

Northwest Area Committee



KOOTENAI RIVER GEOGRAPHIC RESPONSE PLAN (GRP)



Emergency Contact Sheet

Required Notifications			
Activation of StateComm through the 911 system will automatically include these notifications			
National Response Center	800-424-8802	Idaho Department of Environmental Quality, Coeur d'Alene Regional Office	208-769-1422 208-666-4621
Idaho Department of Environmental Quality	208-373-0502	Idaho State Communications Center	911 800-632-8000

Railroad Contact	
BNSF Resource Operations Center	800-832-5452
Union Pacific Railroad Response Management Communication Center	888-877-7267
Montana Rail Link (MRL) Emergency Hotline	406-465-0942
Kootenai River Div. Trainmaster	406-250-1625
Div. Engineer	406-863-0318
Env. Operations	406-256-4116
Env. Remediation	406-465-5976
Regional Director, Public Affairs	406-256-4116

Response Contractors (OSRO, PRC, and/or CO-OP)	
Whitewater Rescue Institute	406-207-2027
NOMO Spill Cooperative	406-546-0875 406-855-5407 406-845-8613
Clean Rivers Cooperative	503-220-2040 503-209-5305 503-412-9199
Clean Harbors	800-645-8265
US Ecology	800-899-4672
Olympus Technical Services, Inc.	406-443-3087
Able Clean-Up Technologies	509-466-5255

Federal	
U.S. EPA Region 10 Spill Response Team- ID	206-553-1263
U.S. Coast Guard Watchstander	503-240-9301
U.S. Coast Guard Pacific Strike Team	415-883-3311
U.S. Coast Guard District 13 Officer of the Day	206-217-6004
U.S. Fish & Wildlife Service -Spokane	509-665-3508
USFS Idaho Panhandle National forests- Bonners Ferry Ranger District (seasonal)/District Office	208-772-3283 208-267-5561
U.S. Forest Service – Sandpoint Ranger District	208-263-5111
U.S. Army Corps of Engineers – District Office/Libby Dam	206-764-3750 208-293-7751 ext 241
NOAA Hazmat Response	206-526-4911
NOAA Scientific Support Coordinator	206-849-9926
U.S. Fish & Wildlife Service – Boise, ID	208-378-5243
Kootenai National Forest Dispatch Center	406-283-7740
Kootenai National Forest Supervisor's Office	406-293-6211
British Columbia Emergency Coordination Centre	800-663-3456

Water Supply Contacts

Idaho Department of Water Resources Northern/State	208-762-2800 208-287-4800
Idaho DEQ	208-373-0502 866-790-4337

Tribal – Kootenai Tribe

Kootenai Tribe of Idaho Ext 514	208-267-3519
Twin Rivers Hatchery	208-267-7451
Fisheries Habitat Biologist	208-267-3620
Tribal Sturgeon Hatchery	208-267-3620

Medical Services

Bonner General Hospital	208-263-1441
Kootenai Health	208-625-5700
Cabinet Peaks Medical Center-Libby	406-283-7000
Boundary Community Hospital-Bonners Ferry	208-267-3141

Pipeline Company

Trans Canada Community Relations Specialist	855-895-8754
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State

Idaho State Police- District 1	Patrol 208-209-8620 Dispatch 208-209-8730
Idaho DOT – District 1- Couer d'Alene, ID	208-772-1200
Idaho Department of Fish & Game - Panhandle	208-769-1414
State Historic Preservation Office	208-334-3861 208-334-2682
Dig Line (ID)	800-342-1585 or 811
Idaho Department of Water Resources	208-762-2800
Idaho DEQ Coeur d'Alene Regional Office Environmental Liasons	Robert Steed 208-625-7572 Marc Kalbaugh 208-660-9285 Chantilly Higbee 208-660-0084

Local Government (County, City)

Boundary County Office of Emergency Management	208-290-5316
Boundary County Sherriff	911 or 208-267-3151
Boundary County Commissioner	208-267-7723
Bonners Ferry Public Works	208-267-3105
Boundary County Road & Bridge Dept.	208-267-3838
Clark Fork, ID, City Hall & Mayor	208-266-1315
Dover, ID	208-265-8339
East Hope, ID	208-264-5877
Kootenai, ID	208-265-2431
Ponderay, ID	208-265-5468
Priest River, ID, Public Works	208-946-9750 208-290-4721
Sandpoint, ID	208-263-3158
Moyie Springs, ID	208-267-5161
Bonners Ferry, ID	208-267-3105

Kootenai River

Geographic Response Plan

October 2022

HOW TO USE THIS GEOGRAPHIC RESPONSE PLAN

This plan prioritizes resources to be protected and allows for immediate and proper action. By using this plan, the first responders to a spill can avoid the initial confusion that generally accompanies any spill.

Purpose of Geographic Response Plan (GRP)

GRPs are used during the initial phase of a spill that lasts from the time a spill occurs until the Unified Command is operating and/or the spill has been contained and cleaned up. Generally this lasts no longer than 24 hours. GRPs constitute the federal and state on-scene coordinator (OSC) “orders” during the initial phase of the spill. During the project phase, the GRP will continue to be used, but with input from natural resource trustees.

Strategy Selection

Chapter 4.1 of the GRP contains complete strategy descriptions in matrix form and response priorities. The accompanying maps are located in **Chapter 4.2**. The strategies depicted in Chapter 4.2 will be implemented after reviewing on-scene information, including: river currents, weather conditions, oil type, initial trajectories, etc.

It is important to note that strategies rely on the trajectory of the spill. A booming strategy listed as a high priority would not necessarily be implemented if the spill trajectory and location did not warrant action in that area.

Chapter 6 outlines the sensitive resources requiring protection and the seasonality of their sensitivity. This information must be consulted before strategies are implemented, as there may be flight restrictions associated with a resource. Flight restriction information is also found in Chapter 6.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses strategy names defined in **Appendix A** (e.g., collection, deflection, exclusion).

Response Equipment

Strategies will be deployed in the order equipment arrives on scene and as directed/selected by the on-scene coordinator.

Table of Contents

Emergency Contact Sheet	i
How to Use This Geographic Response Plan	iv
Record Changes	v
Section 1: Introduction: Scope of this Project	1-1
Section 2: Site Description	2-1
2.1: Sub-Area Site Descriptions and Physical Features	2-2
2.2: Hydrology	2-3
2.3: Climate	2-4
2.4: Risk Assessment	2-4
2.5: Evacuations Considerations	2-5
Section 3: Figures	3-1
Figure 3-1: Kootenai River GRP Sector Overview Map	3-2
Figure 3-2: Kootenai River GRP Hydrology Map	3-3
Figure 3-3: Kootenai Basin GRP Response River Map	3-4
Figure 3-4: Kootenai River GRP Trailer Location Map	3-5
Figure 3-5: Kootenai River GRP Milepost Overview Map	3-6
Section 4: General Protection/Collection Strategies	4-1
4.1.1: Sectors	4-1
4.1.2: Figures	4-1
4.1.3: Major Protection Techniques	4-1
4.2: Strategy Locations and Descriptions	4-2
Figure 4-1: Sector 1	4-3
Table 4-1: Sector 1	4-4
Figure 4-2: Sector 2	4-25
Table 4-2: Sector 2	4-26
Figure 4-3: Sector 3	4-49
Table 4-3: Sector 3	4-50
4.3: Protection/Collection Priorities for Kootenai and Deep Creek Scenarios	4-73
Table 4-4: Priorities of Work	4-73
4.4: Priority Tables	4-73
Figure 4-4: Kootenai River GRP Hazard Prioritization Map	4-75
Table 4-5: Hazard Prioritization Table	4-76
Section 5: Shoreline Countermeasures	5-1
5.1: Chapter Overview	5-1
5.2: Shoreline Type Photos	5-2
5.3: Oil Countermeasure Matrix	5-5
5.3.1: Shoreline Countermeasures Matrices	5-5
Table 5-1: Very Light Oil	5-5
Table 5-2: Light Oil	5-6
Table 5-3: Medium Oil	5-7
Table 5-4: Crude Oil	5-8
Section 6: Sensitive Resource/Wildlife Flight Restriction Information	6-1
6.1: Overview	6-1

