Upper Mississippi River Hazardous Spills Coordination Group

Upper Mississippi River Spill Response & Wildlife Response Training

AGENDA

Tuesday, September 25th

Classroom and Practical Sessions
Ivor Fowler Community Center
710 Main Street, Montrose, Iowa

Time	Topic	Presenter(s)
8:00 a.m.	**Welcome and Introductions**	***David Morrison**, MPCA* ***All***
8:15	**Upper Mississippi Resource and Response Overview**	
	▪ UMR system overview	***Morrison,** MPCA*
	▪ UMR resources	***Mick Hanan,** USFWS*
	▪ Agency roles/USCG role	***Bryan Klostermeyer,** USCG*
	▪ Trustees in the NCP	***Mike Coffey,** USFWS*
	▪ ACPs, SACPs and Sensitivity Atlases	***Ann Whelan,** US EPA*
9:15	**Emergency Spill Response, Booming, and Containment Strategies**	***Joe Davis,** US EPA*
10:15	*BREAK*	
10:30	**Emergency Spill Response, Booming, and Containment Strategies** *(continued)*	***Davis,** US EPA*
11:30	**Hands-On Practical: Booming Equipment**	***Davis,** US EPA*
Noon	*LUNCH*	
1:00 p.m.	**Incident Command System: Structure, Issues & Implementation**	
	▪ ICS overview	***Steve Faryan,** US EPA*
	▪ Operations section	***Tricia Edwards,** US EPA*
	▪ Wildlife branch	***Coffey,** US FWS*
	▪ Documentation	***Mays/Tabor,** US FWS*
2:00	**Wildlife Reconnaissance**	
	▪ Reconnaissance and recovery	***Coffey,** USFWS*
	▪ Estimating flock size	***Hanan**, USFWS*
2:30	*BREAK*	
2:45	**Response Safety**	
	▪ HAZWOPER, wildlife handling, and outdoor work	***Jason Suckow,** USDA*
	▪ Boater safety	***Eric Prufer,** USCG*
3:30	**Disinfection Practices**	***Edwards,** US EPA*
3:45	**Hands-On Practical: Safety and Field Considerations**	
	▪ PPE demo	***Suckow &Coffey***
	▪ Wildlife capture and transport demo	***Suckow &Coffey***
4:30	**Field Preview/Divide into Groups for Field Activities**	***All***
5:00 p.m.	**Adjourn for the Day**	

Wednesday, September 26th

Field Sessions
River View Park
Montrose, Iowa

Time	Topic	Presenter(s)
8:00 a.m.	**Field Day Intro and Safety Briefing**	***All***
8:15	**Response Track: Containment Structures**	***Davis**, US EPA (Leader)*
	▪ Rigid pipe underflow dam	***All***
	▪ Flexible pipe underflow dam	
	▪ Weir dam	
	▪ Straw bale dam	
	▪ Aeration demonstration	
	Wildlife Track: Reconnaissance, Capture, and Rehab	
	▪ "Setting the bar" for sensitive resources	***Whelan,** US EPA*
	▪ Volunteer management	***Mays/Tabor,** US FWS*
	▪ Wildlife salvage and morgue	***Mays/Tabor,** US FWS*
	▪ Wildlife emergency immediate care	***Coffey/Suckow***
	▪ Wildlife rehabilitation	***Coffey/Suckow***
	▪ Alternative capture methods	***Suckow,** USDA*
	▪ Hazing	***Suckow/Mays/Tabor***
Noon	**LUNCH**	
1:00 p.m.	**Response Track: Boom Deployment**	***Davis**, US EPA (Leader)*
	▪ Deflection boom in river	***All***
	▪ Pumps and skimmers	
	▪ Boom across sensitive target	
	▪ "J" booming (still water) Containment boom around vessel	
	▪ Shore deployment of boom	
	Wildlife Track: Recovery Operations	***Coffey & Suckow***
	▪ Wildlife recovery operations	*(Leaders)*
	▪ Encountering boom/issues in crossing boom	***All***
4:30	**Clean-Up, Wrap-Up**	***All***
5:00 p.m.	**Adjourn**	

Upper Mississippi River Spill Response and Wildlife Response Training
Montrose, Iowa
September 25-26, 2012

Attendee List
(emails included if provided by attendee)

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Todd Kyllo (Clean Harbors)	

UMRBA

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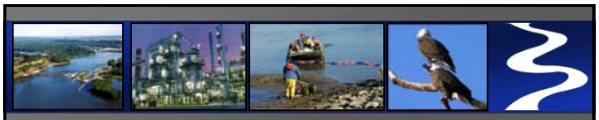


***Upper Mississippi River Response*:**

River System Overview, Response Considerations, and Tools

Upper Mississippi River Spill Response
and Wildlife Response Training

September 25, 2012
Montrose, Iowa

Overview

- Upper Mississippi River (UMR) System Overview and General Response Considerations
- Need for UMR Spill Response Coordination
- UMR Planning and Response Tools

Upper Mississippi River

Resource Setting: Scope and Scale

- **189,000 square miles in basin**
- **1,300 miles in total length**
- **850 miles navigable, 816 interstate**
- **Avg. Annual Discharge: 9,200 cfs at St. Paul, MN 205,000 cfs at Thebes, IL**

UMR Spill Response Considerations

- **Unique Characteristics & Challenges**
- **Complex Physical System**
  - Locks and dams, main channel, side channel, backwaters
  - Flows/spill trajectories variable and hard to predict
- **High Value Natural Resources**
  - Seasonal concentrations of migratory waterfowl
  - Threatened and endangered species
  - Diverse habitats, National Wildlife Refuges

UMR Spill Response Considerations

- **Water Supply Used For**
  - Drinking Water
  - Industrial Processes
  - Cooling
- **Presence of Commercial and Recreational Vessels**
  - Safety considerations
  - Interference with response efforts
- **Diverse Potential Pollution Sources**
  - Vessels, pipelines, railroads, highway crossings, industrial discharge

Need for Cooperation and Coordination on the UMR

- **Multiple Jurisdictions and Agencies**
- **Potential for Downstream Impacts**
- **Government-Private Sector Coordination Important**
- **Need to Target Limited Resources (equipment, personnel, planning, etc.)**

UMR Hazardous Spills Coordination Group

Mission

- Facilitate coordination and cooperation among the region's state and federal response agencies.
- Address the special challenges associated with planning and response on a large, multi-jurisdictional river.

Members

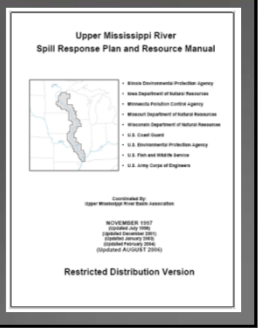
- States: Illinois, Iowa, Minnesota, Missouri, and Wisconsin
- Federal Agencies: USACE, USCG, USEPA, USFWS
- Two meetings per year (spring and fall)

UMR Spills Group: Products & Activities

- Forum for discussion, collaboration and advocating perspectives
- UMR Hazardous Spill Response Plan and Resource Manual
  - Created 1991
  - Periodic Updates (next comprehensive update by September 2013)
- Other Products
  - UMR Response Resource DVD
  - Emergency Action Field Guide
- Training classes and exercises – such as today!
- Support for related efforts (response strategy development, etc.)

UMR Spill Response Plan and Resource Manual

- A contingency plan to supplement other area and agency plans (R5, R7 area)
- Addresses how state and federal agencies respond to UMR spills
- Includes resource manual appendices with reference information
- Restricted access and public distribution versions (due to contents of appendices in resource manual) – see www.umrba.org for public plan



Response Plan & Resource Manual Contents

Response Plan

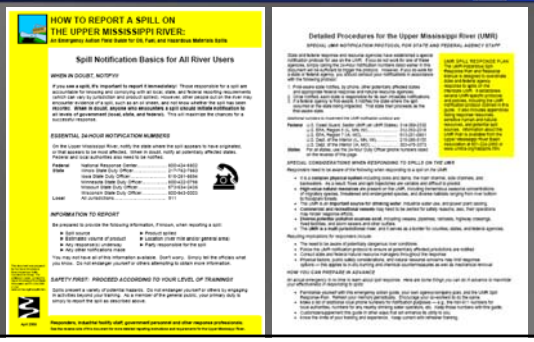
- Public and Private Organization Roles in Response
- Interstate Notification Protocol and Notification Roster
- Response Protocol for UMR Spills
- Incident Command System Implementation Protocol
- Policy on In Situ Burning and COSTAs
- Policy on Bioremediation
- Policy on Vessel Detainment
- State Hazardous Waste Disposal Requirements
- Policy on Coordination with USACE

Response Plan & Resource Manual Contents

Resource Appendices

- Basic river information
  - county lines, locks & dams, USCG & USACE boundaries
- Sensitive human and natural resources
  - water intakes, National Wildlife refuges, sensitive habitats
- Potential sources of spills
  - highway and rail crossings, pipelines, dischargers, commodities transported, tributaries, oil-handling terminals
- Response assets
  - hazmat teams, response equipment, river access points
- Countermeasures
  - in situ burning information and considerations, chemical oil spill treating agents information and considerations

UMR Emergency Action Field Guide



More Planning & Response Tools

- Geographic Response Planning Tools
  - Response Strategies for UMR Metro Areas (Sub-areas): Minneapolis-St. Paul, Quad Cities, and St. Louis
  - Wildlife Refuges and Other Sensitive Areas: UMR Pools 7, 10 and 13; these include initial incident action plan
  - Integrated into Inland Sensitivity Atlas
- Inland Sensitivity Atlas
  - State-wide atlases
  - UMR DVD (atlas information for river corridor)

Oil Spill Emergency

Wildlife Response

Wildlife Response

Topic: **National Contingency Plan**

Topic: **Incident Command System**

Topic: **Wildlife Recon**

National Response System

Three Levels of Contingency Plans under the National Response System:

National Contingency Plan

Regional Contingency Plans – *see Ann's presentation.*

Area (& SubAreas) Contingency Plans

– see Ann's presentation.

National Contingency Plan

40 CFR 300.135(j)(2)

On-Scene Coordinator (OSC) notifies Trustees

40 CFR 300.205(c)(2)

Planning & joint efforts to protect sensitive areas

40 CFR 300.210(c)(4)

Wildlife response planning

40 CFR 300.615(c)(2)

Responsibilities of the Trustees under Oil Pollution Act (OPA) – natural resource damage assessment and restoration (NRDAR)

National Contingency Plan

40 CFR 300.210(c)(4)

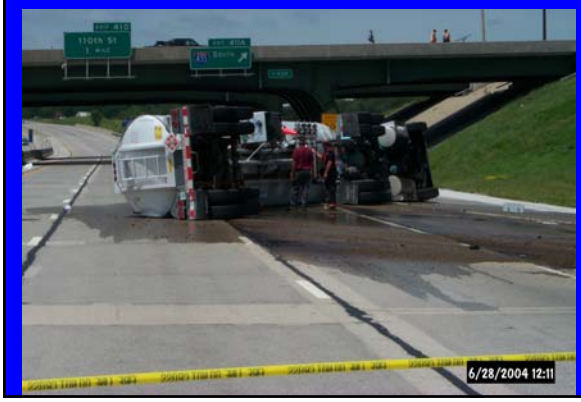
Wildlife response planning

"Identify and plan for the acquisition and utilization of necessary response capabilities for protection, rescue, and rehabilitation of fish and wildlife resources and habitat."

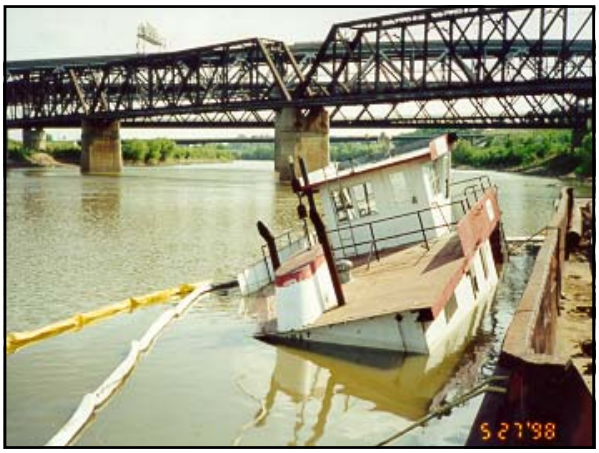
Oil Spill Response Underflow Dams and Containment Structures

Montrose, Iowa
Sept. 25 – 26, 2012
davis.joe@epa.gov

Common Oil Spill Response Scenarios



Train Derailment
Bussey, Iowa April-18-01



Who Responds to Oil Spills?

