booms may be placed at the mouths of tributaries to prevent oil from entering the waterways. These booms must be securely anchored, properly maintained, and functioning. Please note if booms are sagging and water is flowing over them. Also note if booms are saturated with oil and need replacement. **Contact your coordinator at (XXX) XXX-XXXX to report any malfunctioning or absent booms.**

Sorbent boom at spill site.

TIP

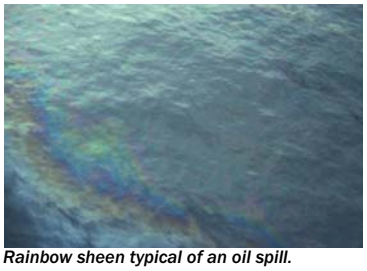
To identify oiled birds, look for birds that:

- Appear wet with no beading on the feathers.
- Exhibit excessive preening and dunking
- Look and act different than similar birds
- Display spots of oil
- Are less buoyant than other birds (sit lower in the water)
- Hide on the shore in vegetation

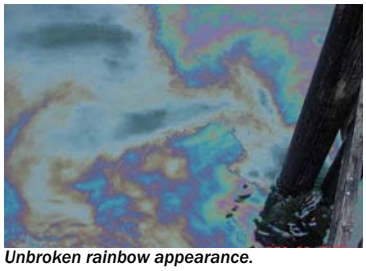
Do not feel limited by the datasheets. Feel free to include a memo with your contact information and any other details pertaining to the cleanup and long-term impacts of the spill.

Oil Observations

Oil products can produce a sheen that can appear silver/gray, rainbow or metallic. Natural plant oils can also create a sheen, but when disturbed plant oil sheen will break into fragments. Brown oils appear brown and black oils appear black.



Rainbow sheen typical of an oil spill.



Unbroken rainbow appearance.

Oil in creek along streambank.

Oil stains at low tide.

Wildlife Observations

Oil, through simple physical contact, inhalation, ingestion and absorption, is harmful to wildlife. Feathers and fur can become contaminated. Oiling disrupts the interlocking structure of a bird's feathers, destroying the waterproofing and insulating properties of its plumage. In addition to becoming chilled, oiled birds may be unable to fly or remain afloat on the water. Vital organ systems, including the lungs and air sacs, kidneys, liver, heart, blood and gastrointestinal tract can be damaged. Direct contact with oil components can result in chemical burns and the absorption of toxic chemicals through the skin. More information about oil's effect on wildlife can be found at www.tristatebird.org

Be sure to take a bird book with you in the field to help you identify birds correctly and prevent you from mistaking natural markings for oil. Immature birds of some species have markings that may appear to be oil. Immature gulls are a good example. Also, note the bird's behavior. Observe the bird for several minutes to see if it exhibits symptoms of oiling. **Do not include birds in your count if you cannot determine if they are oiled or healthy.**

To Report Injured Wildlife

If you find injured wildlife, call the wildlife hotline at (call the National Wildlife Refuge at (877) 396-NWRA or the National Response Center at (800) 424-8802 to find your area's hotline #) for assistance and instruction on how to proceed. **Do not approach wildlife yourself.** Note number of birds oiled, degree of oiling, and status of birds on the Oil Spill Wildlife Assessment Form. **Be sure to visit favorite waterfowl spots not in the immediate impact or tidal zone.** Injured birds have been found miles from the spill & your vigilance can help detect these birds that may otherwise go unnoticed.

Appendix I - Tip Sheets

Oil Assessment Tips for Residual Oil Evaluation

Residual Oil Spill Assessment

Thank you for your help!

Your goal is to help assess the extent of the recent oil spill by monitoring both the tidal and non-tidal sections of a specific tributary and also by recording the impacts to wildlife. You will be visiting public access points along the sections of the tributary from which you can perform a visual assessment for oil as well as for injured wildlife. If you can safely walk the shoreline for a closer inspection please do so.