6.2: Fish	6-1
6.2.1: Kootenai River White Sturgeon	6-1
6.2.2: Burbot	6-2
6.2.3: Kokanee	6-3
6.2.4: Westslope Cutthroat Trout	6-4
6.2.5: Columbia River Redband Trout	6-4
6.2.6: Bull Trout	6-4
6.2.7: Western Pearlshell Mussell	6-5
6.3: Wildlife	6-6
6.4: Shorebirds, Waterfowl, and Raptors	6-7
6.4.1: Harlequin Ducks	6-7
6.5: Aquatic Invasive Species (AIS)	6-7
6.5.1: Prevention of AIS Migration	6-8
6.5.2: Eurasian Watermilfoil	6-8
6.6: Archeological Sites	6-8
6.6.1: General Site Locations	6-8
6.6.2: Seasonal Sensitivity	6-8
6.6.3: Recommendations	6-9
6.6.4: Procedures for the Finding of Human Skeletal Remains	6-9
6.6.5: Procedures for the Discovery of Cultural Resources	6-9
6.7: Flight Restriction Maps	6-10
6.8: Wildlife Resources/Flight Restriction Table	6-10
Section 7: Logistical Information	7-1
Table 7-1: Logistical Information	7-1
Appendix A: Protection Techniques	A-1
Table A-1: Summary of Protection Techniques	A-1
Table A-2: Fast Water Booming Techniques	A-3
Table A-3: Current Drag Force on One-Foot Boom Profile to Current	A-4
Table A-4: Approx. Safe Working Loads/Tensile Strength of New Rope	A-5
Table A-5: Simulated Results-Approx. Arrival Time of Leading Edge of Release Material at Next Boat Ramp – Upper Canyon	A-6
Table A-6: Simulated Results-Approx. Arrival Time of Leading Edge of Released Material at Next Boat Ramp- Town Stretch	A-6
Table A-7: Simulated Results-Approx. Arrival Time of Leading Edge of Released Material at Next Boat Ramp- Lower Reach	A-7
Appendix B: Geographic Response Plan Contributors Local Representatives	B-1
Appendix C: Comments/Corrections/Suggestions	C-1

Section 1 & 2: Introduction and Site Description

Kootenai River, Idaho GEOGRAPHIC RESPONSE PLAN

1. Introduction: Scope of this Project

Geographic Response Plans (GRPs) are intended to help first responders to a spill avoid the initial confusion that generally accompanies any spill. They prioritize resources to be protected and allow for immediate and proper action.

GRPs are developed for marine waters of Washington and Oregon State, the Columbia River, and the inland areas of Washington, Oregon, and Idaho. They are prepared through the efforts of the Washington Department of Ecology, Idaho and Oregon Departments of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, and the Environmental Protection Agency.

GRPs are developed through workshops involving federal, state, and local oil spill emergency response experts; representatives from tribes, industry, ports, and environmental organizations; pilots; and response contractors. Workshop participants identify resources that require protection, develop operational strategies, and pinpoint logistical support.

The first goal of a GRP is to identify resources, physical features, hydrology, currents and tides, winds, and climate that may affect response strategies. After compiling this information, sensitive natural resources are identified.

Secondly, response strategies are developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount and type of equipment necessary for implementation. The response strategies are then applied to likely spill scenarios for oil movement, taking into account factors such as wind, current, and tidal conditions.

Finally, additional logistical support is identified, including:

- Location of operations centers for the central response organization
- Local equipment and trained personnel
- Local facilities and services and appropriate contacts for each
- Response times for bringing equipment in from other areas.

This GRP addresses the Idaho Panhandle portions of the Kootenai River Basin from Leonia to the Canadian Border, covering 61 miles of the Kootenai River and 19 miles of Deep Creek. The Kootenai River is relatively inaccessible by road so it is important to note that there is a public boat launch/boat ramp in Bonners Ferry, and 8 miles upstream boat access is available at Twin Rivers Resort in Moyie Springs.

This GRP provides:

[Section 2](#) – Site Descriptions: General setting that includes physical setting, hydrology, climate, and public/environmental risk attributes.

[Section 3](#) – Vicinity Map.

[Section 4](#) – Protection strategies described for each identified river access point, including summary tables and maps.

[Section 5](#) – Response method descriptions for identified shoreline types and petroleum product types.

[Section 6](#) – Descriptions of sensitive natural resources.

[Section 7](#) – Logistical information for accessing river and staging and deploying equipment.

[Appendix A](#) – Summary of protection techniques.

2. Site Description

The Kootenai River drainage basin is located within the Northern Rocky Mountains physiographic province, which is characterized by north to northwest trending mountain ranges (Barton 2004). The Continental Divide forms much of the eastern basin boundary, the Selkirk Mountains form the western basin boundary, and the Cabinet Mountains form the southern basin boundary (Barton 2004).

The Kootenai River is approximately 432 miles long and drains an area of 17,600 square miles. (Barton 2004) The river's elevation is 11,870 feet at its headwaters in British Columbia. Kootenai Falls, a natural fish-migration barrier, is located 27 RMs downstream from the Libby Dam. At Bonners Ferry, the Kootenai River flows westward into a nearly straight, northwest-trending, 288-mile-long trough known as the Purcell Trench. The Purcell Trench is flanked by the Selkirk Mountains on the west and by the Purcell Mountains on the east (Barton 2004). Here, the river flows toward the northwest in a meandering course through the broad, flat bottomlands referred to as Kootenai Flats for about 48 miles to the head of Kootenay Lake in British Columbia (outside the GRP coverage area). From there, the Kootenai River flows from the West Arm of Kootenay Lake and empties into the Columbia River at Castlegar, British Columbia (also outside the GRP coverage area) (Barton 2004).

The Kootenai watershed has undergone many changes due to loss of wetlands, construction of dikes on the natural levees, changes in backwater conditions because of variations in the level of Kootenay Lake (in Canada), and the construction of dams (Barton 2004). The construction of dikes eliminated flood-plain connectivity and related processes, such as the deposition of sediments onto the flood plain. The dikes increased confinement of stream flow to the river channel during floods, which resulted in increased stream energy and sediment transport during high flow, primarily prior to the closure of Libby Dam in 1972, because the dam greatly reduced high flows (Barton 2004).

The present geological and topographical characteristics of the Kootenai River Basin reflect the effects of massive glaciations during the Pleistocene (Barton 2004). The sills located just east of Bonners Ferry are the hardest geologic materials in the region (Kirkham and Ellis 1926) and, therefore, the least eroded by glacial advances and retreats. During the Pleistocene Epoch, a lobe of the Canadian Cordilleran ice sheet repeatedly advanced down the Purcell Trench, filling the Kootenai River valley and mostly submerging the Purcell and Selkirk Mountains in northern Idaho (Barton 2004). Ice finally left the valley about 10,000 years ago. During times when ice blocked the outlet of Kootenay Lake, a glacial lake formed in the Kootenai River valley and deposited a thick sequence of generally fine-grained lacustrine sediment consisting of clay and silt (Barton 2004).

Since the final glacial retreat and draining of glacial Kootenay Lake, the Kootenai River has incised and eroded some of the lacustrine clay-silt layer and deposited alluvial sediment onto the regional lacustrine clay-silt layer (Alden 1953; Atwater 1986; Buchanan 1989). The contact between the alluvial sand and the lacustrine clay-silt layer is a geologic unconformity.

2.1 Sub-Area Site Descriptions and Physical Features

Site descriptions in Section 3.2 are divided into two GRP sub-areas based on adjacent water bodies in the GRP coverage area, as well as spatial differences in elevation, stream gradient, river channel type, and water flows. These differences may modify decision making when responding to a spilled material release based on potential spilled material travel times, selection of mechanical spilled material recovery equipment/techniques, and the potential effectiveness of the equipment/techniques employed.

The order of locations presented is generally from east to west across the GRP coverage area. River descriptions within each location are presented from upstream to downstream.

- The Kootenai River
- Deep Creek

The Kootenai River Basin is bordered by the USFS Kootenai National Forest and Idaho Panhandle National Forest. It flows through the USFS Salish Mountains, Purcell-North Cabinet Mountains, and Inland Maritime Foothills/Valley Ecological Subsections. From a geomorphic perspective the Kootenai within the GRP coverage area has been characterized by several reaches. These reaches include the canyon, braided, buried gravel-cobble, and meander.

The canyon reach begins at the Kootenai/Fisher River Confluence to 1.2 miles below the mouth of the Moyie River. The river hazard classes in this section are low.

The braided reach begins where the canyon reach ends and continues to a bedrock constriction near US-95 bridge over the Kootenai River at Bonners Ferry. The water surface slope of the Kootenai River decreases at Bonners Ferry and greatly influences river geomorphology (as well as white sturgeon spawning habitat) (Barton 2004). The boundary between backwater and free-flowing water continually moves up and down the Kootenai River near Bonners Ferry in response to changes in Kootenai Lake elevations (in Canada), inflow from tributaries between Bonners Ferry and Libby Dam, and releases from Libby Dam (Barton 2004). Within the Braided Reach, the valley broadens and the river courses over gravel and cobbles. The Braided Reach has a relatively shallow water depth, typically less than 6.5 feet, during low flow (Barton 2004).