- The Responsible Party
- The Fire Department/Hazmat Team
- The State
- EPA, Coast Guard, FWS, Pipeline Safety
- Others

UNDER-FLOW DAMS

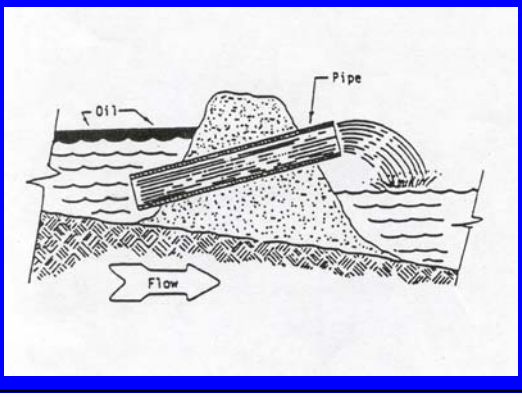
Design and Construction

Theory of Operation

- In small creeks and drainage ways, an under-flow dam can be constructed to contain free floating oil and allow uncontaminated water to pass through the dam.

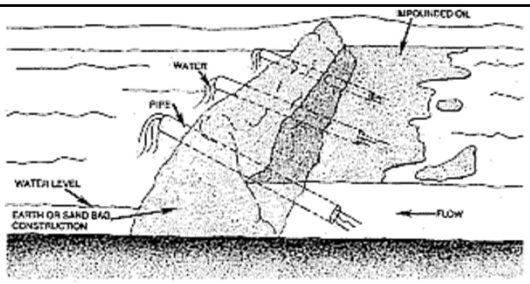
- The design consists of a length of pipe or culvert placed parallel to the direction of water flow with the upstream end lower then the downstream end. The dam can be constructed with sand bags, shovels, or heavy digging equipment.

Under-flow dams are sometimes called siphon dams



Construction Considerations

- The pipe must be large enough and positioned correctly to allow water to pass without backing up to a depth greater then the dam or surrounding banks.
- Several pipes placed side by side may be used in the dam to carry the required flow.
- An alternate method is to add a valve on the downstream side or a "T" on the upstream side of a level pipe to control the water level.
- Existing culverts can be utilized at some locations along a creek by damming the creek downstream and thereby raising the water level above the top of the culvert



Sufficient pipe must be used to handle maximum stream flow. The number, size, length and exact position of pipe vary with volume of water, velocity, width of stream, etc. The pipe can be plastic or steel, plain or corrugated.

Factors Controlling Design

- Stream characteristics: flow rate, water volume, stream width, and depth
- Stream access
- Available time
- Available materials
- Available equipment
- Weather: current and forecasted

Steep slopes, wooded and remote

Flat, open, and accessible

Structural Considerations of Dam

Structural Integrity:

- 2 to 1 Slope on bank
- Crest large enough to drive on
- Sand bags or compacted earth and rock

Impermeability:

- Sheet plastic
- Compacted earth core

Materials and Equipment

Materials:

- Local materials:
  - Dirt (soil)
  - Rock
  - Sand
- Imported materials:
  - Same stuff (but, costs more time & money)
- Types of pipe:
  - Corrugated steel pipe
  - Hard PVC pipe
  - Flexible corrugated plastic pipe (adjustable)

Materials and Equipment

Equipment:

- Shovels
- Excavators
- Bulldozers
- Bobcat
- Absorbent boom
- Vacuum trucks
- Pumps and hoses
- What ever you can get

‘T’ Inlet allows for easy cleanout of debris

Designed and Tested for 100 Year Flood

Time Vs. Resources

You have a limited amount of time. Where to get materials and equipment?

- Large home centers
- Garden centers
- Plumbing shops
- Heavy equipment rental centers
- Emergency response contractors

Time Vs. Resources

- The Local Emergency Planning Committee (LEPC) may have access to the county road works supply yard. This is a great source for pipe, rock, sand, tools, and heavy equipment!!

- Make a mental note of all the vendors in the area as you are driving to the site. You are likely to find the materials needed to construct an under-flow dam at local stores and shops.

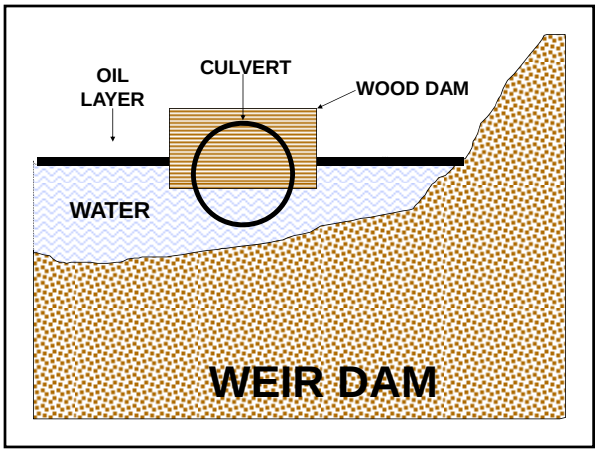
Common Problems in Design

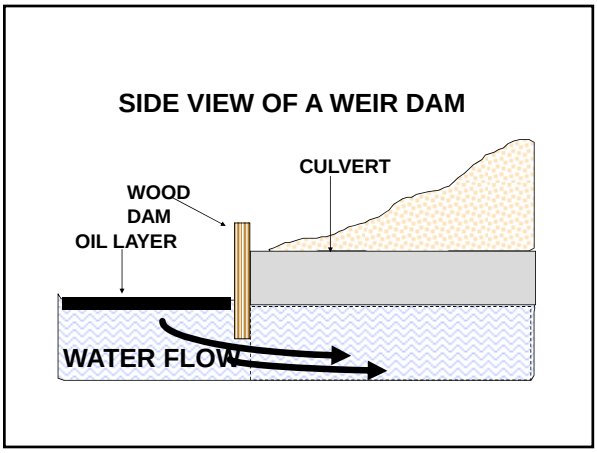
- Outlet of the pipe is too high. This will cause the upstream pool to crest over the dam or flood the adjacent banks.
- Insufficient drainage capacity of the pipes. (Same result as above).
- Drainage pipes too level or to large. This will allow oil to pass through the dam.
- Dam material not wide enough or compacted enough. This will cause the dam to fail catastrophically.

"Took the corner to Quick and Tripped"

WEIR DAMS

- Used to prevent flow of spilled product into or out of a storm sewer culvert.
- Can be used to catch spilled product in an outfall.
- Practical materials: boards, plywood, or any material that can stop flow.





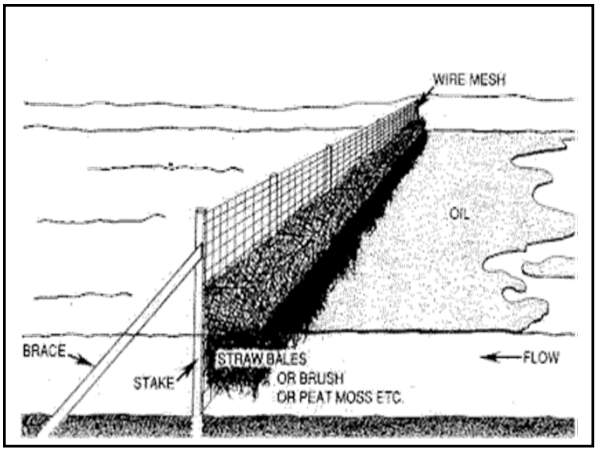
PLYWOOD DAMS

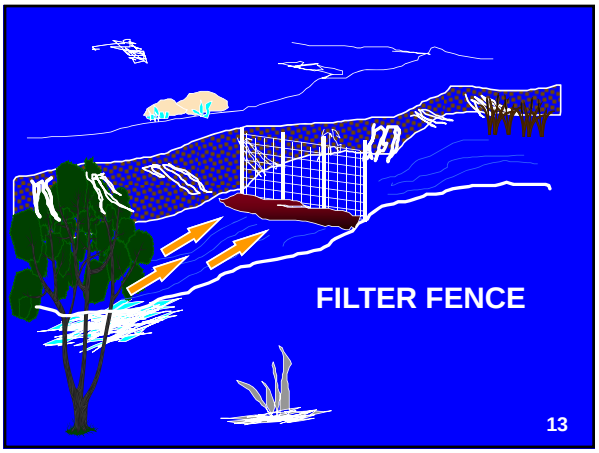
STRAW DAMS

- Used to contain sediment or spilled product.
- Can be used in conjunction with a Peat material.
- Can be an additional media in use with containment or absorbent boom.
- Can generate excess waste (= excessive cost for disposal).

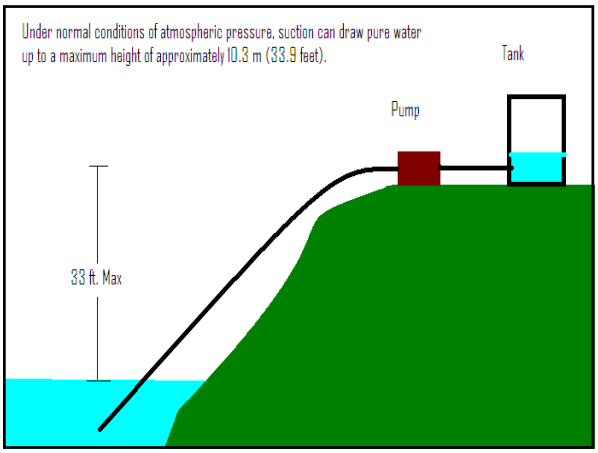
FILTER FENCES

- Constructed using stakes, chicken wire, and straw.
- Used to slow or contain spilled product.





A Word about Pumps…



For Additional Information
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On-scene Coordinator, USEPA
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EPA R7 Emergency Response and Preparedness

Other Inlands Waters Spill Containment and Cleanup Strategies

Todd Campbell
Federal On-Scene Coordinator
EPA Region 7

What do you do if you have a Spill?

- Stop the Source of Release
- Contain the Spill
- Make Notifications

NOTIFICATIONS

- National Response Center
  800.424.8802
- EPA Region 7
  913.281.0991
  EPA Region 5
  312.353.2318
- Iowa Dept. of Natural Resources
  515.281.8694
- Locals
  Emergency Management, Fire Dept., Law Enforcement., Local Emergency Planning Committee

What do you do if you have a Spill?

- Stop the Source of Release
- Contain the Spill
- Make Notifications
- Material Clean-up

Removal and Remediation

- In-Situ Burning

REQUIRES APPROVAL FROM THE REGIONAL RESPONSE TEAM (RRT)

Removal and Remediation

- In-Situ Burning
- Collection and Skimming

*copied from skimoil.com

www.abasco.com

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Bank Washing

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Bank Washing
  - Oil Herding
    - Leaf Blowers
    - Dragging

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul
  - Interception

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul
- Absorption
  - Pads

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul
- Absorption
  - Pads
  - Sock

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul
- Absorption
  - Pads
  - Sock
  - Pom-Poms
  - Peat
  - Hay

Removal and Remediation

- In-Situ Burning
- Collection and Skimming
  - Washing
- Dig and Haul
- Absorption
  - Pads
  - Sock
  - Pom-Poms
  - Peat
  - Hay
- Dispersants/Encapsulation

REQUIRES RRT APPROVAL

When Containment Booming Won't Work!

Loading and Entrainment

*Copied off the Internet

Oil Spill Response in Fast Currents A Field Guide

U.S. COAST GUARD
RESEARCH & DEVELOPMENT CENTER

Common Oil Spill Boom Scenario

Boom submergence failure in swift current

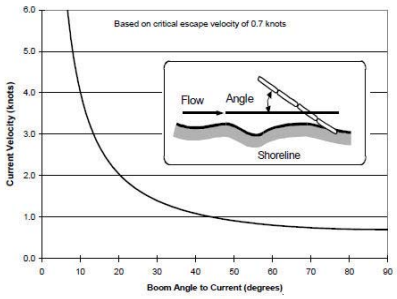


Figure 3-1. Maximum boom deployment angles required to prevent oil entrainment.

X	ANGLE
1	45.0
2	26.0
3	18.0
4	14.0
5	11.0
6	9.5
7	8.0
8	7.0
10	5.7
20	3.0
30	2.0

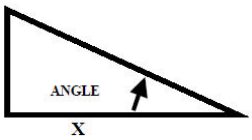


Figure 3-2. Angle measurement.

Table 3-1. Current drag force on one-foot boom profile to current.