You will complete **one** *Oil Spill Assessment Summary* for all sites visited as well as a *Quick Oil Spill Site Assessment* for each station monitored. **If you do not find oil, please note this information on the datasheet.**

Visit your site as often as possible. Be aware that tide stages may alter your waterway's appearance. Try to visit your site at different tide stages. By visiting your site as the tide is coming in you may also observe oil coming in with the tide. After high tide and approaching low tide, you may see oil stains along the high tide mark as well as oil that has sunk to the river bottom (heavy oils can sink and contaminate riverbeds). A tide schedule can be found at www.saltwatertides.com

Before you head out to your stream, review your datasheets: *Oil Spill Assessment Summary; Quick Oil Spill Site Assessment;* and *Oil Spill Wildlife Assessment*. Study a local map to select observation points along your waterway where you can safely and legally access the stream. First, proceed to the furthest downstream location to begin documenting conditions. Ideally, you will be able to begin monitoring at the mouth of your stream (where the stream meets a larger river or waterbody). Work upstream systematically, visiting each public access point until you reach the head of tide for your tributary. "Head of tide" is that point where a dam or other obstacle stops tidal exchange (e.g., Fairmount Dam in Philadelphia marks the head of tide on the Schuylkill River). By documenting stations consecutively, you can better help with mapping of the impacted area. **You should also visit non-tidal areas and ponds upstream of the head of tide to document wildlife observations, particularly if you are aware of areas where injured waterfowl may congregate.**

Consider that in some cases, places that are not oiled at your initial visit could potentially be oiled in the future, depending on weather and tides. Frequent visits to locations are encouraged (ideally once a week). **As cleanup efforts diminish and migration occurs, animals may return to polluted areas and become oiled.**

After you complete your observations, submit your datasheet and send to your coordinator's office as soon as possible. Include a copy of a map marked with your public access points. Photos and video are appreciated and encouraged. Be sure to make a copy of your datasheet for your own records and follow-up monitoring. If you have any questions about monitoring, contact your coordinator, name, at (XXX) XXX-XXXX and address.

What You Should Take Into the Field

- A partner - sample in pairs
- Clipboard and pencils
- This monitoring protocol
- One *Oil Spill Assessment Summary*
- Several copies of the *Quick Oil Spill Site Assessment*
- Several copies of the *Oil Spill Wildlife Assessment*
- Camera/video camera
- Binoculars
- Bird book
- Local map
- Cell phone

Safety Tips

Your safety and welfare take precedence over data collection. Please, when collecting your information:

- Do not trespass
- Do not touch anything covered in oil. Oil is toxic and can cause health hazards. Oil also stains clothing and equipment.
- Avoid low-lying areas where vapors may concentrate.

Crude Oil Characteristics

(Insert characteristics of the oil type that has been spilled - an example is below)
Heavy oils, such as the Venezuelan crude that spilled from the Athos I on the Delaware River, can sink and contaminate riverbeds. This sunken oil can smother aquatic habitat and result in repeated re-oiling of cleaned shorelines. Re-oiling has already been noted this summer as temperatures rise.

Some crude oils will mix with water forming an emulsion that often looks like chocolate pudding. This oil and water mixture is thicker and stickier than the original oil. Over time, the emulsion will break apart, due to wind and wave action, into smaller pieces referred to as tarballs. Tarballs can be very persistent in the marine environment and can travel hundreds of miles.

Appendix I - Tip Sheets

Oil Assessment Tips for Residual Oil Evaluation

Residual Oil Spill Assessment Tips

Thank you for your continued help and vigilance!

Your goal is to help assess **residual oiling** along shorelines and re-suspended oil in the water column from the spill. If you can safely walk the shoreline for a close inspection please do so. This residual oil is often noted when you pick up rocks, as seeping occurs.

What is "seeping"? Due to warm temperatures and the effect of the sun on shorelines, oil in pore spaces within the coarse grain pebble sediments becomes mobile. As it becomes liquid, it flows with the subsurface water out into the river. Once it reaches the river, if floats up to the surface as dark streaks or sheen. This sheen soon dissipates.

What is "sheen"? Oil products can produce a sheen that can appear silver/gray, rainbow or metallic. Natural plant oils can also create a sheen, but when disturbed plant oil sheen will break into fragments. Brown oils appear brown and black oils appear black.