The buried gravel and cobble reach is relatively short and represents a transition zone between the higher gradient Braided Reach and the lower gradient Meander Reach. This reach is relatively straight and stable, with no evidence of the rapid channel shifting that has been observed in the Braided Reach (Barton 2004). The straightness and stability of the channel may be controlled by an outcrop of bedrock near the river channel between the U.S. 95 Bridge and Mission Hill. The water-surface slope in this reach is less than one-half the gradient in the Braided Reach. Water depths in the Buried Gravel-Cobble Reach are deeper than in the Braided Reach and typically range from 10 to 20 feet. Sand overlies most of the discontinuous cobble and gravel deposits along this reach (Barton 2004).

The meander reach of the Kootenai River gently bends north. The average water-

surface slope of the Meander Reach is about one-tenth the gradient in the Buried Gravel-Cobble Reach (Barton 2004). Water depths in the Meander Reach exceed 40 feet in the thalweg. Fluvial sand occurs throughout most of the Meander Reach. A reconnaissance seismic survey (Barton 1998) found that the fluvial sand forms dunes throughout the Buried Gravel-Cobble Reach and the Meander Reach, including areas used by sturgeon for spawning. The Pleistocene lacustrine clay-silt layer forms the river substrate in parts of the thalweg (Barton 2004).

Deep Creek is a northern flowing tributary of the Kootenai River whose confluence is located just west of Bonners Ferry. It flows through a mountainous, heavily vegetated, narrow river valley bisected ephemeral/snow-melt dependent, and perennial mountain streams, such as Caribou Creek, Ruby Creek, and Gold Creek. The Deep Creek drainage system can also be described as dendritic.

This portion of Deep Creek is typified by moderate sinuosity and riffle-pool configuration, medium to large substrate streambeds with medium to high energy water flows and river hazard classes of I to II.

From upstream to downstream, this portion of the GRP coverage area has been mapped by the USFS as both part of the Purcell-North Cabinet Mountains and Inland Maritime Foothills/Valley Ecological Subsections (see Section 3.3) and is bordered on both sides by the USFS Idaho Panhandle National Forest.

Train tracks generally parallel Deep Creek in this portion of the GRP coverage area, crossing and crossing back several times, but predominantly traversing the river along its eastern bank. US-2 and paved roads, such as Deep Creek Loop Road, provide good automobile access to much of the Deep Creek portion of the GRP coverage area.

2.2 Hydrology

Generally speaking, two large discharge events occur in the Kootenai River annually. The first between April and June, associated with runoff from spring snowmelt, and the second in late November through December, associated with augmented river flows from releases at the Libby Dam related to increasing power demands during winter months. This results in the Kootenai River effectively having two periods of annual peak discharge. (See Figure 3-2)

Winter releases from the Libby Dam have the greatest impact on mean monthly Kootenai River discharges near the Dam itself. Directly below the Dam, winter release discharges are the higher peak discharge, on average, than spring runoff discharges. This phenomenon decreases downstream as contributions from medium and large tributaries to the Kootenai River (i.e. Moyie Rivers, Deep Creek, etc.) attenuate the contribution of releases from the Libby Dam.

Based on the data available as indicated by the USGS, winter releases from the Libby Dam are sufficiently attenuated by the time the Kootenai River reaches the Montana–Idaho border near Leonia, Idaho for spring runoff to constitute the peak runoff discharge for the year. Average peak flows of about 19,000 cfs usually occur in late May to June and drop throughout the summer. Winter releases from the Libby Dam still augment flows causing a second ‘peak’ of 14,200 cfs in late November to December, but on average, these flows are lesser than those from spring snowmelt. Occasional peak flows of 21,900 and 18,400 cfs have been encountered in the spring and winter, respectively. Normal low flows occur in March through early April and are about 9,200 cfs. (See Figure 3-2)

From below Moyie River near Bonners Ferry the Kootenai River's peak flows usually occur in late May to June at 36,300 cfs and drop throughout summer. Winter releases from the Libby Dam augment flows to around 19,900 cfs in late November to December are on average lesser than those from spring snowmelt. Occasional peak flows of up to 47,500 cfs have been encountered during high water years. Normal low flows of 5,800 and 8,100 cfs are encountered in October and January. (See Figure 3-2)

Lastly, the peak flows at the border by Porthill, Idaho usually occur in late May to June at about 25,100 cfs. These flows drop throughout the summer months. Winter releases from the Libby Dam augment flows to around 18,000 cfs in late November to December. Occasionally, flows of up to 49,400 cfs have been encountered during the high-water years. Normal flows of 10,200 cfs are encountered in March. (See Figure 3-2)

2.3 Climate

The Kootenai sub-basin has a relatively moist climate, with annual precipitation even at low elevations generally exceeding 20 inches. Warm, wet air masses from the Pacific bring abundant rain and 40 to 300 inches of snowfall each year (KRN 2014). In winter, Pacific air masses dominate and produce inland mountain climates that are not extremely cold, although subzero continental-polar air occasionally settles over the mountains of northern Idaho and vicinity (KRN 2014).

The Continental Divide Range, with crest elevations of 10,000 to 11,500 feet along nearly 155 miles of ridgeline, is a major water source for the Kootenai River (KRN 2014). The range receives 80 to 120 inches of precipitation annually (KRN 2014). Some of the high elevation country in the Purcell Range around Mount Findlay receives 80 inches of precipitation a year; but most of the range, and most of the Selkirk and Cabinet Mountains, get only 40 to 60 inches annually (KRN 2014). In the inhabited valley bottoms, annual precipitation varies from just under 20 inches at Rexford, Montana and Creston, British Columbia, to just over 40 inches at Fernie, British Columbia (KRN 2014).

2.4 Risk Assessment

The information presented in this section provides a summary of natural, cultural, and economical resources in the GRP coverage area and is meant to give response managers enough detail to make them familiar with key resources that may need protection in the event of a spilled material release. Section 3.5 should not be considered to contain a comprehensive list of natural, cultural, and economical resources in the GRP coverage area. USEPA, MT DEQ, IDEQ, USFS, MT DNRC, ID DWR, Boundary County DES, Lincoln County EMA, the KTI, EC, and MEBC resource specialists can provide additional information when contacted by response managers.

The GRP coverage area contains a large diversity of landforms, water bodies, and ecosystems, heavily studied by a consortium of federal, state, tribal, local, and private entities. Description and manifest of each natural resource present, or potentially present, is outside the scope of this document. Additionally, natural resources, such as white sturgeon, bull trout, westslope cutthroat trout, and seasonally migratory species, may be present in the GRP coverage area for portions of the year, and absent during others.

In the event of a spilled material release, emergency response managers are encouraged to engage biologists, entomologists, fisheries managers, wildlife biologists, resource, and technical specialists from USEPA, MT DEQ, IDEQ, USFS, MT DNRC, ID DWR, the KTI, EC, and MEBC, etc., to aid in determining which natural resources may be present, and in which areas, as well as which response efforts may warrant modification to increase sensitivity to a specific resource.