	Boom Drag Force (pounds)			
Velocity (knots)	Draft 0.5 Feet	Draft 1.0 Feet	Draft 1.5 Feet	Draft 2.0 Feet
0.5	0.7	1.3	2.0	2.7
1.0	2.7	5.3	8.0	10.7
1.5	6.0	12.0	18.0	24.0
2.0	10.7	21.3	32.0	42.6
2.5	16.7	33.3	50.0	66.6
3.0	24.0	48.0	72.0	95.9
3.5	32.6	65.3	97.9	130.6
4.0	42.6	85.3	127.9	170.6
4.5	54.0	107.9	161.9	215.9
5.0	66.6	133.3	199.9	266.5
5.5	80.6	161.2	241.8	322.5
6.0	95.9	191.9	287.8	383.8
6.5	112.6	225.2	337.8	450.4
7.0	130.6	261.2	391.8	522.3

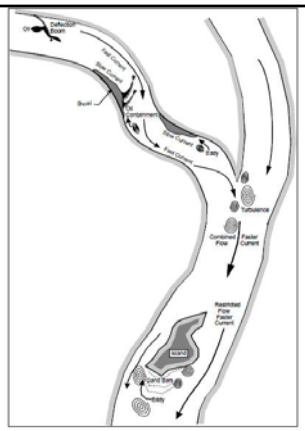


Figure 4-2. Typical river flow patterns and boom deployments.

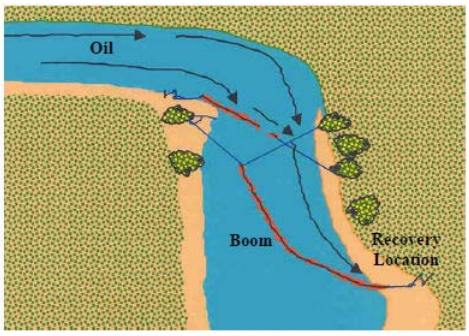


Figure 4-1. Oil collection (DOWCAR, 1997).

Diversion booming is used to:

* Exclude oil from areas that need protection
* Divert oil to areas of collection

Figure 4-3. Oil collection with diversion booming to shore (DOWCAR, 1997).

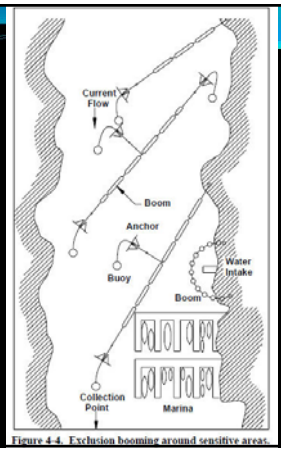


Figure 4-4. Exclusion booming around sensitive areas.

Figure 4-5. Exclusion booming of inlet.

Figure 4-6. Exclusion booming of side stream.

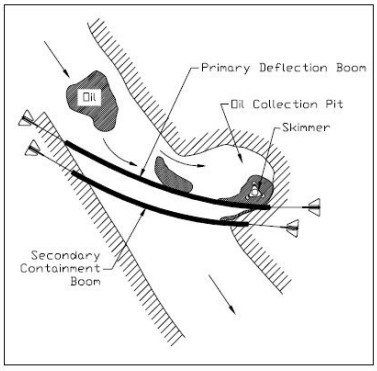


Figure 4-7. Two parallel diversion booms and collection pit.

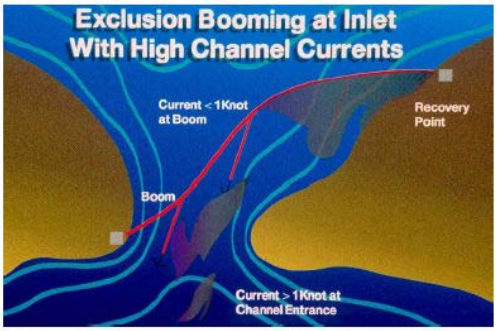


Figure 4-35. Protecting inlets with exclusion booming.

Booming Strategies and Tactics

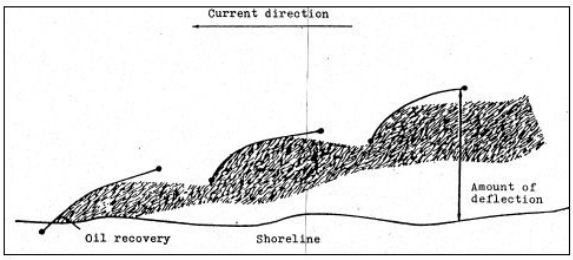


Figure 4-8. Cascade diversion booming (Exxon, 1992).

Figure 4-9. Cascade diversion booms deployed.

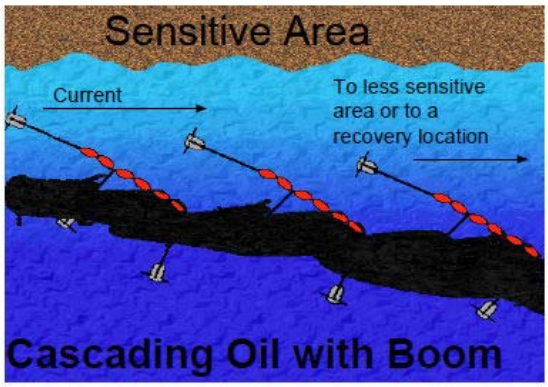


Figure 4-33. Cascaded deflection booms (U.S. Navy, 1991).

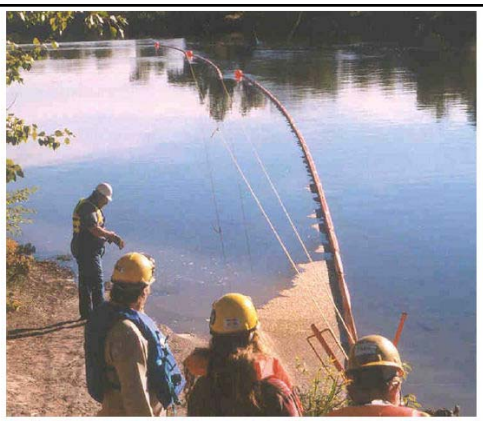


Figure 5-1. Deploying cascade boom in a narrow river (DOWCAR, 1997).

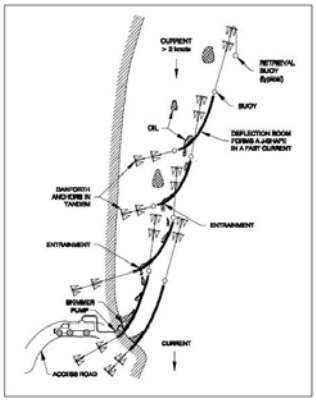


Figure 5-2. Cascade J-shape deflection booming requires more overlap (Coe and Gurr, 1999).

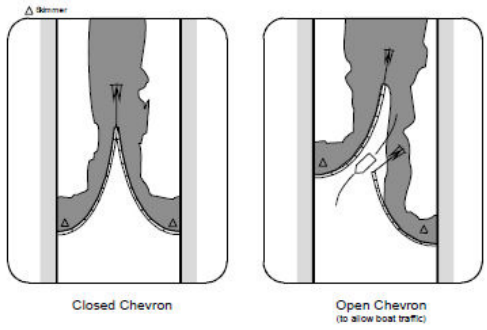


Figure 4-11. Closed and open Chevron booming tactics.

Figure 4-10. Chevron booming.

Figure 4-14. Use of two boats for oil spill capture.

4.2.4 Encircle and Divert

In wide rivers and coastal areas boom can also be used to encircle the large oil patches that move with the current. A patch of oil can be encircled by one boat by using a sea anchor to resist boom movement while the boat circles the oil as seen in Figure 4-12. The oil is then slowly diverted at a velocity less than one knot relative to the surface current into a low current eddy or inlet for skimming. A high level of competency is needed to be able to quickly execute this technique and should only be used as a last resort due to the complexity of the maneuvers required.

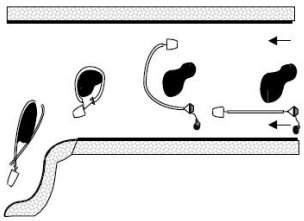


Figure 4-12. Procedure used by one boat to capture oil and divert it to slower waters (Coe and Gurr, 1999).

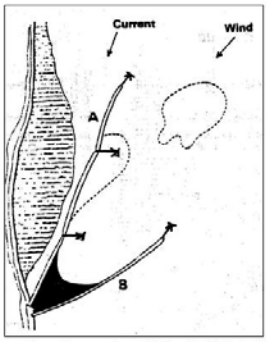


Figure 4-31. Correct booming near shore (National Spill Control School, 1998).

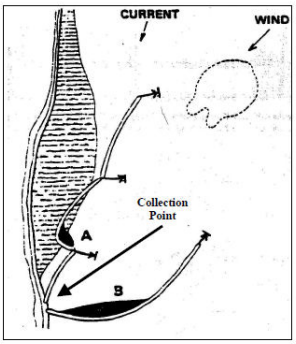


Figure 4-32. Pockets forming as result of incorrect booming.
(Note that oil is not arriving at collection point)

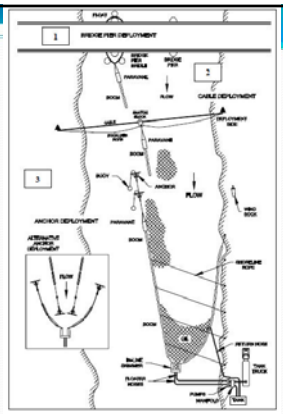


Figure 5-3. Transmountain pipeline tactic.

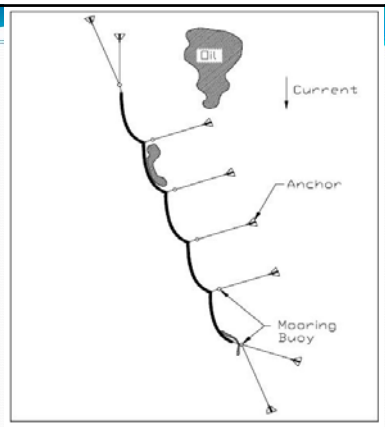


Figure 5-4. Multiple anchors on sections of boom.

5.5 Boom Deflectors

Boom deflectors (see Figure 5-5) allow quick deployment of deflection boom with a long continuous run and only requires one upstream anchor line. They are useful where fast response is needed and deployment of multiple anchors or cascade booming is too difficult. The deflectors are placed between each section of boom using 50-foot sections for speeds over 2 knots. A floating arm extends out the downstream side of the deflector body and pushes the boom into the current. The push on the deflector corresponds to the speed of the current and the angle set on the deflector. In faster currents a shallower boom angle and thus less extension of the deflector arm is required. The boom is deflected up to a maximum of 20 degrees into the current. The number of deflectors is based on the number of boom sections and not on the speed of the current or the amount of oil being contained.

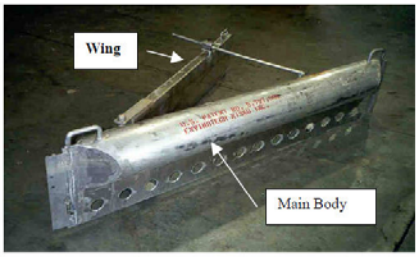


Figure 5-5. Boom deflector.

Figure 5-6. Boom deflectors push the boom into the current.

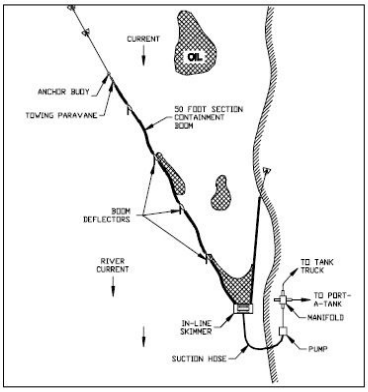


Figure 5-7. Boom deflectors can be used without multiple anchors.

Figure 5-8. Boom vane is quickly assembled.

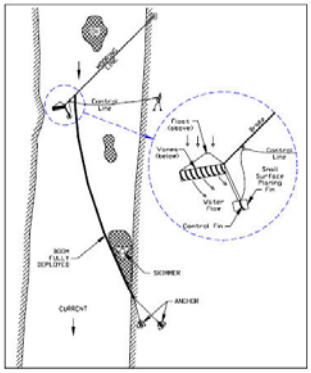


Figure 5-9. Boom vane deploys and retrieves deflection boom from shore to allow vessel passage (ORC AB, 2000).

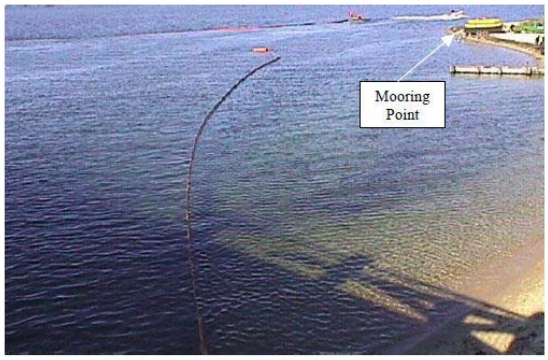


Figure 5-10. Boom vane deployed in Martha's Vineyard.
(Mooring line is attached to point of land in upper right-hand part of picture)

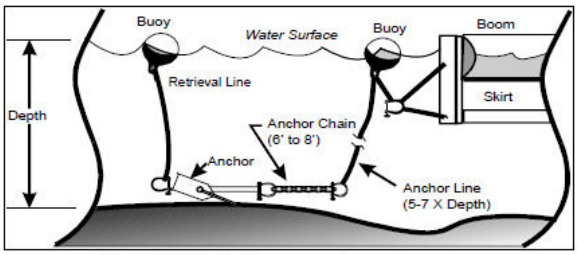
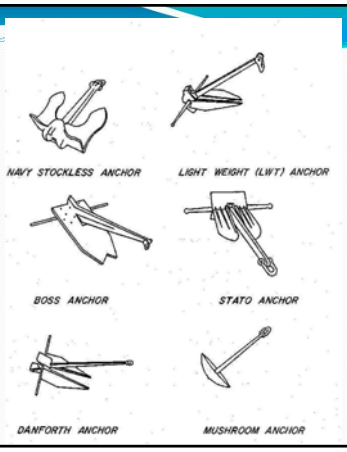


Figure 8-1. Typical boom mooring configuration.