We ask that you document your monitoring by providing us with a memo that states at a minimum:

- Your contact information with date of observations
- Areas/shorelines surveyed
- Exact location of oiled areas if observed (GPS would be very helpful if you have it, otherwise use landmarks as much as possible. This is helpful as in the first few months after the spill cleanup crews may ask you to accompany them to the location.)
- Photos of oiled areas with a ruler or object inserted to scale the photo
- Note vegetation that has died back or appears to be negatively impacted by oiling (use your knowledge of past oiling reports).

Visit your site at different tide stages. Be aware that tide stages may alter your waterway's appearance. Try to visit your site at different tide stages, but if you can only get out once, try to visit at low tides so sediments are visible. This is the location where seepage will occur. A tide schedule can be found at www.saltwatertides.com

Before you head out to your stream, study a local map to select areas along your waterway where you can safely and legally access the stream. Any locations within the priority area - shoreline areas along the area of the spill as well as near the mouth of tributary streams - would be the areas where oiling is most likely to occur. However, checking upstream tributaries can also help document any oiling that may have traveled upstream, particularly if you have documented oiling upstream in the first few months after the spill.

NOTE: **As cleanup efforts have diminished, animals may have returned to polluted areas. Please report if you see any animals in areas where seepage is occurring or if you see any oiled birds.**

What You Should Take Into the Field

- A partner - sample in pairs
- Clipboard and pencils
- Monitoring tips and blank paper
- Camera/video camera
- Binoculars
- Bird book
- Local map
- Cell phone
- Latex gloves (to safely pick up rocks)

Safety Tips

Your safety and welfare take precedence over data collection.
Please, when collecting your information:

- Do not trespass
- Do not touch anything covered in oil. Oil is toxic and can cause health hazards. Oil also stains clothing and equipment.

Crude Oil Characteristics

(Insert characteristics of the oil type that has been spilled - an example is below)
Heavy oils, such as the Venezuelan crude, can sink and contaminate riverbeds. This sunken oil can smother aquatic habitat and result in repeated re-oiling of cleaned shorelines.

Some crude oils will mix with water forming an emulsion that often looks like chocolate pudding. This oil and water mixture is thicker and stickier than the original oil. Over time, the emulsion will break apart, due to wind and wave action, into smaller pieces referred to as tarballs. Tarballs can be very persistent in the marine environment and can travel hundreds of miles.

OIL SPILL ASSESSMENT SUMMARY

Date (mm/dd/yy)**:** _____ **Time** (e.g., 14:20)**:** _____ **Observer Name:** _____

Phone: _____ **E-mail:** _____ **Address:** _____

Tributary Surveyed: _____ **Reach Surveyed** (list upper and lower limits)**:** _____

Weather Conditions: _____ **Percent Clouds:** ❑ **Fog;** ❑ **Rain;** ❑ **Snow**

Wind Direction: ❑ **N;** ❑ **NE;** ❑ **E;** ❑ **SE;** ❑ **S;** ❑ **SW;** ❑ **W;** ❑ **NW;** ❑ **None** (Note: a wind blowing from the west toward the east is called a west wind)

Tidal Stage: ❑ **Outgoing;** ❑ **Incoming;** ❑ **Low/Slack;** ❑ **High** (Refer to tide charts and water levels)

Water Surface Conditions: ❑ **Calm;** ❑ **Light Chop;** ❑ **Heavy Chop;** ❑ **Swells**

Please list stations from upstream to downstream or from downstream to upstream - do not skip around the watershed.

Station ID #	Public Access Point Location/Description	Oil Impacts Present? (Yes/No)	Photos (Exposure #/ Vantage Point)	Oil Impact Types Present (check all categories observed at each public access point - see key to the right for descriptions of categories)					
				❶	❷	❸	❹	❺	Other impacts noted
1									
2									
3									
4									
5									

KEY - Oil Impact Types:

❶ ribbon like-rainbow sheen on water surface
❷ black oil on water surface
❸ oil stains on beach/vegetation
❹ oiled wildlife (D if dead, A if alive)
❺ hydrocarbon (oil) odor present

OIL SPILL ASSESSMENT SUMMARY (cont.)