2.5 Evacuation Considerations

One of the first considerations in response to an oil train fire is evacuating people from the effected zone. The North American Emergency Response Guidebook recommends “initial” evacuation for 800 meters (½ mile) in all directions” (US Department of Transportation 2016). This recommendation poses a unique problem for the cities of Boundary County because each city was developed adjacent to the rail lines; following the guidebook’s recommendation, approximately half of each community would need evacuation, depending on the accident location. Additionally, the evacuation routes out of the community area are all two-lane roadways. Recent experience with crude oil train accidents indicates that the average time between a derailment and the onset of fire may be less than 20 minutes. On several occasions, the fire started immediately. Once an oil train fire starts, it is extremely difficult to extinguish and has the propensity to spread to other rails cars, the surrounding occupied facilities, and adjacent landscapes. The initial response is almost always defensive until the fire cools sufficiently to begin offensive tactics. A further complicating consideration is the predominance of high-occupancy facilities adjacent to the railroad tracks. In accordance with the Boundary County Emergency Operations Plan, the Governor of Idaho is responsible for issuing mandatory evacuation orders. Voluntary evacuation recommendations are made by the Boundary County Sheriff, in coordination with the Boundary County Commissioners and Emergency Management. In the event of an oil train derailment, the Boundary County 9-1-1 Dispatch Center should immediately notify both the sheriff and the county commissioners; evacuation of the neighboring area should begin without delay. If resources are limited, evacuation consideration should take precedence over strategy deployment of offensive firefighting. Due to the physical limitations of the occupants, hospitals, nursing homes, and assisted living facilities face a unique challenge in their ability to evacuate. Such facilities may need to shelter in place rather than evacuate. Additional evacuation considerations are found in the Boundary County Emergency Operations Plan (12/2011)

References

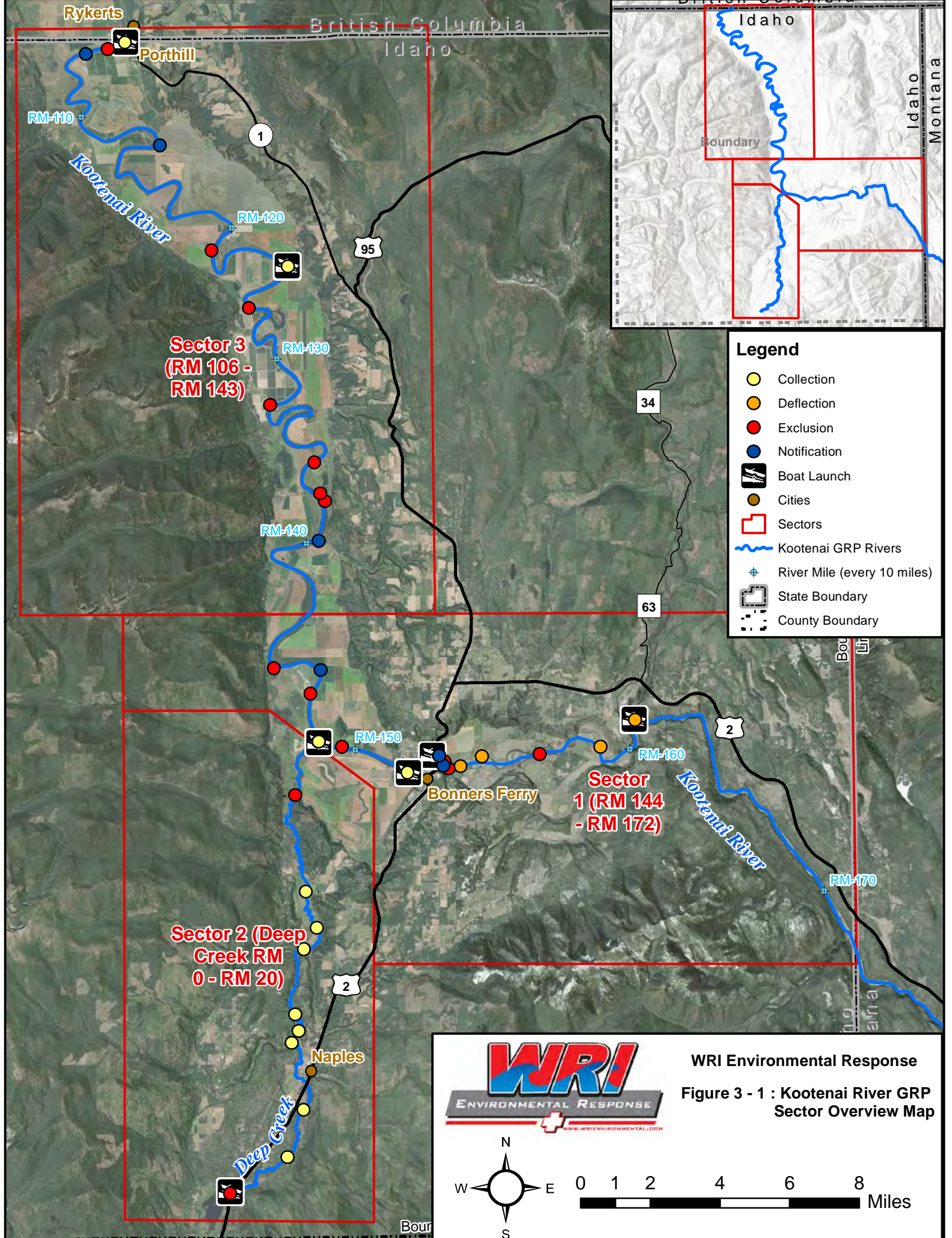
Barton, G.J. 1998. Subbottom seismic-reflection profiling on the Kootenai River near Bonners Ferry, Idaho [Abs.]: Proceedings, Ninth Annual Nonpoint Source Water Quality Monitoring Results Workshop, sponsored by Idaho Department of Environmental Quality. 1 p.

Barton, G.J. 2004. Characterization of Channel Substrate, and Changes in Suspended-Sediment Transport and Channel Geometry in White Sturgeon Spawning Habitat in the Kootenai River near Bonners Ferry, Idaho, Following the Closure of Libby Dam: Water-Resources Investigations Report, 03-4324. 102 p.

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Kootenai River Network. 2014. Kootenai River Basin. Retrieved from:
<http://kootenairivernetwork.org/geography.html>

Section 3: Figures



Legend

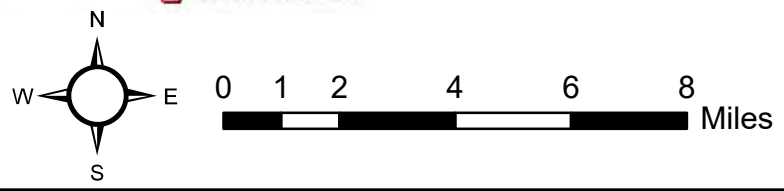
- Collection
- Deflection
- Exclusion
- Notification
- Boat Launch
- Cities
- Sectors
- Kootenai GRP Rivers
- River Mile (every 10 miles)
- State Boundary
- County Boundary



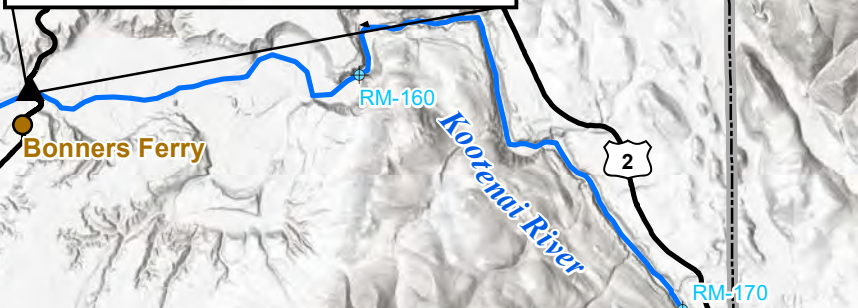
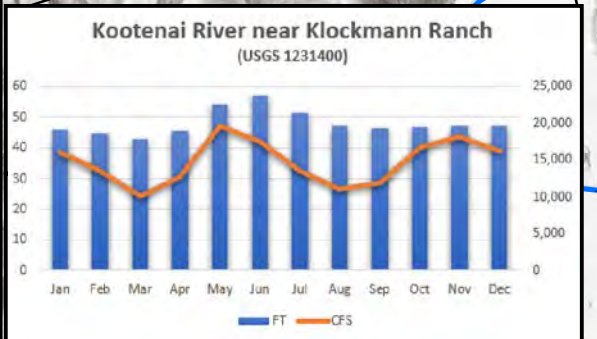
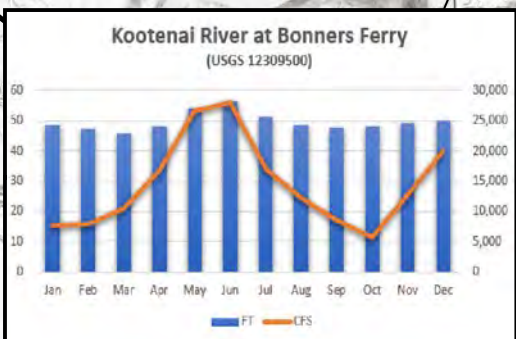
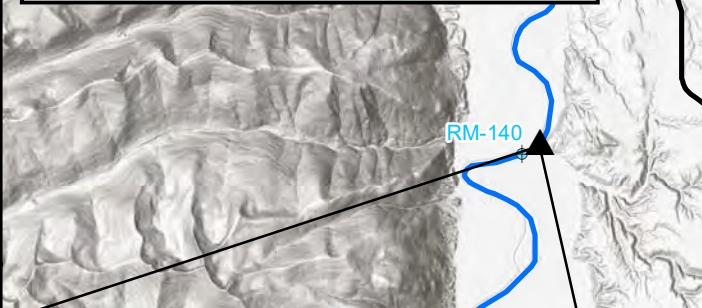
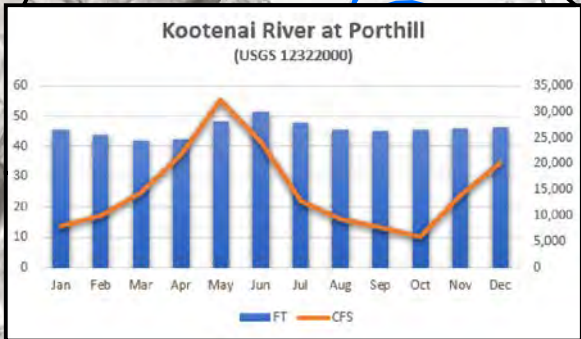
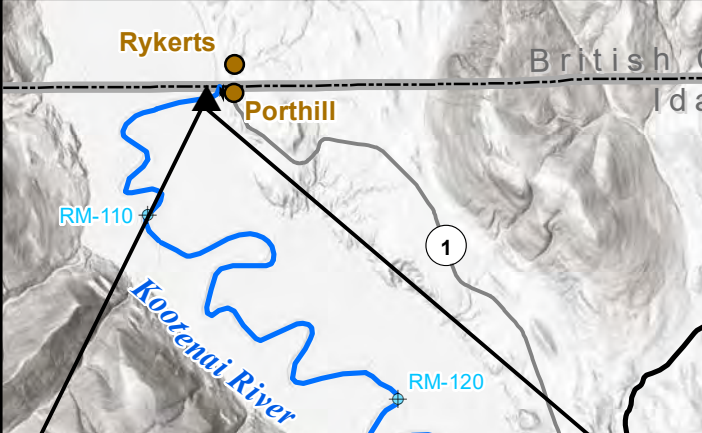
WRI Environmental Response
Figure 3 - 1 : Kootenai River GRP Sector Overview Map