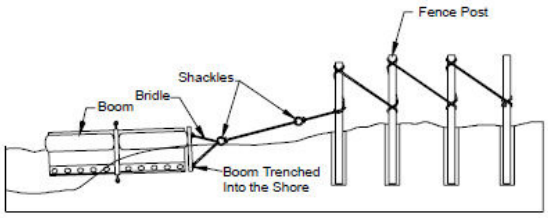


Figure 8-7. Typical shoreline boom mooring system using posts (Alaska Clean Seas, 1998).

Figure 8-9. Multiple booms being anchored (DOWCAR, 1997).

Figure 9-1. Ascenders used in gripping mooring lines.

Figure 9-2. Ascenders in use for tightening lines (DOWCAR, 1997).

Figure 8-12. A 12-inch draft boom is too much for this boat and motor.

Table 8-3. Pounds of force per foot of boom (towed from end).

Skirt Depth	Current (knots)									
(inches)	1	2	3	4	5	6	7	8	9	10
4	0.03	0.11	0.24	0.42	0.66	0.95	1.30	1.69	2.14	2.65
6	0.04	0.16	0.36	0.64	0.99	1.43	1.95	2.54	3.22	3.97
8	0.05	0.21	0.48	0.85	1.32	1.91	2.59	3.39	4.29	5.29
12	0.08	0.32	0.71	1.27	1.98	2.86	3.89	5.08	6.43	7.94

Table F-2. Mooring line loads.

Mooring Line Angle (degrees)	Each Mooring Line Tension (pounds force)					
	1 knot	2 knots	3 knots	4 knots	5 knots	6 knots
0	137	547	1,231	2,188	3,419	4,923
5	137	549	1,235	2,196	3,432	4,942
10	139	555	1,250	2,222	3,471	4,999
20	146	582	1,310	2,328	3,638	5,239
25	151	604	1,358	2,414	3,772	5,433
30	158	632	1,421	2,526	3,948	5,685
40	179	714	1,607	2,856	4,463	6,427
45	193	774	1,741	3,094	4,835	6,962
50	213	851	1,915	3,404	5,319	7,659
60	274	1,094	2,462	4,376	6,838	9,846
70	400	1,599	3,598	6,397	9,996	14,394
80	788	3,150	7,088	12,600	19,688	28,350
85	1,569	6,276	14,121	25,104	39,256	56,485
89	7,836	31,342	70,550	125,370	195,890	282,081

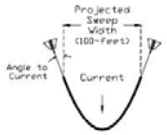


Figure F-1. Projected boom sweep.

Table F-1. Current chip log and maximum boom deflection angle.

Time to Drift 100 Feet (seconds)	Velocity (ft/sec)	Velocity (m/sec)	Velocity (knots)	Max Boom Deflection Angle (degrees)	Boom Required for 100-foot Profile to Current (feet)	Anchors if Placed Every 50 feet (number)
6	16.7	5.1	10.00	4.0	1,429	30
8	12.5	3.8	7.50	5.4	1,071	22
10	10.0	3.1	6.00	6.7	857	18
12	8.3	2.5	5.00	8.0	714	15
14	7.1	2.2	4.29	9.4	612	13
17	5.9	1.8	3.53	11.4	504	11
20	5.0	1.5	3.00	13.5	429	10
24	4.2	1.3	2.50	16.3	357	8
30	3.3	1.0	2.00	20.5	286	7
40	2.5	0.8	1.50	27.8	214	5
60	1.7	0.5	1.00	44.4	143	4
>86	≤1.2	≤0.35	≤0.70	90.0	100	3

Table G-1. Mooring Line Force Worksheet

Column # Instructions

1 Estimate maximum current in the waterway using tidal current tables or a chip log Table F-1.
2 Determine the maximum deflection angle allowed for that current using Table F-1 or Figure 3-1
3 Determine what projected deflection width is required per boom (not boom length) or Table G-2
4 Select a boom draft based on equipment available, weather and drag considerations.
5 Determine drag force per projected foot width of boom using Table G-3.
6 Calculate Total Boom Drag Force by multiplying column (3) times column (5).
7 Estimate Boom Catenary Angle (smaller angles are better but higher boom and mooring tension result).
8 Determine the Tension Force Multiplier using Table G-4.
9 Total Tension is calculated by multiplying column (6) by column (8) (this assumes two end moorings. Note 1
10 Force on each mooring line: divide column (9) by 2 (end moorings). Notes 1&2
11 Determine total length of boom required for projected sweep width desired (3), using the maximum deflection angle (2) and Table F-1 or G-2. Additional anchors along the boom, boom deflectors or shoreline tie backs will usually be required for boom lengths greater than 100 feet depending upon the conditions.

*Notes: 1. If total tension on the boom (9), exceeds the tensile breaking strength of the boom or the mooring system cannot provide the required holding force (10), then several actions can be chosen:
Use a more shallow boom, decrease sweep width, or use a larger catenary angle which could cause entrainment
2. Mooring loads and total boom tension can also be reduced by using additional mooring points along the length of deflection boom, however, the maximum boom tension and mooring line loads cannot be easily calculated.

Column #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Location or Scenario Description	Max Current Expected (knots)	Max Deflection Angle (degrees)	Projected Deflection Width (feet)	Boom Draft Desired (feet)	Force per Foot of Boom (pounds)	Total Boom Drag Force (pounds)	Boom Catenary Angle (degrees)	Tension Force Multiplier (#)	Total Tension on Boom (pounds)	Force on Each Mooring Line (pounds)	Total Length of Boom Req. (feet)
Math Help	Table G-1	Table G-1	Table G-2		Table G-3	(3) X (5)		Table G-4	(6) X (8)	(9)/2 moorings	Table F-2
Example	2 Knots	20.5	34	6.5	10.7	363.8	15	3.9	1418.8	709.4	

Incident Command System (ICS) implementation, Structure, Issues

Steve Faryan USEPA On Scene Coordinator

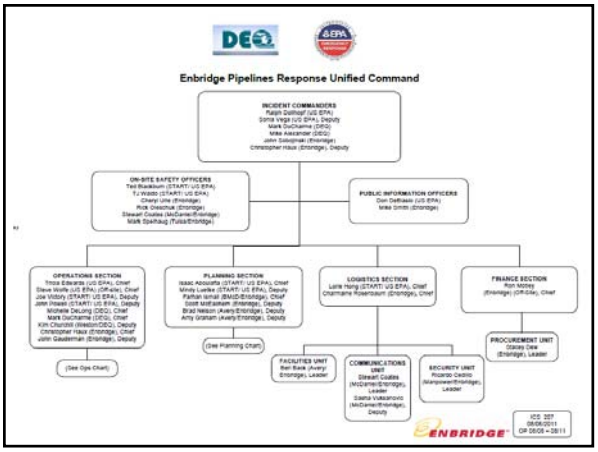
USE of ICS

Since 2001, EPA response program has responded multi–regionally to a number of nationally significant events in support of other lead agencies.

- FEMA/NYC DEM at World Trade Center
- Capitol Hill Sgt. at Arms at Anthrax Attacks
- FEMA and NASA at Columbia Shuttle Response
- FEMA at Katrina and other hurricanes
- USCG at BP-DWH
- Recent Pipeline releases with Enbridge Kalamazoo River , West Shore Pipeline Jackson Wi, West Shore Pipeline Palos Hts, Illinois

ICS Implementation

- ICS is a flexible, scalable structure that provides standardized processes, procedures, organization structure and common terminology
- Built around five major management functional areas: Command, Planning, Operations, Logistics and Finance



Why use Incident Command

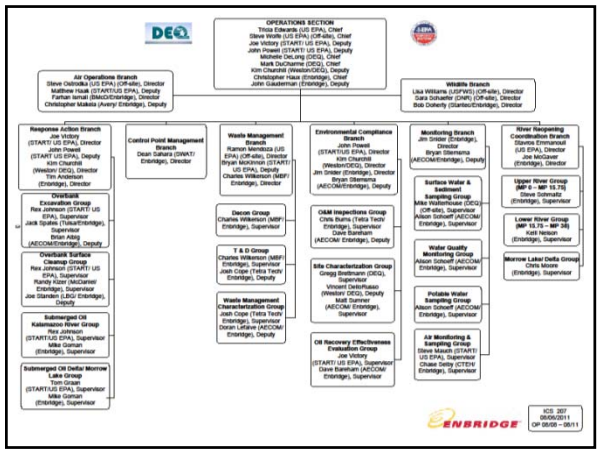
- Unified Command
- Achieve Objectives for each organization
- Flexibility to expand and contract
- Trained Incident Management Personnel to support response
- Support and Logistics and Safety for responders:
- Liaison with State and Local Emergency Management and Federal Partners
- Cost Control, Record Keeping, Efficiency

Issues/Disadvantages

- Availability of Personnel
- More layers, paperwork,
- Paralysis by Analysis
- Top Heavy Organizational Structure
- Communication
- Personality Conflicts
- Texas Ranger –"One Ranger One Riot"

Operations Section

- Ensure that all operations are properly managed
- Ensure that operational objectives established by the IC are carried out effectively and efficiently
- Coordinate with other ICS staff to ensure adequate operations support
- Serve as a key contributor to the operational planning process
- Revise tactics and resource utilization to meet objectives, as needed
- Ensure that response activities with the Ops Section are properly documented



Focus of Operations Section

- Objectives
  - Developed by the IC/UC
  - Convey the desired outcome of Command
- Strategies
  - The direction selected to accomplish incident objectives
- Tactics
  - Clearly outline the task(s) to be accomplished, where, when, and with what resources

ICS Structures

- Identify Geographical Area's and Functions
  - Groups (functional) = Containment, Treatment, Disposal, etc.
  - Divisions (geographical)= Div A River Mile Marker 1 to Mile Marker 5
- Develop Manageable Work Units (Org Chart)
  - Span of Control
  - Divisions, Groups, Branches, etc.
  - Branch's used to maintain Span of Control

OPERATIONS

Tricia A. Edwards, OSC
U.S. EPA Region 5

Key Responsibilities

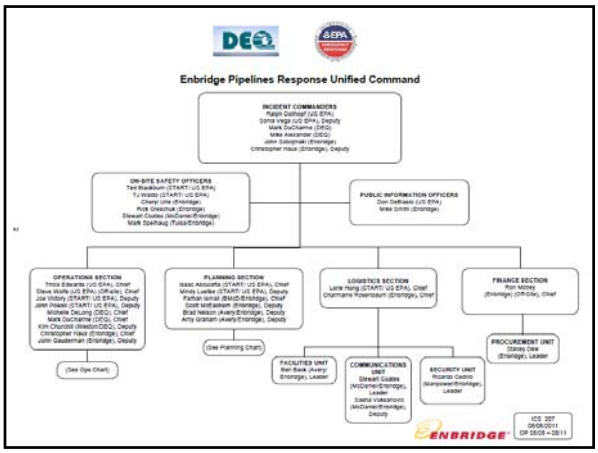
- Ensure that all operations are properly managed
- Ensure that operational objectives established by the IC are carried out effectively and efficiently
- Coordinate with other ICS staff to ensure adequate operations support
- Serve as a key contributor to the operational planning process
- Revise tactics and resource utilization to meet objectives, as needed
- Ensure that response activities with the Ops Section are properly documented

Focus of OPS

- Objectives
  - Developed by the IC/UC
  - Convey the desired outcome of Command
- Strategies
  - The direction selected to accomplish incident objectives
- Tactics
  - Clearly outline the task(s) to be accomplished, where, when, and with what resources

- Identify Functions
  - Containment, Treatment, Disposal, etc.
- Develop Manageable Work Units (Org Chart)
  - Span of Control
  - Divisions, Groups, Branches, etc.