Station ID #	Public Access Point Location/Description	Oil Impacts Present? (Yes/No)	Photos (Exposure #/ Vantage Point)	Oil Impact Types Present (check all categories observed at each public access point - see key to the right for descriptions of categories)					
				❶	❷	❸	❹	❺	Other impacts noted
6									
7									
8									
9									
10									

KEY - Oil Impact Types:

❶ ribbon like-rainbow sheen on water surface
❷ black oil on water surface
❸ oil stains on beach/vegetation
❹ oiled wildlife (D if dead, A if alive)
❺ hydrocarbon (oil) odor present

Approximate size/extent of oiled area (estimate sq. feet)**:** _____

Are booms present? ❑ **Y;** ❑ **N** **Are skimmers operating?** ❑ **Y;** ❑ **N** **Are absorbent materials being used?** ❑ **Y;** ❑ **N**

Are booms/absorbent materials saturated and leaking oil? ❑ **Y;** ❑ **N**

Wildlife/Habitat at Risk/Injured: _____

_____

Immediate action taken, if injured wildlife found (e.g., hotline contacted)**:** _____

Additional notes: _____

Make a copy of your datasheets and send original form with photos/video and a map with your sampling locations to your coordinator - name, at (XXX) XXX-XXXX. Please send as soon as possible. **If you find injured wildlife, call** *the National Wildlife Refuge at (877) 396-NWRA or the National Response Center at (800) 424-8802 to find your area's hotline #* **immediately with the location and approximate number of wildlife present.**

QUICK OIL SPILL SITE ASSESSMENT

Please complete a copy of this datasheet at each station that you visit in order to describe surrounding shoreline conditions and the degree of oiling along the shoreline. If you can safely walk the shoreline for a closer inspection please do so. Record information as accurately and with as much detail as possible.

Please respect private property rights when conducting your assessment and do not put yourself in harms way. Remember, your safety and welfare take precedence over data collection.

Date (mm/dd/yy)**:** _____ **Start Time** (e.g., 14:20)**:** _____ **End Time:** _____

Observer: _____ **Station ID #** (from *Oil Spill Assessment Summary*)**:** _____

Location Description: _____

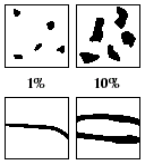
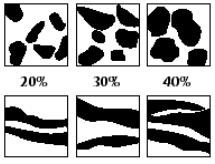
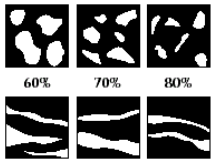
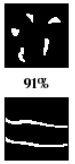
Weather Conditions: _____ **Percent Clouds:** ❑ **Clear;** ❑ **Partly Cloudy;** ❑ **Overcast**

Wind Direction: ❑ **N;** ❑ **NE;** ❑ **E;** ❑ **SE;** ❑ **S;** ❑ **SW;** ❑ **W;** ❑ **NW;** ❑ **None** (Note: a wind blowing from the west toward the east is called a west wind)

Tidal Stage: ❑ **Outgoing;** ❑ **Incoming;** ❑ **Low/Slack;** ❑ **High** (Refer to tide charts and water levels)

Water Surface Conditions: ❑ **Calm;** ❑ **Light Chop;** ❑ **Heavy Chop;** ❑ **Swells**

Oil Spill Impacts Observed? ❑ **Y;** ❑ **N if yes, approximate length and width of impact. Length:** _____ **Width:** _____

Impacted Habitat Types and Materials: **Check all habitat types or materials present**	**No Impact or Trace (<1%)**	**Sporadic 1 - 10%** 	**Patchy 11 - 50%** 	**Broken 51 - 90%** 	**Continuous 91 - 100%** 
Water					
Marsh/Swamp					
Tidal Flat					
Sand or Shell Beach					
Dune					
Rip-Rap (large rock used to prevent erosion)					
Bulkhead, Manmade Structures					
Other Vegetation					
Other (describe)					

Resources on Scene: ❑ **Laborers;** ❑ **Booms;** ❑ **Small Boats;** ❑ **Vehicles;** ❑ **Other** (describe) _____

If present, are containment booms sagging and not blocking/stopping/containing oil? ❑ **Y;** ❑ **N**

If present, are absorbent booms saturated or leaking oil? ❑ **Y;** ❑ **N**

Is there any collected waste oil that needs to be removed? ❑ **Debris;** ❑ **Oil Bags;** ❑ **Sorbent Boom;** ❑ **Sorbent Pads**