WRI Environmental Response Figure 3 - 2 : Kootenai River GRP Hydrology Map



- Legend**
- ▲ KootenaiStreamGauges
 - ⊕ River Mile (every 10 miles)
 - ~ Kootenai GRP Rivers
 - Cities
 - ▭ State Boundary
 - ▭ County Boundary

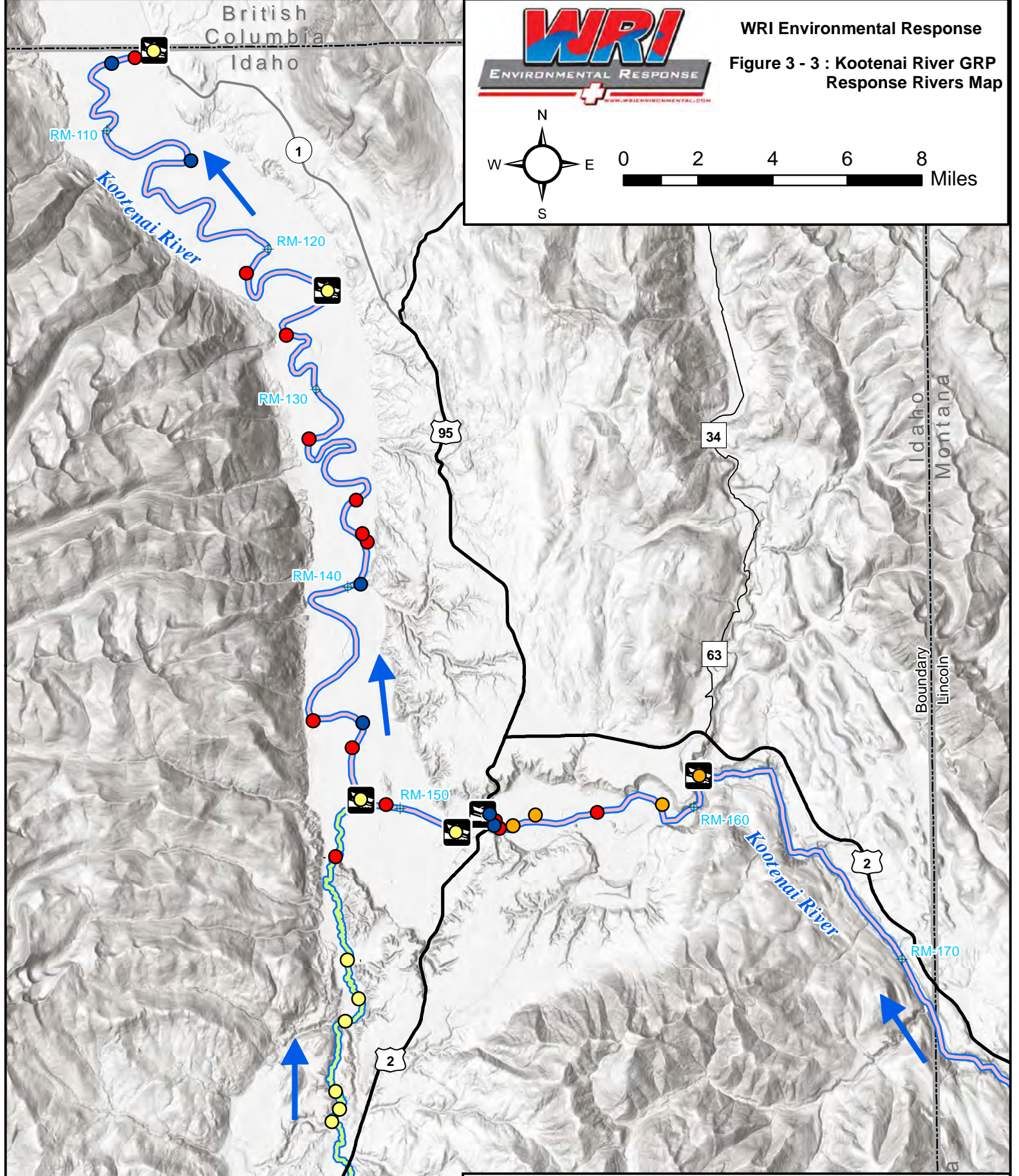
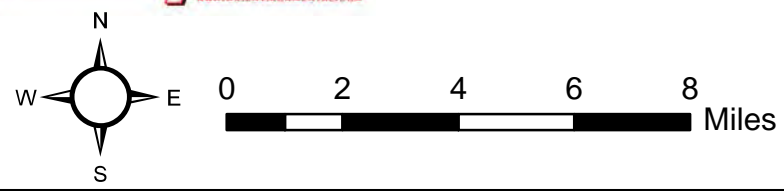