- Coordinate closely with other Command and General Staff
  - Planning / Logistics / Resources / Liaison / IC / PIO
- Look forward
  - Demobilization Plan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Mark DeCharme (DEQ), Chief
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SECURITY UNIT
Ricardo Cedillo (Manpower/Enbridge), Leader
FINANCE SECTION
Ron Morley (Enbridge) (Off-Site), Chief
PROCUREMENT UNIT
Stacey Dew (Enbridge), Leader
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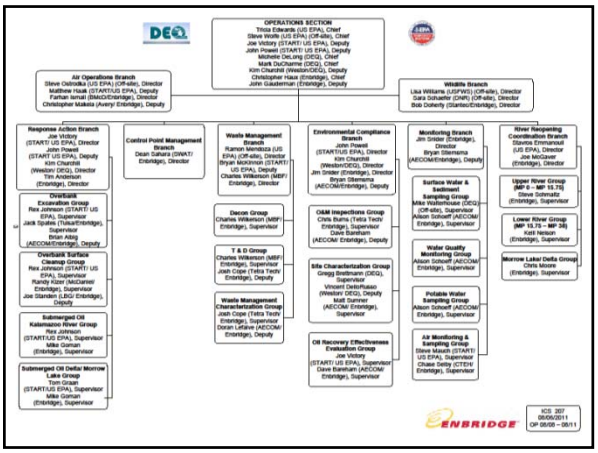
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Wildlife Branch
Lisa Williams (USFWS) (Off-site), Director
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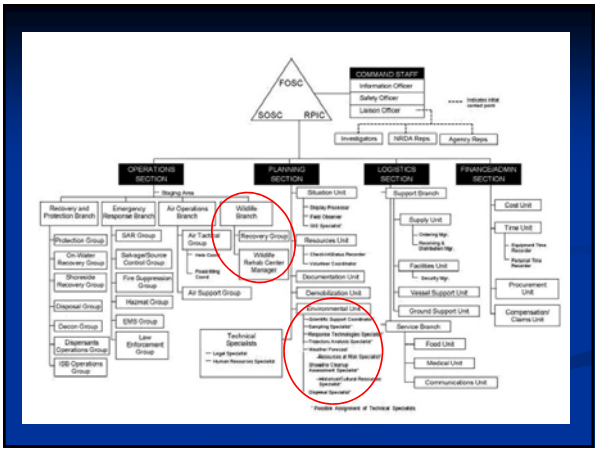
Tim Anderson
(Enbridge), Director
Control Point Management Branch
Dean Sahara (SWAT/ Enbridge), Director
Waste Management Branch
Ramon Mendoza (US EPA) (Off-site), Director
Bryan Mickinnon (START/ US EPA), Deputy
Charles Wilkerson (MBF/ Enbridge), Director
Environmental Compliance Branch
John Powell
(START/US EPA), Director
Kim Churchill
(Weston/DEQ), Director
Jim Snider (Enbridge), Director
Bryan Stemema
(AECOM/Enbridge), Deputy
Monitoring Branch
Jim Snider (Enbridge), Director
Bryan Stemema
(AECOM/Enbridge), Deputy
River Reopening Coordination Branch
Stavros Emmanouil
(US EPA), Director
Joe McGraver
(Enbridge), Director
Riverbank
Excavation Group
Rex Johnson (START/ US EPA), Supervisor
Jack Spates (Tulsa/Enbridge), Supervisor
Brian Alsip
(AECOM/Enbridge), Deputy
Riverbank Surface Cleanup Group
Rex Johnson (START/ US EPA), Supervisor
Randy Kizer (McDaniel/ Enbridge), Supervisor
Joe Standen (LEG/ Enbridge), Deputy
Submerged Oil Kalamazoo River Group
Rex Johnson
(START/US EPA), Supervisor
Mike Goman
(Enbridge), Supervisor
Submerged Oil Delta/ Morrow Lake Group
Tom Groan
(START/US EPA), Supervisor
Mike Goman
(Enbridge), Supervisor
Decon Group
Charles Wilkerson (MBF/ Enbridge), Supervisor
T & D Group
Charles Wilkerson (MBF/ Enbridge), Supervisor
Josh Cope (Tetra Tech/ Enbridge), Deputy
Waste Management Characterization Group
Josh Cope (Tetra Tech/ Enbridge), Supervisor
Doran LeFalve (AECOM/ Enbridge), Deputy
O&M Inspections Group
Chris Burns (Tetra Tech/ Enbridge), Supervisor
Dave Banham
(AECOM/ Enbridge), Deputy
Site Characterization Group
Gregg Brethnam (DEQ), Supervisor
Vincent DelloRusso
(Weston/ DEQ), Deputy
Matt Sumner
(AECOM/ Enbridge), Supervisor
Oil Recovery Effectiveness Evaluation Group
Joe Victory
(START/ US EPA), Supervisor
Dave Banham (AECOM/ Enbridge), Supervisor
Surface Water & Sediment Sampling Group
Mike Wolterhouse (DEQ) (Off-site), Supervisor
Alison Schoeff (AECOM/ Enbridge), Supervisor
Water Quality Monitoring Group
Alison Schoeff (AECOM/ Enbridge), Supervisor
Potable Water Sampling Group
Alison Schoeff (AECOM/ Enbridge), Supervisor
Air Monitoring & Sampling Group
Steve Mauck (START/ US EPA), Supervisor
Chase Selby (CTEH/ Enbridge), Supervisor
Upper River Group (MP 0 – MP 10.75)
Steve Schmaltz
(Enbridge), Supervisor
Lower River Group (MP 10.75 – MP 36)
Kelli Nelson
(Enbridge), Supervisor
Morrow Lake/ Delta Group
Chris Moore
(Enbridge), Supervisor
ENBRIDGE
ICS 207
08/08/2011
OP 08:00 – 20:11

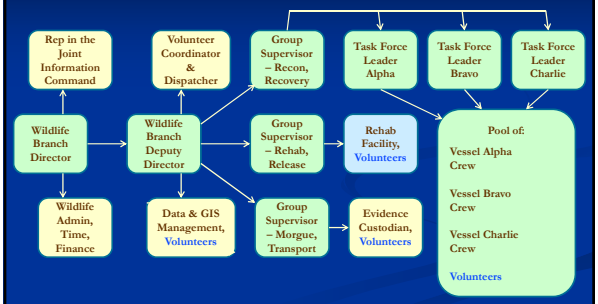

STAY
IN YOUR
LANE

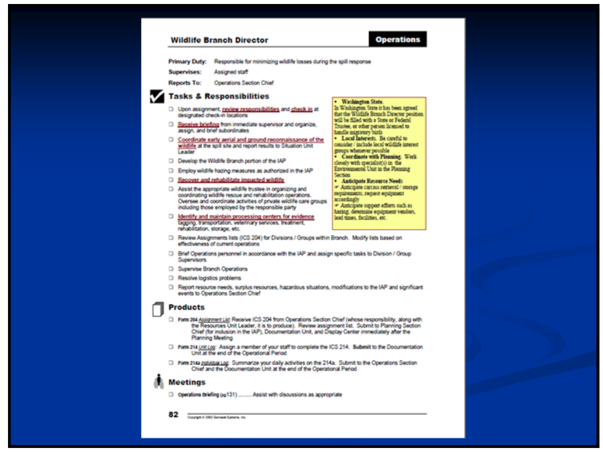
Wildlife Response

- Incident Command System



Wildlife Branch Organization Scheme





Wildlife Branch Director

Operations

Primary Duty: Responsible for minimizing wildlife losses during the spill response

Supervises: Assigned staff

Reports To: Operations Section Chief

Tasks & Responsibilities

- ❑ Upon assignment, review responsibilities and check in at designated check-in locations
- ❑ Receive briefing from immediate supervisor and organize, assign, and brief subordinates
- ❑ Coordinate early aerial and ground reconnaissance of the wildlife at the spill site and report results to Situation Unit Leader
- ❑ Develop the Wildlife Branch portion of the IAP
- ❑ Employ wildlife hazing measures as authorized in the IAP
- ❑ Recover and rehabilitate impacted wildlife
- ❑ Assist the appropriate wildlife trustee in organizing and coordinating wildlife rescue and rehabilitation operations. Oversee and coordinate activities of private wildlife care groups including those employed by the responsible party
- ❑ Identify and maintain processing centers for evidence tagging, transportation, veterinary services, treatment, rehabilitation, storage, etc.
- ❑ Review Assignments lists (ICS 204) for Divisions / Groups within Branch. Modify lists based on effectiveness of current operations
- ❑ Brief Operations personnel in accordance with the IAP and assign specific tasks to Division / Group Supervisors
- ❑ Supervise Branch Operations
- ❑ Resolve logistics problems
- ❑ Report resource needs, surplus resources, hazardous situations, modifications to the IAP and significant events to Operations Section Chief

- **Washington State.** In Washington State it has been agreed that the Wildlife Branch Director position will be filled with a State or Federal Trustee, or other person licensed to handle migratory birds
- **Local Interests.** Be careful to consider / include local wildlife interest groups whenever possible
- **Coordinate with Planning.** Work closely with specialist(s) in the Environmental Unit in the Planning Section
- **Anticipate Resource Needs:** ☞ Anticipate carcass retrieval / storage requirements; request equipment accordingly ☞ Anticipate support efforts such as hazing; determine equipment vendors, lead times, facilities, etc.

Products

- ❑ **Form 204** Assignment List: Receive ICS 204 from Operations Section Chief (whose responsibility, along with the Resources Unit Leader, it is to produce). Review assignment list. Submit to Planning Section Chief (for inclusion in the IAP), Documentation Unit, and Display Center immediately after the Planning Meeting
- ❑ **Form 214** Unit Log: Assign a member of your staff to complete the ICS 214. **Submit** to the Documentation Unit at the end of the Operational Period
- ❑ **Form 214a** Individual Log: Summarize your daily activities on the 214a. Submit to the Operations Section Chief and the Documentation Unit at the end of the Operational Period

Meetings

- ❑ **Operations Briefing** (pg131) .... Assist with discussions as appropriate

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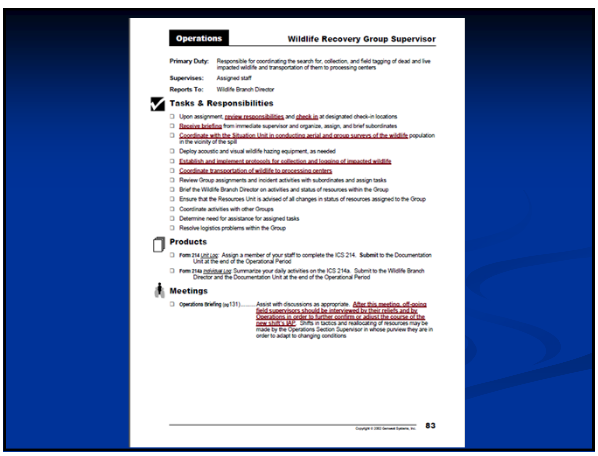

Operations

Wildlife Recovery Group Supervisor

Primary Duty: Responsible for coordinating the search for, collection, and field tagging of dead and live impacted wildlife and transportation of them to processing centers

Supervises: Assigned staff

Reports To: Wildlife Branch Director

Tasks & Responsibilities

- ❑ Upon assignment, review responsibilities and check in at designated check-in locations
- ❑ Receive briefing from immediate supervisor and organize, assign, and brief subordinates
- ❑ Coordinate with the Situation Unit in conducting aerial and group surveys of the wildlife population in the vicinity of the spill
- ❑ Deploy acoustic and visual wildlife hazing equipment, as needed
- ❑ Establish and implement protocols for collection and logging of impacted wildlife
- ❑ Coordinate transportation of wildlife to processing centers
- ❑ Review Group assignments and incident activities with subordinates and assign tasks
- ❑ Brief the Wildlife Branch Director on activities and status of resources within the Group
- ❑ Ensure that the Resources Unit is advised of all changes in status of resources assigned to the Group
- ❑ Coordinate activities with other Groups
- ❑ Determine need for assistance for assigned tasks
- ❑ Resolve logistics problems within the Group

Products

- ❑ **Form 214** Unit Log: Assign a member of your staff to complete the ICS 214. **Submit** to the Documentation Unit at the end of the Operational Period
- ❑ **Form 214a** Individual Log: Summarize your daily activities on the ICS 214a. Submit to the Wildlife Branch Director and the Documentation Unit at the end of the Operational Period

Meetings

- ❑ **Operations Briefing** (pg131)........ Assist with discussions as appropriate. After this meeting, off-going field supervisors should be interviewed by their reliefs and by Operations in order to further confirm or adjust the course of the new shift's IAP. Shifts in tactics and reallocating of resources may be made by the Operations Section Supervisor in whose purview they are in order to adapt to changing conditions