OIL SPILL WILDLIFE ASSESSMENT FORM

Use one of these forms for each of your sites

Location: **GPS Coordinates:** **Date:**

Observer Name: **Start Time:** (at this site) **End Time:** (at this site)

	DEGREE OF OILING (tabulate number of birds)							DEAD BIRD CONDITION					
Species	No Oil Obs. on Bird	Trace (<5%)	Light (6%-20%)	Moderate (21%-40%)	Heavy (>40%)	"Flying", "Standing" or "In Water"	Debilitated	Dead	No Oil Obs.	Light	Moderate	Heavy	Comments

Survey Protocol

1. Count only birds observed or identifiable as to species and degree of oiling. Do not include birds in the count if you cannot determine if they are oiled or healthy.
2. Count starts at the observer and extends to the first bird for which oiling cannot be determined.
3. Record survey location name (creek or site name) and GPS coordinates, if possible. If no GPS, use street names to mark location.
4. Use a new data sheet for each creek, waterway or site name.
5. Record your total time spent and vehicle mileage accrued each day.

Appendix III - Examples

Reach Assignment Map

Delaware River Watershed Monitoring Report
Provided to Trustees Involved in Athos I NRDA

Background

Delaware Riverkeeper Network (DRN) has a multifaceted volunteer monitoring program that has been in existence for over a decade. DRN relies on it's volunteer monitors to help on behalf of the river. So when the Athos I began leaking large amounts of Venezuelan crude from it's damaged single hull, DRN knew that a citizen monitoring initiative could serve as our eyes and ears for the river, as it suffered from the consequences of the spill.

DRN staff scientists developed oil spill visual assessment protocols and datasheets, coordinated with the public agencies, contacted local volunteer monitoring groups, developed internet and web page resources, and mobilized and trained concerned citizens interested in helping to document the harm done to the river by the oil spill. DRN's priorities are to: 1. inspect cleanup measures and alert Coast Guard officials of areas in need of maintenance; 2. identify and report oiled wildlife to the Fish and Wildlife Service; 3. track the extent and degree of oiling contamination up through the tidal tributaries of the Delaware; and 4. generate documentation to help support a thorough and comprehensive Natural Resource Damage Assessment (NRDA) for the Delaware River.

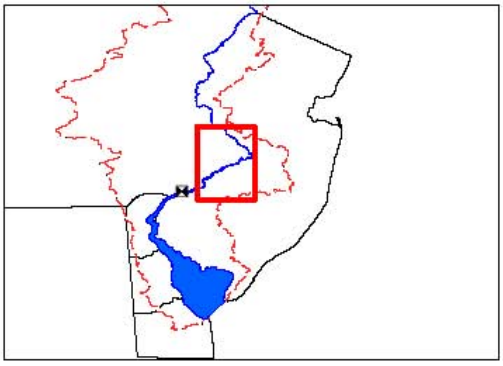
Purpose of Summary Report

Data summarized in this report include observations made by over one hundred citizens and volunteer monitors during the weeks that followed the Athos I oil spill. Delaware Riverkeeper Network assigned volunteer monitors to specific tributaries, wildlife areas and beaches and provided oversight and literature for volunteer monitors to accurately determine the impacts from the Athos I oil spill. Monitors recorded observations using standardized protocols and datasheets that were reviewed and/or developed by state agencies and DNR. Data was reviewed and summarized by New Jersey's Volunteer Monitoring Program and DNR staff. This summary was prepared specifically for the Trustees to ensure the development of a comprehensive NRDA for the Delaware River.