Idaho
Mont
Boundary
Lincoln
Idaho
Montana

British Columbia
Idaho



WRI Environmental Response
Figure 3 - 3 : Kootenai River GRP
Response Rivers Map

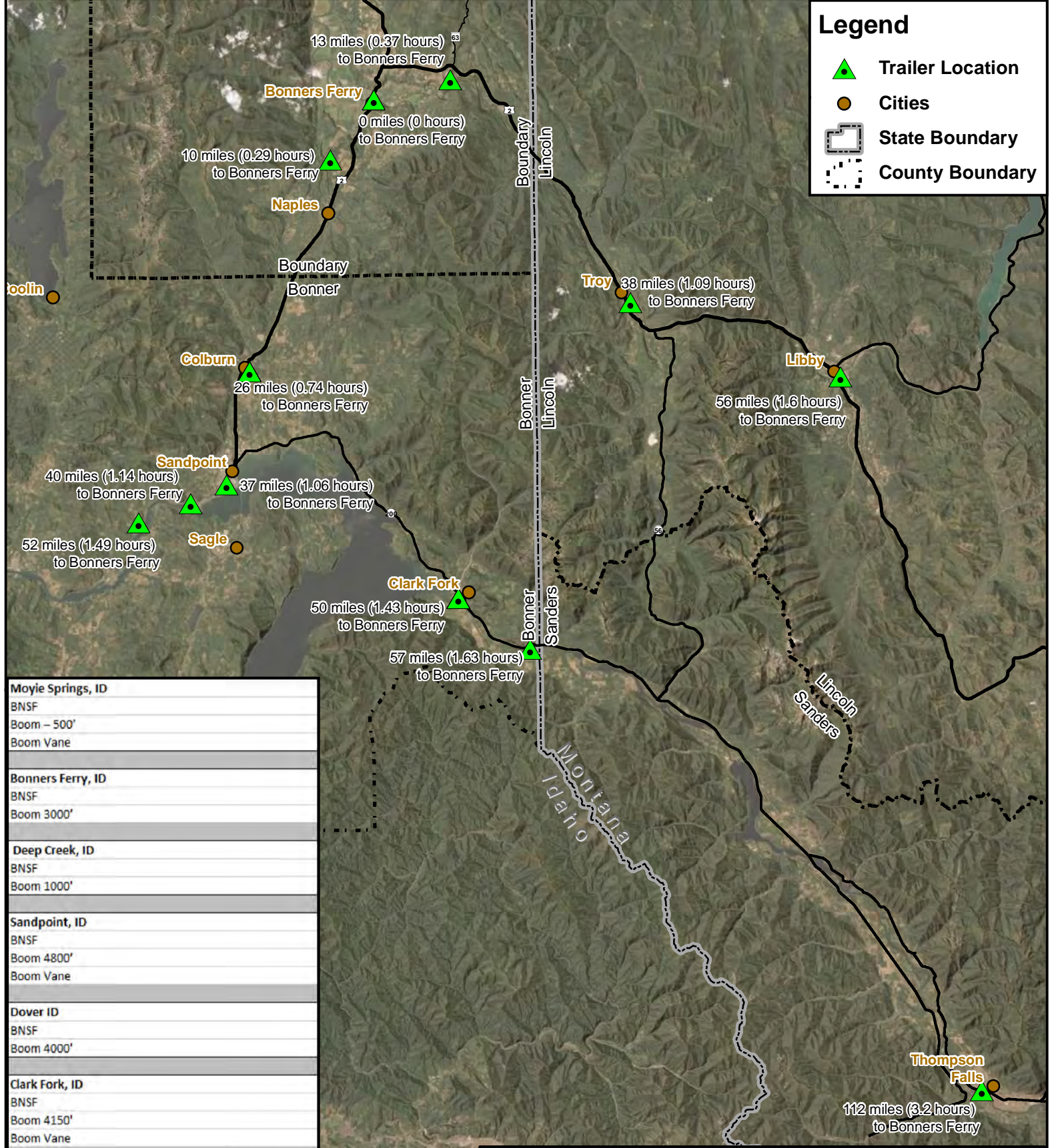


Legend


- | | | |
|--------------|-----------------------------|-------------------------|
| Collection | Boat Launch | State Boundary |
| Deflection | River Mile (every 10 miles) | County Boundary |
| Exclusion | Kootenai River | Direction of River Flow |
| Notification | Deep Creek | |

Legend

-  Trailer Location
-  Cities
-  State Boundary
-  County Boundary



Moyie Springs, ID
BNSF
Boom – 500'
Boom Vane
Bonners Ferry, ID
BNSF
Boom 3000'
Deep Creek, ID
BNSF
Boom 1000'
Sandpoint, ID
BNSF
Boom 4800'
Boom Vane
Dover ID
BNSF
Boom 4000'
Clark Fork, ID
BNSF
Boom 4150'
Boom Vane
Cabinet Gorge Dam
Avista
Boom 1700'
Thompson Falls, MT
BNSF
Boom 1000'
Boom Vane
Libby, MT
BNSF
Boom 1000'



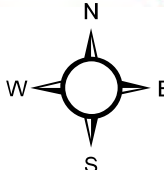
WRI Environmental Response

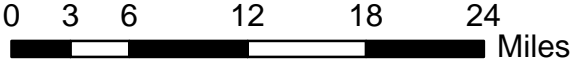
ENVIRONMENTAL RESPONSE

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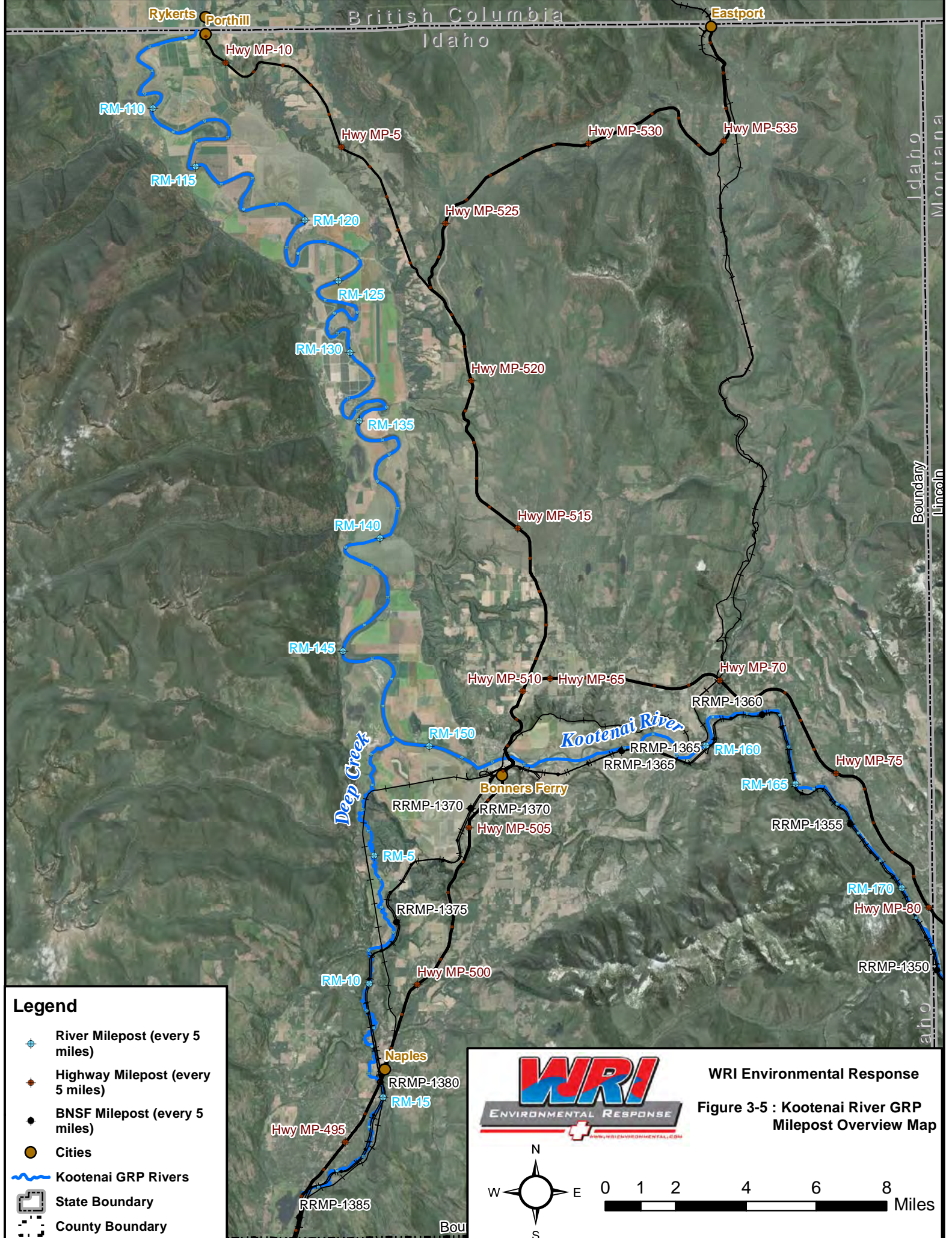
WRI Environmental Response

Figure 3-4 : Kootenai River GRP Trailer Location Map












0 3 6 12 18 24 Miles

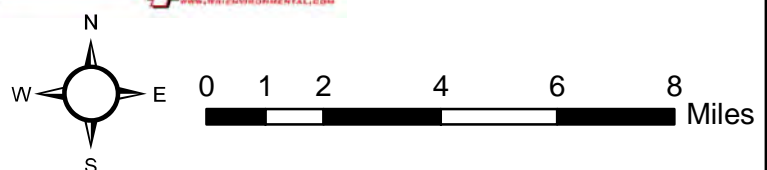


Legend

-  River Milepost (every 5 miles)
-  Highway Milepost (every 5 miles)
-  BNSF Milepost (every 5 miles)
-  Cities
-  Kootenai GRP Rivers
-  State Boundary
-  County Boundary



WRI Environmental Response
Figure 3-5 : Kootenai River GRP Milepost Overview Map



Section 4: General Protection/Collection Strategies

4. General Protection/Collection Strategies 4.1 Chapter Overview

This chapter details specific response strategies and the natural resources requiring protection, as outlined by participants of the GRP workshops for the Kootenai River system and Deep Creek Corridor. Other pertinent information necessary for proper implementation of scenarios is found in [Chapters 5 and 6](#), including wildlife areas, economic areas, sensitive aquatic areas and flight restriction zones that may be implemented by the on-scene coordinator (OSC), if necessary.