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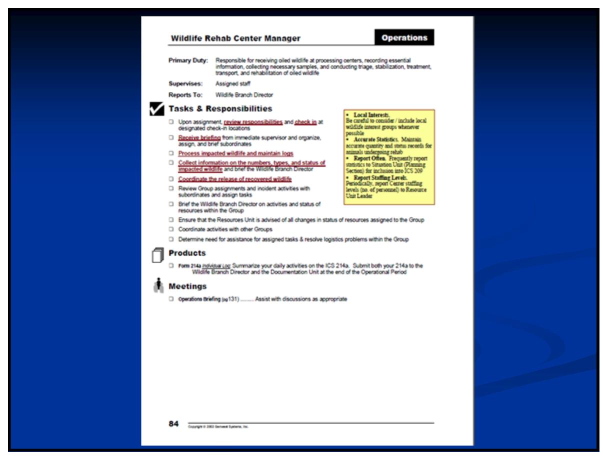

Wildlife Rehab Center Manager

Operations

Primary Duty: Responsible for receiving oiled wildlife at processing centers, recording essential information, collecting necessary samples, and conducting triage, stabilization, treatment, transport, and rehabilitation of oiled wildlife

Supervises: Assigned staff

Reports To: Wildlife Branch Director

Tasks & Responsibilities

- ❑ Upon assignment, review responsibilities and check in at designated check-in locations
- ❑ Receive briefing from immediate supervisor and organize, assign, and brief subordinates
- ❑ Process impacted wildlife and maintain logs
- ❑ Collect information on the numbers, types, and status of impacted wildlife and brief the Wildlife Branch Director
- ❑ Coordinate the release of recovered wildlife
- ❑ Review Group assignments and incident activities with subordinates and assign tasks
- ❑ Brief the Wildlife Branch Director on activities and status of resources within the Group
- ❑ Ensure that the Resources Unit is advised of all changes in status of resources assigned to the Group
- ❑ Coordinate activities with other Groups
- ❑ Determine need for assistance for assigned tasks & resolve logistics problems within the Group

- **Local Interests.** Be careful to consider / include local wildlife interest groups whenever possible
- **Accurate Statistics.** Maintain accurate quantity and status records for animals undergoing rehab
- **Report Often.** Frequently report statistics to Situation Unit (Planning Section) for inclusion into ICS 209
- **Report Staffing Levels.** Periodically, report Center staffing levels (no. of personnel) to Resource Unit Leader

Products

- ❑ **Form 214a** Individual Log: Summarize your daily activities on the ICS 214a. Submit both your 214a to the Wildlife Branch Director and the Documentation Unit at the end of the Operational Period

Meetings

- ❑ **Operations Briefing** (pg131) .... Assist with discussions as appropriate

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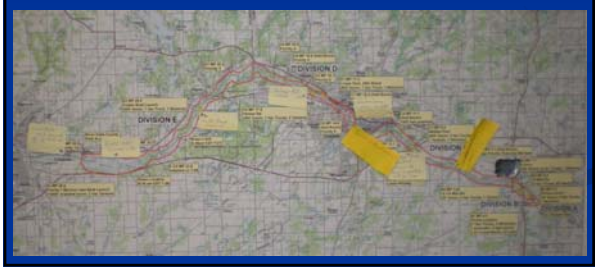
Wildlife Response

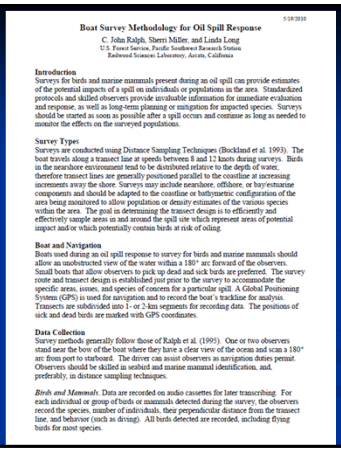
- Wildlife Recon

Wildlife Recon

- Are there concentrations of birds or other wildlife in the affected area or attracted to the affected area?
- How many of what species?
- What percentages of the colonies or flocks are oiled?
- What is the degree of oiled plumage?
- Observations on excessive preening, panting, feeding, caring for young. Not all birds need to be immediately recused even if oiled.
- Any dead around? *- see Craig's & Justin's presentation.*
- Recommended capture techniques. *- see Jason's presentations.*
- Recommended approaches to avoid nesting impacts, prevent escape or chasing into the oil.
- How engaged is the public and citizen groups? *- see Craig's & Dan's discussion.*

Sensitive environmental area maps
Local knowledge Hotline reports
Car, boat, aircraft surveys
Shoreline and beach walks
Stay organized – set up divisions and segments





Boat Survey Methodology for Oil Spill Response

C. John Ralph, Sherri Miller, and Linda Long
U.S. Forest Service, Pacific Southwest Research Station
Redwood Sciences Laboratory, Arcata, California

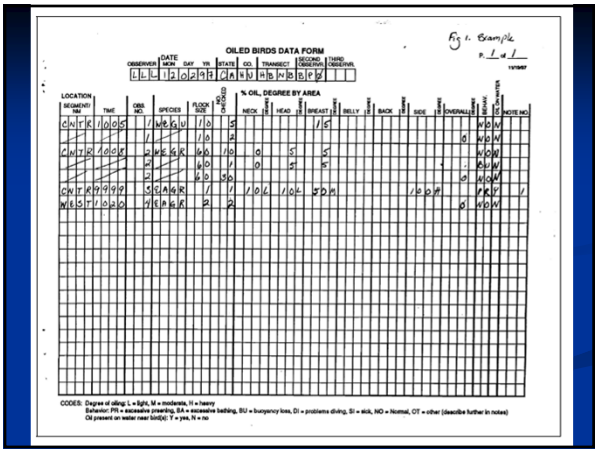
Introduction
Surveys for birds and marine mammals present during an oil spill can provide estimates of the potential impacts of a spill on individuals or populations in the area. Standardized protocols and skilled observers provide invaluable information for immediate evaluation and response, as well as long-term planning or mitigation for impacted species. Surveys should be started as soon as possible after a spill occurs and continue as long as needed to monitor the effects on the surveyed populations.

Survey Types
Surveys are conducted using Distance Sampling Techniques (Buckland et al. 1993). The boat travels along a transect line at speeds between 8 and 12 knots during surveys. Birds in the nearshore environment tend to be distributed relative to the depth of water, therefore transect lines are generally positioned parallel to the coastline at increasing increments away the shore. Surveys may include nearshore, offshore, or bay/estuarine components and should be adapted to the coastline or bathymetric configuration of the area being monitored to allow population or density estimates of the various species within the area. The goal in determining the transect design is to efficiently and effectively sample areas in and around the spill site which represent areas of potential impact and/or which potentially contain birds at risk of oiling.

Boat and Navigation
Boats used during an oil spill response to survey for birds and marine mammals should allow an unobstructed view of the water within a 180° arc forward of the observers. Small boats that allow observers to pick up dead and sick birds are preferred. The survey route and transect design is established just prior to the survey to accommodate the specific areas, issues, and species of concern for a particular spill. A Global Positioning System (GPS) is used for navigation and to record the boat's trackline for analysis. Transects are subdivided into 1- or 2-km segments for recording data. The positions of sick and dead birds are marked with GPS coordinates.

Data Collection
Survey methods generally follow those of Ralph et al. (1995). One or two observers stand near the bow of the boat where they have a clear view of the ocean and scan a 180° arc from port to starboard. The driver can assist observers as navigation duties permit. Observers should be skilled in seabird and marine mammal identification, and, preferably, in distance sampling techniques.

Birds and Mammals. Data are recorded on audio cassettes for later transcribing. For each individual or group of birds or mammals detected during the survey, the observers record the species, number of individuals, their perpendicular distance from the transect line, and behavior (such as diving). All birds detected are recorded, including flying birds for most species.

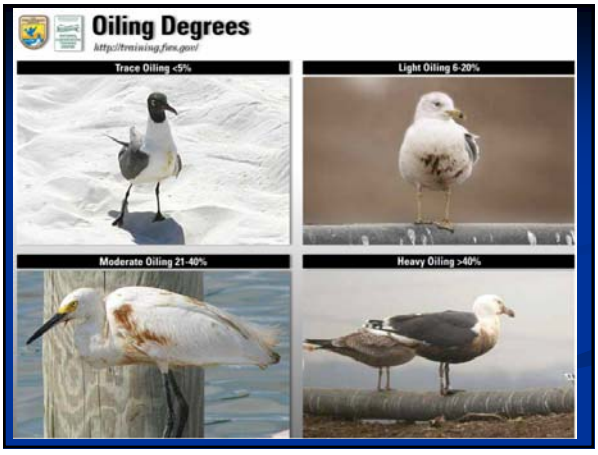


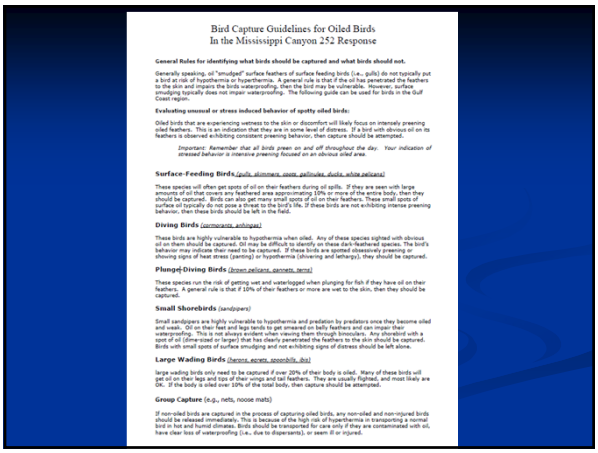
OILED BIRDS DATA FORM

Fig 1. Example

LOCATION SEGMENT/ SM	TIME	OBS NO.	SPECIES	FLOCK SIZE	# OILED	% OIL, DEGREE BY AREA: NECK	HEAD	BREAST	BELLY	BACK	SIDE	OVERALL	BEHAV	OIL PRESENT	NOTE NO
CNTR	1005	1	WEGU	10	5			1/S						WON	
		1		10	2							S		WON	
CNTR	1005	2	WEGR	60	10	0	5	5						WON	
		2		60	1	0	4	5				-		BUN	
		2		60	50							S		WON	
CNTR	9999	3	SEAGR	1	1	10L	10L	SDN			100H			PRV	1
WEST	1020	4	HERGR	2	2							S		WON	

CODES: Degree of oiling: L = light, M = moderate, H = heavy
Behavior: PR = excessive preening, BA = excessive bathing, BU = buoyancy loss, DI = problems diving, SI = sick, NO = Normal, OT = other (describe further in notes)
Oil present on water near bird(s): Y = yes, N = no





Bird Capture Guidelines for Oiled Birds
In the Mississippi Canyon 252 Response

General Rules for identifying what birds should be captured and what birds should not.

Generally speaking, oil "smudged" surface feathers of surface feeding birds (i.e., gulls) do not typically put a bird at risk of hypothermia or hyperthermia. A general rule is that if the oil has penetrated the feathers to the skin and impairs the birds waterproofing, then the bird may be vulnerable. However, surface smudging typically does not impair waterproofing. The following guide can be used for birds in the Gulf Coast region.

Evaluating unusual or stress induced behavior of spotty oiled birds:

Oiled birds that are experiencing wetness to the skin or discomfort will likely focus on intensely preening oiled feathers. This is an indication that they are in some level of distress. If a bird with obvious oil on its feathers is observed exhibiting consistent preening behavior, then capture should be attempted.

Important: Remember that all birds preen on and off throughout the day. Your indication of stressed behavior is intensive preening focused on an obvious oiled area.

Surface-Feeding Birds *(gulls, skimmers, coots, gallinules, ducks, white pelicans)*

These species will often get spots of oil on their feathers during oil spills. If they are seen with large amounts of oil that covers any feathered area approximating 10% or more of the entire body, then they should be captured. Birds can also get many small spots of oil on their feathers. These small spots of surface oil typically do not pose a threat to the bird's life. If these birds are not exhibiting intense preening behavior, then these birds should be left in the field.

Diving Birds *(cormorants, anhingas)*

These birds are highly vulnerable to hypothermia when oiled. Any of these species sighted with obvious oil on them should be captured. Oil may be difficult to identify on these dark-feathered species. The bird's behavior may indicate their need to be captured. If these birds are spotted obsessively preening or showing signs of heat stress (panting) or hypothermia (shivering and lethargy), they should be captured.

Plunge-Diving Birds *(brown pelicans, gannets, terns)*

These species run the risk of getting wet and waterlogged when plunging for fish if they have oil on their feathers. A general rule is that if 10% of their feathers or more are wet to the skin, then they should be captured.

Small Shorebirds *(sandpipers)*

Small sandpipers are highly vulnerable to hypothermia and predation by predators once they become oiled and weak. Oil on their feet and legs tends to get smeared on belly feathers and can impair their waterproofing. This is not always evident when viewing them through binoculars. Any shorebird with a spot of oil (dime-sized or larger) that has clearly penetrated the feathers to the skin should be captured. Birds with small spots of surface smudging and not exhibiting signs of distress should be left alone.