Report Format

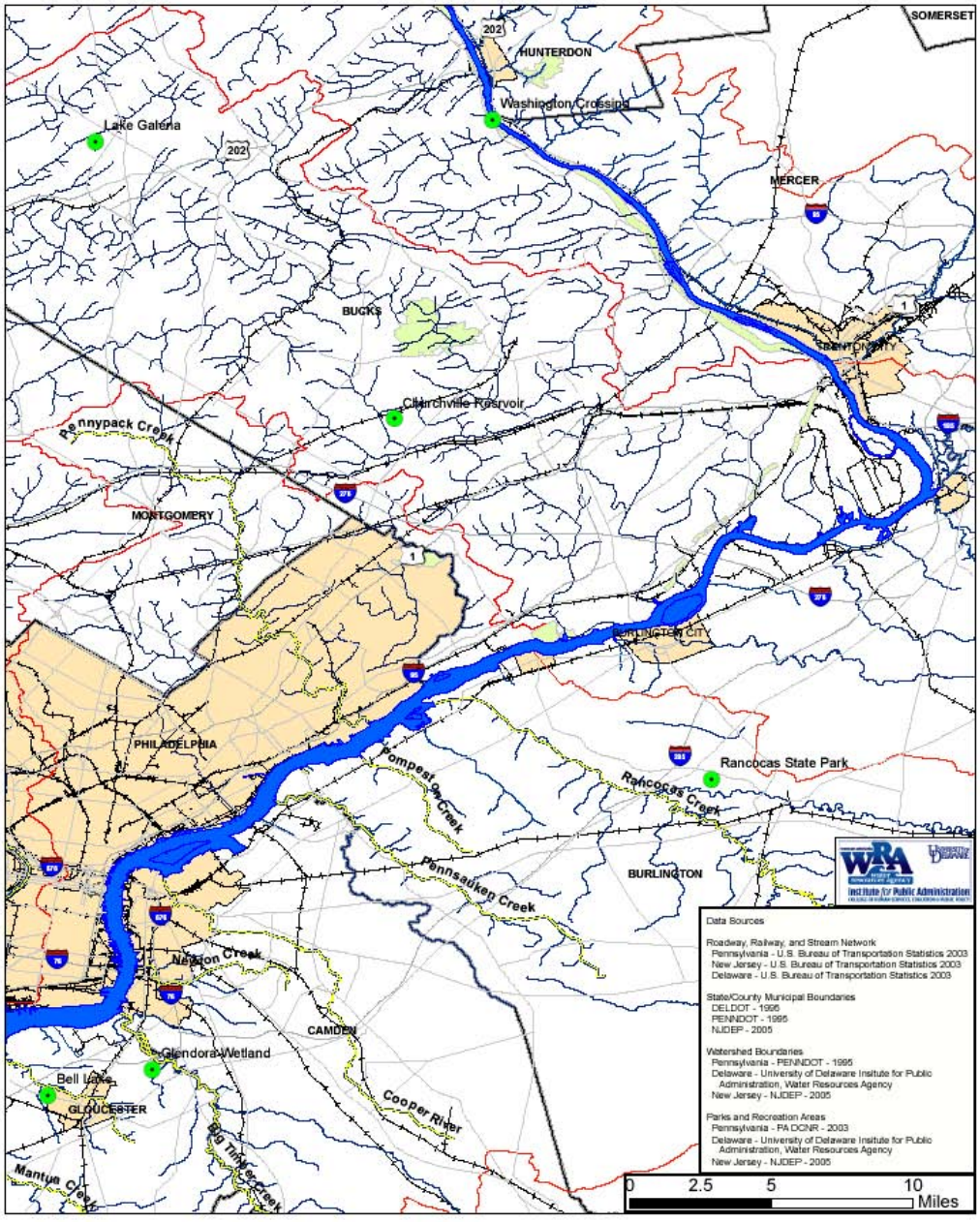
This report includes the following components in order:

- **Table 1**
  A list of streams and areas where oil impacts were observed.
- **Section 1**
  Detailed data summaries for each area and stream (from Table 1) where observations made by monitors noted impacts from the Athos I oil spill.
- **Section 2**
  A list of streams and areas where observations were made but no apparent impacts were noted by monitors at the time of their observation(s).
- **Appendix A**
  A summary of action alerts and correspondence from Delaware Riverkeeper Network to alert Coast Guard officials to areas in need of attention and cleanup.