4.1.1 Sectors

The Kootenai/Deep Creek geographic region is divided into three sectors, shown by the [reference map in Chapter 3 \(Figure 3-1\)](#).

4.1.2 Figures

The maps in this chapter provide information on specific locations of strategy points. They are designed to help the responder visualize response strategies in relation to valuable wildlife zones, economic areas, and sensitive aquatic areas. For a complete list of all maps contained in this GRP, refer to the [Table of Contents](#).

- **Figure 3-1: Sector Overview Map:** Details the 3 sectors and response sites, staging areas and boat ramps.
- **Figure 3-2: Hydrology Map:** Shows the monthly average flow (CFS), river hight (feet) at, and locations of USGS gauge stations.
- **Figure 3-3: Response River Map:** Shows each major river in response area.
- **Figure 4-1: Sector 1 Map:** Details the strategies, staging and boat launches for the sector.
- **Figure 4-2: Sector 2 Map:** Details the strategies, staging and boat launches for the sector.
- **Figure 4-3: Sector 3 Map:** Details the strategies, staging and boat launches for the sector.
- **Figure 4-4: Risk Prioritization Map:** Identifies the potential hazard points for spills along the GRP corridor.

4.1.3 Major Protection Techniques

All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in [Section 4-2](#) are based on one or more of the following techniques:

Dispersants

Chemical dispersants can be used to break up slicks on the water. Dispersants can decrease the severity of a spill by speeding the dissipation of certain oil types. Their use will require approval of the Unified Command. Dispersants will only be used in offshore situations under certain conditions, until the Area Committee makes further determinations and publishes them in the Northwest Area Contingency Plan (http://www.rrt10nwac.com/nwacp_document.htm).

In-Situ Burning

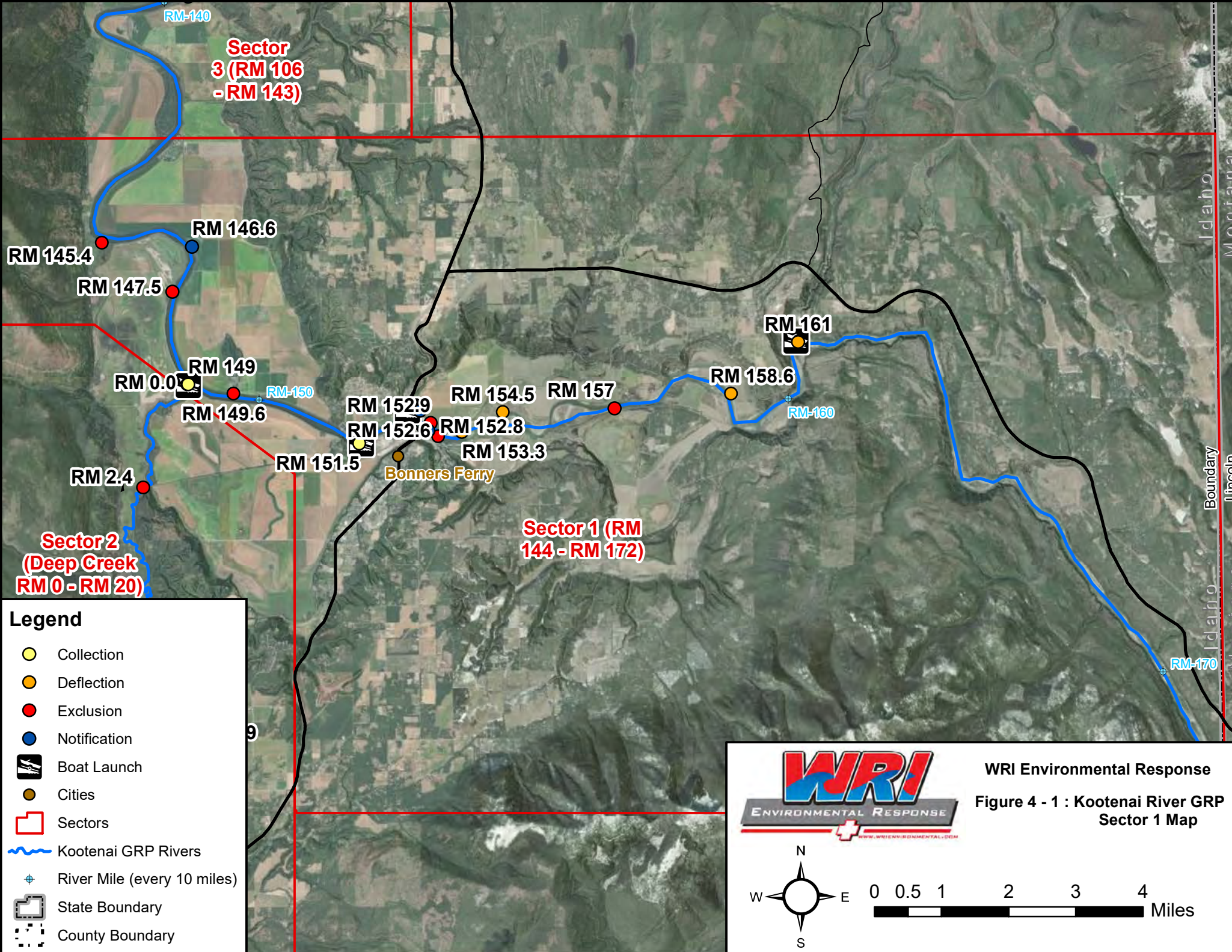
If possible, an oil slick may be set on fire. Burning must be authorized by the Unified Command, who confers with state and local air and water quality authorities. This option is often preferable to allowing a slick to reach the shore. This method works on many types of oil, and requires special equipment, including a fire boom and ignitors. In-situ burning will only be allowed when consistent with the Northwest Area Contingency Plan's In-Situ Burning Policy and Guidelines.

Mechanical Recovery Strategies

If a spill is too close to the shore for in-situ burning or dispersants, the key strategies are to use **collection**, **deflection**, or **exclusion** booms to contain the slick and prevent it from entering areas with sensitive wildlife and fisheries resources. Booming strategies are described in detail in [Appendix A](#).

4.2 Strategy Locations and Descriptions

The following response strategies and locations are organized by sector (index map), river mile (strategy map), and description (strategy table). The location numbers on maps represent river mile designations, derived via GIS. The river miles are derived from ISO 19139 ver. 2007 layer in ARCGIS, in which the Kootenai River river mile 0.0 is at the confluence with the Columbia River. Deep Creek river mile 0.0 is at the confluence with the Kootenai River. River miles increase going upstream.



Legend

- Collection
- Deflection
- Exclusion
- Notification
- Boat Launch
- Cities
- Sectors
- Kootenai GRP Rivers
- River Mile (every 10 miles)
- State Boundary
- County Boundary

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 Figure 4 - 1 : Kootenai River GRP Sector 1 Map

N
 W E S
 0 0.5 1 2 3 4 Miles

Table 4-1: Strategies RM 172 - RM 149- Booming Strategies, Staging Areas, and Boat Launches