Large Wading Birds *(herons, egrets, spoonbills, ibis)*

large wading birds only need to be captured if over 20% of their body is oiled. Many of these birds will get oil on their legs and tips of their wings and tail feathers. They are usually flighted, and most likely are OK. If the body is oiled over 10% of the total body, then capture should be attempted.

Group Capture (e.g., nets, noose mats)

If non-oiled birds are captured in the process of capturing oiled birds, any non-oiled and non-injured birds should be released immediately. This is because of the high risk of hyperthermia in transporting a normal bird in hot and humid climates. Birds should be transported for care only if they are contaminated with oil, have clear loss of waterproofing (i.e., due to dispersants), or seem ill or injured.

Remember:
Evidence preservation.
Chemical analysis integrity.

1. What species?
2. How many?
3. Any oiled?
4. We kept our distance to set up a cannon net versus chasing with hand nets to some unknown location or breaking up the flock?

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U.S. Fish and Wildlife Service
Greater Illinois & Iowa Field Office
Environmental Contaminants Program
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Moline, IL 61265

309-757-5800 x206
michael_coffey@fws.gov
http://www.fws.gov/contaminants/Issues/OilSpill.cfm

Counting Birds

Mick Hanan
Clarence Cannon National Wildlife Refuge

Stephen Winter
Upper Mississippi River
National Wildlife and Fish Refuge

Statistical Estimate

- Rigorous study design
- Sufficient training
- Appropriate analyses

- Not feasible in a spill response context?

Seat of the Pants Estimate

- Some training recommended
  - Greater training and experience should result in greater accuracy
- Back of envelope analyses

- Really just "Guestimates" but probably the most feasible in a spill response context

Seat of the Pants Estimate

- Don't try to count individual birds
- Count in groups of 10, 20, 50, 100, etc. and extrapolate

Seat of the Pants Estimate

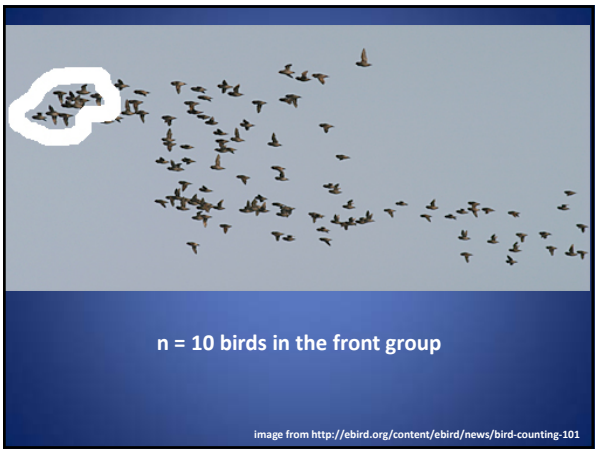
- The bigger the actual number, the less accurate the estimate?
- At what level does it become meaningless?

n = 10 birds in the front group
10 x 6 groups = 60 total birds?

actual count = 66 birds

image from http://web.uct.ac.za/depts/stats/adu/pdf/cwac-info4.pdf

image from http://ebird.org/content/ebird/news/bird-counting-101



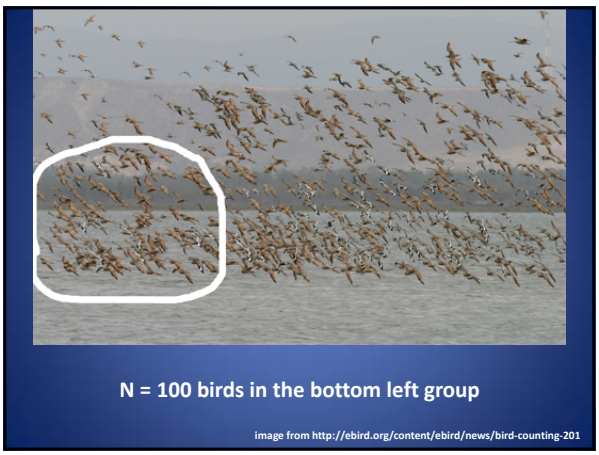
n = 10 birds in the front group

image from http://ebird.org/content/ebird/news/bird-counting-101

n = 118 total birds

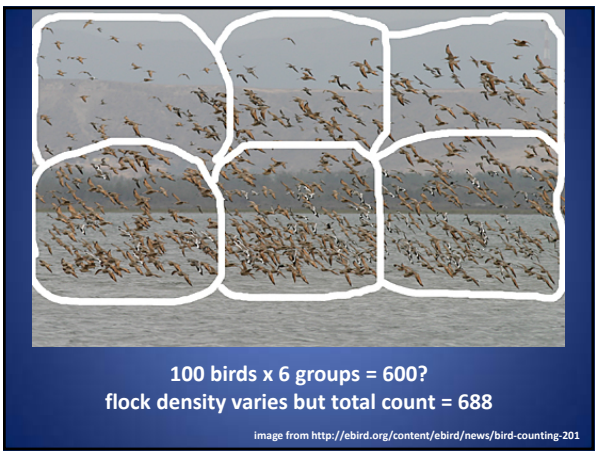
image from http://ebird.org/content/ebird/news/bird-counting-101

image from http://ebird.org/content/ebird/news/bird-counting-201



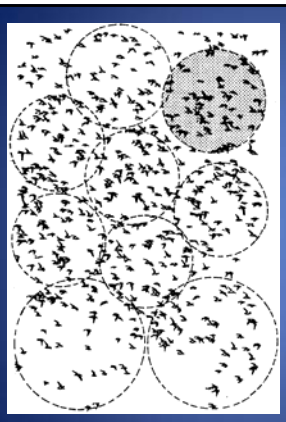
N = 100 birds in the bottom left group

image from http://ebird.org/content/ebird/news/bird-counting-201



100 birds x 6 groups = 600?
flock density varies but total count = 688

image from http://ebird.org/content/ebird/news/bird-counting-201



n = 50 birds in the upper right group

50 x 9 groups = 450 total birds?

actual count = 491 birds

image from http://web.uct.ac.za/depts/stats/adu/pdf/cwac-info4.pdf

image from http://ebird.org/content/ebird/news/bird-counting-101

N = 25 birds in the front left group

image from http://ebird.org/content/ebird/news/bird-counting-101

25 birds x 6 groups = 150 total birds?

image from http://ebird.org/content/ebird/news/bird-counting-101

n = 206 total birds
2-dimensions (width and depth)
groups in back have more birds per group

image from http://ebird.org/content/ebird/news/bird-counting-101

N = 100 birds per group
group size gets smaller to account for depth of field

image from http://data.prbo.org/apps/pfss/uploads/Estimating%20Shorebird%20Flock%20Size%20&%20Composition.pdf

approximately 2,000 birds

image from http://data.prbo.org/apps/pfss/uploads/Estimating%20Shorebird%20Flock%20Size%20&%20Composition.pdf

image from http://www.wildlifecounts.com/index.html

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image from http://www.wildlifecounts.com/index.html

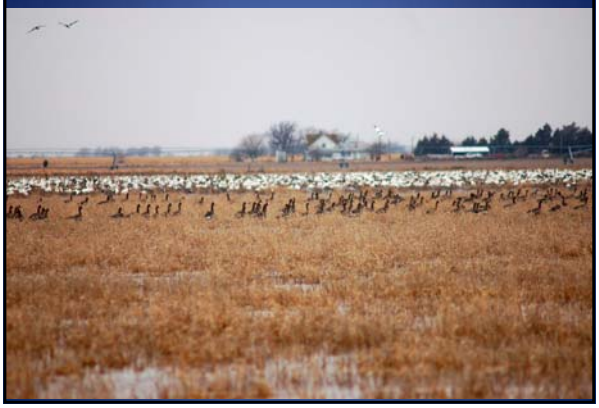
image from http://www.wildlifecounts.com/index.html

image from http://www.wildlifecounts.com/index.html

Diving ducks on the Upper Mississippi River

image from http://www.birdchick.com/wp/

Geese in Nebraska



Coots on the Upper Mississippi River

image from http://10000birds.com/duck-migration-on-the-upper-mississippi-river.htm

Sandhill cranes in Nebraska

Coots on the Upper Mississippi River

image from http://10000birds.com/duck-migration-on-the-upper-mississippi-river.htm

Sandhill cranes in Nebraska

Coots and diving ducks on the Upper Mississippi River

Online Resources

http://ebird.org/content/ebird/news/bird-counting-101

http://ebird.org/content/ebird/news/bird-counting-201

http://data.prbo.org/apps/pfss/uploads/Estimating%20Shorebird%20Flock%20Size%20&%20Composition.pdf

http://www.google.com/url?sa=t&rct=j&q=estimating%20bird%20flock%20size&source=web&cd=8&ved=0CFkQFjAH&url=http%3A%2F%2Fconservation.audubon.org%2Fsites%2Fdefault%2Ffiles%2Fdocuments%2Festimating_flocks.ppt&ei=SNc8UMr5F4bD6wGypIBY&usg=AFQjCNFb4QPQJLPHGFZfi2p9acK32NYUeQ

http://staff.jccc.edu/dseibel/birds/birdcount.htm

http://web.uct.ac.za/depts/stats/adu/pdf/cwac-info4.pdf

http://www.pwrc.usgs.gov/monmanual/techniques/shorebirdsnonbreedingsites.htm#id

http://www.wildlifecounts.com/index.html

Upper Mississippi River Spill Response & Wildlife Response Training

Response Safety

MONTROSE, IOWA
SEPTEMBER 25-26, 2012

HAZWOPER

OSHA Regulatory Standard

The General Duty Clause

29 CFR 1903.1 **Basis for .120 and 242 FW 6**

EMPLOYERS MUST: Furnish a place of employment free of recognized hazards that are causing or are likely to cause death or serious physical harm to employees.

Employers must comply with occupational safety and health standards promulgated under the Williams-Steiger Occupational Safety and Health Act of 1970.

29 CFR 1910.120

Developed to require employers to protect hazardous waste site and emergency response personnel from known and possible site hazards

- **Education and training**
- Hazard recognition
- PPE
- **Specific training** requirements for various operational levels
- Medical Monitoring


THE DAILY ADVERTISER
Agents train for oil spills

29 CFR 1910.120

•HAZWOPER covers the following operations,

- ⇨ Clean-up operations required by a government body
- ⇨ Corrective Actions covered by RCRA
- ⇨ Voluntary clean-up operations
- ⇨ Operations involving hazardous waste (TSD)
- ⇨ Emergency response operations for releases
- ⇨ Response/Recovery operations per Oil Spill Contingency Plan

HAZWOPER – OSHA Requirement 1910.120 (e)

General oil spill response (No respirators)

- Site workers – minimum 24 hrs instruction off site and one day actual field experience.
- Supervisors (may) require more training (40 hours and 3 days field experience)
- Annual refresher training. ALL need 8 hours.

LEVEL D - PROTECTION:

THE FOLLOWING CONSTITUTE LEVEL D PROTECTION:

1. **Coveralls or suitable work uniform**
2. **Gloves (Optional, as applicable)**
3. **Boots/Shoes, chemical resistant, steel toe and shank**
4. **Boots outer, chemical resistant (disposable)**
5. **Safety glasses or chemical splash goggles**
6. **Hard hat (Optional, as applicable)**
7. **Face shield (Optional, as applicable)**
8. **Escape mask (Optional, as applicable)**

Level D Modified

- Used primarily to combat heat stress concerns – extensively for DH (MC 252) Oil Spill
- Typical Components:
  - Tyvek pants or Tyvek suits tied off at the waist
  - Boots
  - Booties
  - Disposable Gloves
  - Duct tape – boots duct taped to pants to form a seal

PPE CONSIDERATIONS

THINGS TO CONSIDER WHEN PROCURING PPE:

- ✓ **Age of the Equipment**
- ✓ **Chemical Resistance**
- ✓ **Cleanability**
- ✓ **Comfort**
- ✓ **Communication**
- ✓ **Design**
- ✓ **Durable**
- ✓ **Flexibility**
- ✓ **Temperature Resistance**
- ✓ **Visibility**

The actual properties of the hazard must be known to make a decision on the specific type of equipment to be used!

Oil Spill Contingency Plan

Handling Wildlife

- Eye/Face Protection
- Chemical resistant gloves
- Leather Gloves
- Disposable coveralls
- Boots

At most USFWS/USDA spill sites, level C and D PPE will require either cleaning (typically with water, soap, or removal agent) or disposal.