ATHOS I Monitoring Locations

- Oil Spill Location
- Rivers Monitored for Oil
- Beaches Monitored for Oil
- Inland Areas Monitored for Oil
- Municipalities
- State Parks, Recreation, and Open Space
- Sub-Watersheds



Example of Creek Report Blank

WATERBODY NAME									
Station[1] ID #	Public Access Point Location/Description	Oil Impacts Present? (Yes/No)	Oil Impact Types Observed[2]						Notes
			1	2	3	4	5	6	
DATE, TIME, WEATHER, TIDE, BOOM, COMMENTS									
1									
2									
3									
4									
5									
6									
DATE, TIME, WEATHER, TIDE, BOOM, COMMENTS									
1									
2									
3									
4									

[1] Stations are listed in order starting with sites nearest the mouth and going inland. (e.g., station 1 is site located nearest the mouth)

[2] Numerical code indicates extent of oil impact as indicated on Oil Assessment Summary sheets as follows:

1. Sheen (may appear silver/gray, rainbow or metallic)
2. Brown/black oil on water surface
3. Oil stains on beach/vegetation
4. Oiled wildlife (D if dead, A if alive)
5. Hydrocarbon (oil) odor present
6. Tarballs on shore

Example of Creek Report Completed

FENWICK CREEK										
Station[1] ID #	Public Access Point Location/Description	Oil Impacts Present? (Yes/No)	Oil Impact Types Observed[2]						Notes
			1	2	3	4	5	6	
12/12/04 16:20 to 17:45; Partly cloudy in 50's; Tide outgoing; Water calm Containment boom on north shore not in use									
1	Mouth of Fenwick	Yes	X						oil on beach
2	Route 45 Bridge over Fenwick Creek	Yes	X		X				sheen in water; stains on bridge
12/12/04 17:40; Clear, no wind; Tide outgoing; No water conditions Boom present; sagging and not blocking oil									
2	Route 45 Bridge over Fenwick Creek	Yes							sporadic on bulkhead trace in water

Additional Notes on Fenwick Creek:

No other impact noted on Fenwick Creek

Summary Fenwick Creek:

Sporadic oil (sheen; some staining) along Fenwick

[1] Stations are listed in order starting with sites nearest the mouth and going inland. (e.g., station 1 is site located nearest the mouth)

[2] Numerical code indicates extent of oil impact as indicated on Oil Assessment Summary sheets as follows:

1. Sheen (may appear silver/gray, rainbow or metallic)
2. Brown/black oil on water surface
3. Oil stains on beach/vegetation
4. Oiled wildlife (D if dead, A if alive)
5. Hydrocarbon (oil) odor present
6. Tarballs on shore

Volunteer Monitoring Creek Data Summary Sheet Example

Creek	Date Monitored
Creek	**Date Monitored**
ALLOWAY CREEK	12/10 - 12/11/04
BIG TIMBER CREEK	12/4 - 12/5/04
COOPER RIVER	12/2 - 12/14/04
FENWICK CREEK	12/12/04
LITTLE TIMBER RIVER	12/5 - 12/11/04
MANTUA CREEK	12/5/04 - 1/2/05
NEWTON CREEK	12/3 - 12/12/04
OLDMANS CREEK	12/6 - 12/11/04
PENNSAUKEN CREEK	12/2 - 12/9/04
POMPESTON CREEK	12/5/04
RANCOCAS CREEK	12/10 - 12/12/04
RACCOON CREEK	12/4 - 12/11/04
REPAUPO CREEK	12/3/04
SALEM RIVER	12/3/04 - 1/5/05
Beaches	
MOORE'S BEACH	12/13/04
SUNSET BEACH	12/23/04 - 3/18/05
TOWNBANK BEACH	1/2/05 - 1/15/05
Other	
ABBOTT'S MEADOW PRESERVE	12/29/04 - 1/6/05

Appendix III - Examples
Assessment Sheets

Summaries Example

Abbott's Meadow: Sporadic oil noted throughout site from 12/29/04 - 1/6/05 with a noticeable increase during 1/4/05 - 1/6/05 particularly around Elsinboro Point.

Repaupo Creek: 12/3/04 Oil impacts near mouth. No wildlife observed.

Sunset Beach: Oil effects (tarballs) noted on particular days only - 1/20/05, 2/11/05, 3/10/05, 3/18/05. Two dead gulls at site - one with moderate oiling.

Towbank Beach: Oil impact sporadic; some residue at high water mark; sporadic tarballs noted.

Moore's Beach: 12/13/04 Sporadic oil noted at low tide.

Fenwick Creek: 12/12/04 Sporadic oil (sheen; some staining) along Fenwick.