- **The complexity of Level A and B decon requires a high level of training, equipment, and supplies which are not typically utilized in the natural resource setting by Agency Responders**

Other Protection Needs

- Poison Vegetation
- Insect Protection
- UV Protection
  - Sunscreen
  - Sunglasses
  - Sun hat
- PFD
- **Hydration**
- Hearing Protection

Other Agency Specific Regulations That May Apply

- Aircraft
- Bloodborne Pathogens
- Firearm Use and Safety
- Hazardous Materials Operations
- Law Enforcement
- Motor Vehicles and Equipment
- Noise Control/Prevention of Hearing Loss
- Personal Protective Equipment
- Pyrotechnics, Rocket Net Charges, and Incidental Explosive Materials
- Respiratory Protection
- Watercraft
- Wildlife Disease Surveillance and Emergency Response
- Wildlife Handling and Inspections

PHYSICAL, ENVIRONMENTAL, AND SAFETY HAZARDS

Physical, environmental, and safety hazards include a wide range of potential exposures

Many hazards exist at a spill or hazardous waste site

They may include:

▪Confined Spaces	▪Radioactivity
▪Critters	▪Slips, Trips, and Falls
▪Electricity	▪Steam
▪Excavation	▪Struck-By Hazards
▪Fire and Explosion	▪Vehicle Operations
▪Heat and Cold	▪Water Bodies (Ponds, Lagoons, Swamps, Open Water)
▪Noise	

Water Bodies

Hazards around water bodies may include:

- **drowning**
- **partially solidified surface**
- **corrosive or toxic materials**
- **gases or vapors**

The precautions that should be used include:

- **using protective equipment such as life jackets, safety belts, or life lines**
- **wearing protective clothing if material could cause injury if contacted or inhaled (e.g., rubber boots, waders, etc.)**
- **limiting access**
- **training workers**
- **Others ? Please name a few!**

Heat stress is probably one of the most common illness at a spill or hazardous waste site. **Regular monitoring and other protective measures are vital.** Individuals react to heat in different ways.

Some factors which predispose someone to heat stress include:

- Lack of physical fitness
- Age
- Lack of fluid intake
- Alcohol and drug use
- Sunburn
- Diarrhea
- Infection

Heat stress is caused by **a number of interacting factors**, including environmental conditions, clothing, workload, and the individual characteristics of the worker

COLD

If the body is overexposed to cold, the following problems could occur:

Frostbite

Symptoms: **numbness of hands, feet, or face**

Cause: prolonged exposure to cold environments

Treatment: **frostbitten tissue should be gently warmed and not exposed to further cold**

Slips, Trips, and Falls

- **Are common causes of injuries at spill sites**
- **Prevention is the key to avoiding injuries such as broken bones or injured backs**
- **Avoid wet rocks or oily floors**
- **Don't climb up the fall line on steep slopes**
- **Avoid climbing over equipment**

Vehicle Safety

The following procedures for vehicular safety should be followed:

- seat belt use required
- only trained operators for boats, ATVs/UTVs, trucks, etc.
- do not leave any unattended unit running
- transport equipment being loaded or unloaded should have brakes set and wheels chocked
- heavy equipment operators must use seat belts for the roll-over protection system to be effective
- traffic pattern at site must be controlled
- exhaust in closed areas could cause a carbon monoxide hazard

Noise

At a hazardous waste site, the noise may exceed the allowable level

Repeated exposure to excessive noise may cause **permanent hearing loss** and may be **stressful** for the worker

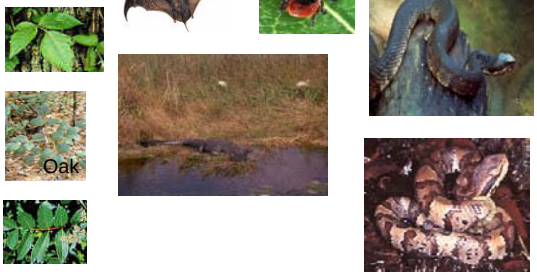
Excessive exposure to noise is a **primary cause** of **hearing disorders**

High-volume sound is also linked to **high blood pressure, stress, insomnia, anxiety, headaches, and ulcers**

Although the harmful effects of noise vary among individuals, **noise levels above 85 to 90 decibels** should be **considered dangerous**

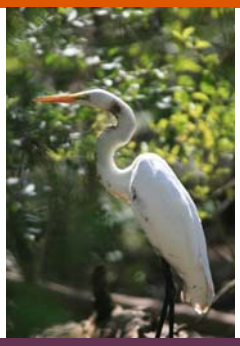
- **Equipment used at oil / Hazmat Spills that may / do produce hazardous noise:**
  - **Rocket net launchers**
  - **Air cannon**
  - **Airboats**
  - **Pyrotechnics and explosives**
  - **Etc.**

Critters



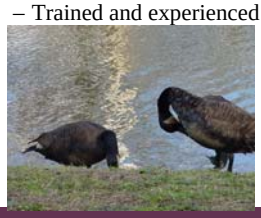
WILDLIFE OPTIONS WITHIN SPILL AREAS

- Observation / Planning
- Deterrence
- Capture



Wildlife Handling

- Safety – for you and the animal
- Minimize stress – for you and the animal
- Efficiently (right tool, right time, right place)
  - Trained and experienced



Wildlife Disease Exposures

- Evaluate Risk
  - Animal species, pop. densities, behavior
  - Handling: bites, bodily fluids, dissections
  - Biogeography: season, climate, biomes
- Protect yourself
  - Use appropriate PPE type for hazard
  - Use situational awareness
- Literature/References
  - Check CDC: latest surveys and reports

Wildlife Capture Techniques - Nets

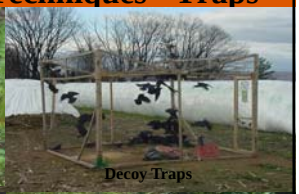
- Long handled
- Throw
- Mist
- Drop nets

Wildlife Capture Techniques - Nets

- **Air Cannon**
- **Rocket Nets**
- **Cannon nets**
- **Bow nets**

Capture Techniques – Coda Nets

Wildlife Capture Techniques - Traps



Decoy Traps

Traps - Modified Soft Catch Footholds

Padded Footholds – Methods developed and tested by USDA-WS-NWRC to safely capture birds.

Used to catch wading birds in feeding and loafing areas.

Other Capture Methods - Chemical

- **ALPHA CHLORALOSE – chemical immobilization of birds (primarily ducks and geese). Used effectively during ATHOS spill.**
- **Selectively bait oiled birds and remove for cleaning.**
- **Restrictions during hunting seasons – emergency exemptions authorized**

Hand Capture of Wildlife




Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

Visual Harassment of Wildlife





- **Lasers**
- **Effigy**
- **Scarecrow/scarryman**
- **Mylar tape**
- **Kites**
- **Balloons**

Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

USDA — United States Department of Agriculture, Animal and Plant Health Inspection Service

Acoustic Harassment of Wildlife





- **Pyrotechnics**
- **Propane Cannons**
- **Sirens**
- **Natural Sounds**

Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

USDA — United States Department of Agriculture, Animal and Plant Health Inspection Service

USFWS / USDA Primary Objective…..

….Minimize impacts to Federal trust resources!


Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

USDA — United States Department of Agriculture, Animal and Plant Health Inspection Service

QUESTIONS?

Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

USDA — United States Department of Agriculture, Animal and Plant Health Inspection Service

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Wildlife Services — Protecting People, Protecting Agriculture, Protecting Wildlife

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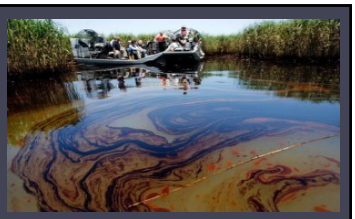
Oil Spill Clean Up



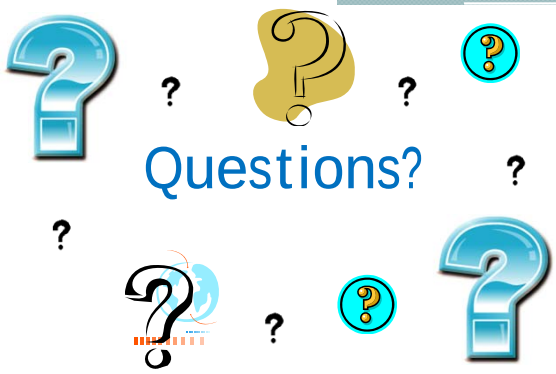
Boat Crew Safety

Protective Equipment

- Level D
- Lifejacket
- Safety Glasses
- Safety Toe Boots
- Radio
- Gloves

Boat Operations

- Do not Overload
- Weight distribution
- Mindful of objects in the water
- Mindful of gear inside the boat.
- Driving style



Stop Aquatic Invaders: Boat Disinfection at Spills

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Region 5 Regional Response Team
June 18-20, 2012 Meeting

Aquatic Invasive Species can dramatically alter ecosystems

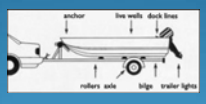
Additional Concerns with Spreading Invasive Species

- Economic
  - A Cornell University study reports that invasive species on land and water already cost the United States $148 billion annually.
- Recreation
  - Invasive species such as the sea lamprey, ruffe, and round goby can harm native fish, such as lake trout, walleye, yellow perch and catfish.
  - They threaten a national sport and commercial fishing industry that supports 81,000 jobs in the Great Lakes.
- Public Health
  - Some invasive species may cause significant health problems.
  - e.g. South American strain of human cholera bacteria found in ballast water tanks of ships in the port of Mobile, Alabama

And one more…

- Law/Policy
  - Executive Order 13112 (1999) directs agencies to prevent the spread of invasive species in their work (http://www.invasivespeciesinfo.gov/laws/execorder.shtml)

Aquatic Invasive Species can hitchhike on boats and equipment



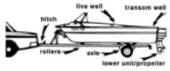
General Precautions:
- Remove all visible mud, plants, fish/animals.
- Eliminate water from all equipment before transporting anywhere.
- Clean and dry anything that came in contact with the water.
- Do not release or put plants, fish or animals into a body of water unless they came out of that body of water.

For large spills, boats and equipment may be brought in from far away

Guidance Available

CLEAN BOATS CLEAN WATERS

WATERCRAFT CHECK POINTS



- ☐ Anchor
- ☐ Axle
- ☐ Bait bucket
- ☐ Bunks
- ☐ Bow line
- ☐ Fishing line
- ☐ Floor
- ☐ Hull
- ☐ Intake pipe
- ☐ Ladder
- ☐ Landing net
- ☐ License plate
- ☐ Motor
- ☐ Wheels
- ☐ Live well
- ☐ Lights/wiring
- ☐ Rollers
- ☐ Prop
- ☐ Spare tire
- ☐ Tackle
- ☐ Tow rope
- ☐ Trailer
- ☐ Transducer
- ☐ Transom well
- ☐ Trolling motor

WORKING TOGETHER WITH BOATERS TO PROTECT OUR WATERS

www.miseagrant.umich.edu/cbcw

Disinfection Techniques

Methods	Procedures	Positives	Negatives
Heat + Air (Drying in hot sun/air)	**50C (86 F)** 24 hours minimum (time at temp contact period crucial) (exposure to hot sun/ air while dry)	Chemical free Effective, but only if properly done under ideal conditions	Time consuming Weather/Temperature criteria critical to reliable results
Heat + Water Spray &/or immerse	**50C (122 F)** contact time 10 minutes (time and temp contact crucial) (source of very hot water needed)	Chemical free Same as above	Must maintain high water temp/contact; hotter than normal tap or carwash
Heat + Water Spray &/or immerse	**70C (158 F)** contact time 1 minute (time and temp contact crucial) (source of super hot water needed)	Chemical free Same as above	Must maintain very high water temp/contact; hotter than normal tap or carwash. Risk of burns
Virkon Aquatic	**Follow product directions for proper mixture and minimum contact time.** (immerse in solution, apply directly, or spray-on with pressure washer & rinse)	Environmentally friendly Designed for aquatic use Quick inactivation time Sewer compatible	Follow MSDS directions for health risks and use personal protective gear ppg, when mixing Corrosive in concentrate form Chemical based
Quarternary Ammonium+Water "(family of products)	**Follow product directions for proper mixture and minimum contact time.** (immerse in solution, apply directly, or spray-on with pressure washer & rinse)	Effective, user friendly Low health risks Sewer compatible	Chemical based Follow MSDS directions for health risks and use ppg.
Chlorine + Water	**Min. 200 mg/liter** water for 20 minutes (immerse in solution, apply directly, or spray-on with pressure washer and rinse/neutralize thoroughly)	Widely available Effective	Follow MSDS directions for health risks and use personal protective gear ppg. Highly Corrosive

Disinfection / Inspection Stations should be set up

- Required by Montana at Yellowstone River Spill
- Different from decontamination procedures
- Procedures are fairly readily available

SE MI ACP Proposal

- Section of ACP drafted (e.g. 3290 Disinfection)
  - Purpose and need
  - Disinfection Plan distinct from Decontamination Plan
  - Disinfection Group
  - Inspection and disinfection station
- Job Aids – ACP Appendices
  - Inspection Checklist
  - Draft Disinfection Plan with equipment list
- Presented at Area Committee Meeting, under review
- Welcoming input or other examples
- Will share when finalized (e.g. RRT website)

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