Salem River: Oil impact (sheen and vegetation stained; except for 12/12/04) mostly around Elsinboro, Fenwick Creek Salem Bridge - Rt. 45 and in Tilbury.

Little Timber Creek: 12/5 - 12/26/04 Considerable oil impact noted throughout sites even after cleanup crew left, with the exception of Kings Highway site. Oiled debris continues to appear.

Big Timber Creek: 12/4 - 12/5/04 Considerable impact noted.

Pennsauken Creek: 12/2/04 Surface sheen noted throughout creek.

Pompeston Creek: 12/5 - 12/10/04 No or minimal impact noted.

Alloway Creek: 12/10 - 12/11/04 Surface oil impact noted both rainbow sheen and brown. Worse where creek meets tribs. Oiled wildlife noted.

Cooper Creek: 12/4 - 12/14/04 Pyne Point School, East State St., Federal St., Adm. Wilson Bridge most affected sites. Many oiled birds noted.

Mantua Creek: 12/5/04 - 1/2/05 Widespread and intermittent oil sheen on entire creek. Impact worsens approaching mouth. Wildlife considerably affected - many appear oiled at Riverwinds site.

Raccoon Creek: 12/4 - 12/11/04 No wildlife observed by residents - - unusual. Considerable oil impact throughout sites - worse at 108 Ferry Rd. site and S. Bridgeport Rd. site, north and south of the Rt. 130 Bridge.

Newton Creek: Sporadic impact noted throughout creek 12/3 - 12/12/04. Some oiled wildlife noted.

Date: November 27, 2004
Contact: Maya K . van Rossum, the Delaware Riverkeeper, cell phone (215) XXX-XXXX

OIL SPILL ON THE DELAWARE RIVER

Delaware Riverkeeper Network (DRN) was notified that a listing oil tanker spilled about 473,500 gallons of crude oil into the Delaware River last night about 9:00 PM EST. The Cyprus-flagged vessel, Athos I, began spilling oil as it was being towed by two tugboats into the CITGO facility in Paulsboro, New Jersey. The spill covers about 20 miles downstream, and the river is closed to traffic. Dead birds and fish are accumulating. The Athos I was built in 1983 and was carrying oil from Venezuela.

"The Coast Guard should place booms on tributaries and other sensitive locations like drinking-water intakes before the slick spreads," said Maya van Rossum.

The spill occurred near some very sensitive habitat in the lower Delaware River and upper Delaware Bay which is host to enormous concentrations of shorebirds, waterfowl, fish, hawks, eagles and other wildlife, which is of particular concern during fall migration season. Fish and wildlife are fundamental to the quality of life for many New Jersey residents.

DRN has long alerted federal officials that single-hulled oil tankers like the Athos I are not able to hold up to accidents in contrast to more resilient double-hulled ships that have a second layer of steel to protect oil storage tanks. In Europe, single-hulled tankers were recently banned from entering their waters following an oil spill that released 17 million gallons of oil off the coastline of Spain.

Delaware Riverkeeper Network will mobilize our volunteers to monitor beaches and report oil to the Coast Guard during the next several weeks. Reports will also be made if creeks have not been boomed or if booms are not functioning properly.

Appendix III - Examples
Thank You Card

Front of Card

Back of Card

New Jersey Department of Environmental Protection
DIVISION OF WATERSHED MANAGEMENT
P.O. Box 418 · Trenton · New Jersey · 08625-0418 · (609) 984-0058
www.nj.gov/dep/watershedmgt

Dear Delaware River Oil Spill Volunteer,

The NJDEP Watershed Watch Network thanks you for volunteering during the oil spill crisis last winter. Thank you for monitoring in the cold weather, driving from site to site, filling out and faxing the many report forms and calling the hotline when you found injured wildlife. You have provided valuable assistance in protecting the precious places of our Delaware River Watershed. Citizens like you make a real difference in providing stewardship to the Delaware River Estuary.

We would like to give special recognition to the Delaware Riverkeeper Network for providing their resources and the time of their volunteer coordinator, Faith Zerbe. We are sincerely grateful to them and to her.

We look forward to working with you in the future and building on our relationship.

Photo by Nicole Hoffman