Nearest Highway Milepost	Location Description	Site Type	Site Specific Notification	Location Latitude/Longitude decimal degrees	Shown on Sector Map	Adjacent Receiving Waterbody	Next Downstream Milepost (MP) and Downstream Arrow Indicator	Strategy Type					Onsite Resources		Site-Specific Notification Information and/or Strategy Implementation Notes	
								Collection and Recovery	Deflection	Exclusion	Boat Launch	Staging	Boom Length Recommended (feet)	Jet Boat Required to Implement?		Staging Onsite?
Sector 1: Kootenai River, Montana/Idaho Border RM 172 - Deep Creek Confluence RM 149																
Kootenai River																
RM 161	Twin River Hatchery	Boom and boat launch	Twin Rivers Hatchery (208) 267-1689	48.71536, -116.18607	1	Kootenai River	RM158.6		X	X	X	X	300	NO	Yes	Kootenai River flow direction at strategy is north to south. Contact Hatchery to shut off Kootenai River water intake. Secure upstream end of boom to on shore anchor, river right. Secure downstream end of boom to in water anchor.
RM 158.6	Habitat Restoration 1	Boom only	NA	48.70255 -116.20739	1	Kootenai River	RM 157		X	X			1200	YES	No	Kootenai River flow direction at strategy is south to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to in-water anchor.
RM 157	Habitat Restoration 2	Boom only	NA	48.70141, -116.24582	1	Kootenai River	RM154.5		X	X			750	YES	No	Kootenai River flow direction at strategy is south to northwest. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor at head of island.
RM 154.5	Habitat Restoration 3	Boom only	NA	48.700704, -116.280783	1	Kootenai River	RM 153.3		X	X			1800	YES	No	Kootenai River flow direction at strategy is north east to south west. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchor on river right. NOTE: This strategy is applicable ONLY at flows GREATER than 5,000 CFS
RM 153.3	Habitat Restoration 4	Boom only	NA	48.696597, -116.295409	1	Kootenai River	RM 153		X	X			200	YES	No	Kootenai River flow direction at strategy is northeast to southwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchor on river right.
RM 153	Bonnars Ferry Water Intake	Boom only	City of Bonnars Ferry Public Works (208) 267-3151	48.695696, -116.303298	1	Kootenai River	RM 152.9		X	X			50	YES	No	Kootenai River flow direction at strategy is southeast to northwest. Notify City of Bonnars Ferry Public Works Department. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchor on river left below intake.
RM 152.9	Habitat Resoration 5	Boom only	NA	48.696597, -116.295409	1	Kootenai River	RM 151.7		X	X			600	YES	No	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchor at head of island.
RM 151.5	Bonnars Ferry SAR Boat Ramp	Boom and boat launch	NA	48.69409 -116.32875	1	Kootenai River	RM 149.6	X			X	X	1700	YES	Yes	Kootenai River flow direction at strategy is east to west. Secure upstream end of boom to existing anchor installed in rock on river right. Secure downstream end of boom to on-shore anchors on river left.
RM 149.6	Kootenai Tribal Fish Hatchery	Boom only	KTOi Fish Hatchery (208) 267-3620	48.705023, -116.369786	1	Kootenai River	RM 149.0		X	X			300	YES	No	Kootenai River flow direction at strategy is east to west. Notify KTOi Fish Hatchery to shut off water intake. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchors on river right below intake.
RM 149	Kootenai/Deep Creek Conflueneec Boat Launch	Boom and boat launch	NA	48.70709, -116.38455	1	Kootenai River	RM147.5	X			X	X	2000	YES	Yes	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchors on river left.

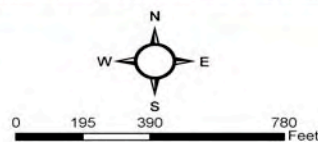
Twin Rivers Hatchery Intake and Boat Launch

RM 161.0

Site Lat Long:	48.71536 -116.18607 https://goo.gl/maps/LDh8xjHioLVZFDX2A
Strategy Objective:	Notification and deployment of deflection/exclusion boom: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the intake.
Implementation:	Kootenai River flow direction at strategy is north to south. Contact Hatchery to shut off Kootenai River water intake. Secure upstream end of boom to on shore anchor, river right. Secure downstream end of boom to in water anchor. Shoreline: Mixed sand and gravel bars and gently sloping banks (Type 5).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	YES
Field Notes:	4WD Access: NO Locked Gate: NO Response equipment stored in "Conex box". Twin Rivers Road is steep, narrow and with multiple switch backs - may be challenging during inclement weather. Road is maintained when Hatchery is operational.
Resources Targeted:	Fish Hatchery water intake, Recreational Use, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment

Quantity	Description
300 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
375ft.	Rope
1	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
1	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <u>No</u>	

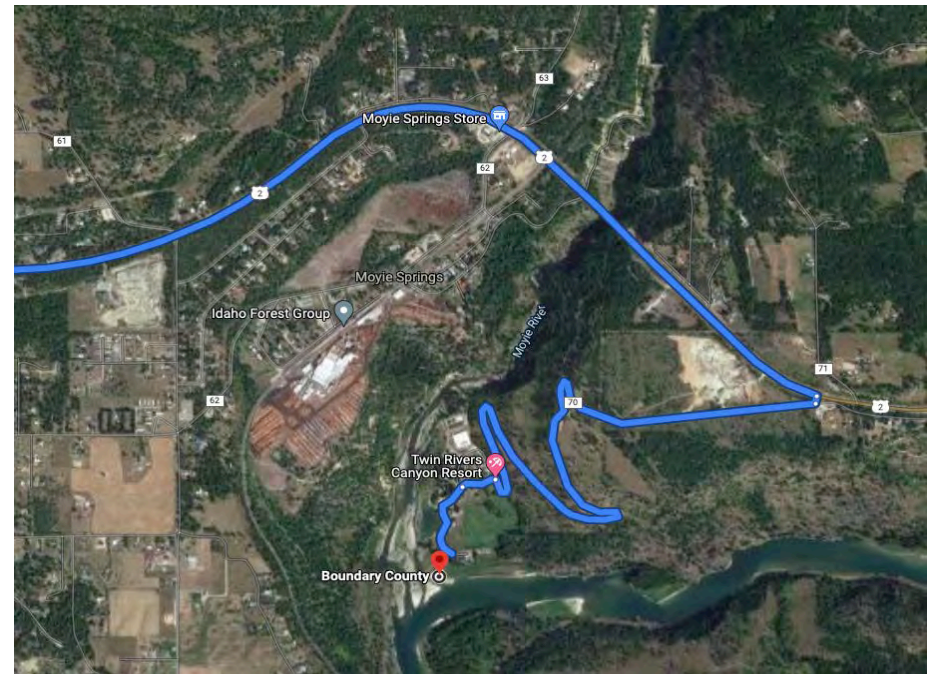
Suggested Personnel

Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River discharge in CFS 9,000



Overhead view of Hatchery Intake



Nearest Address: 1823 Twin Rivers Rd, Moyie Springs, ID 83845

Site Contacts:

Twin Rivers Hatchery (208) 267-1689

Site Directions From:

Bonnors Ferry, ID

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn right onto US-2 E
3. Turn right onto Co Rd 70A
4. Turn right onto Co Rd 70/Twin Rivers Rd
5. Turn left at Twin Rivers Resort office

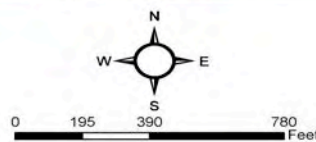
158.6 Habitat Restoration 1

RM 158.6

Site Lat Long:	48.70255 -116.20739 https://goo.gl/maps/iLf7eLgi2LeM8xKS8
Strategy Objective:	Deployment of deflection/exclusion boom: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the sensitive habitat.
Implementation:	Kootenai River flow direction at strategy is south to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to in-water anchor. Shoreline: Mixed Rip-rap/log and gravel bars (type 6).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	NO: Nearest: Twin Rivers Boat Launch
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

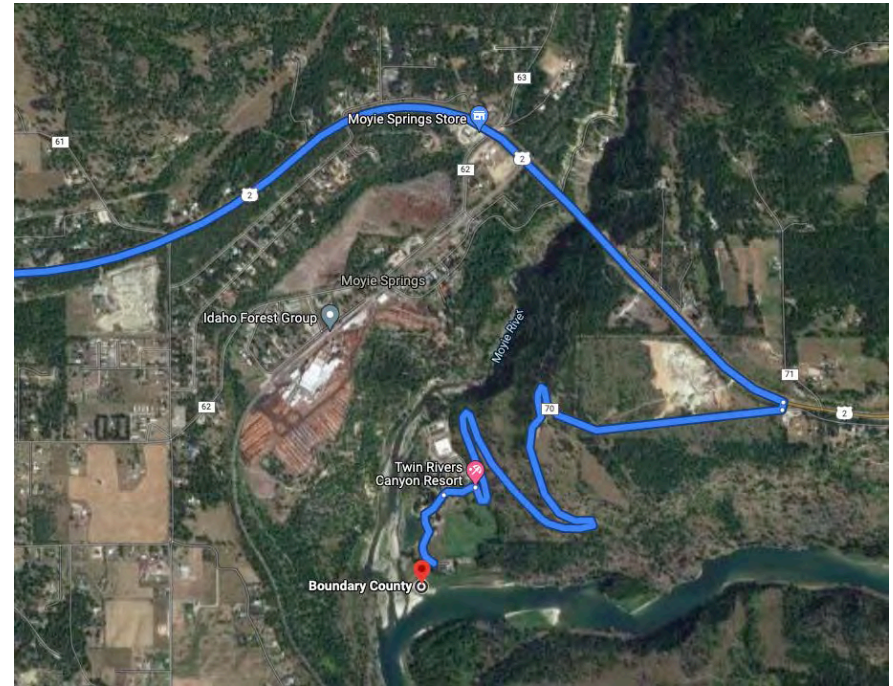


Suggested Equipment	
Quantity	Description
1200 ft total.	Curtain Boom / Tow Bridles
As Appropriate	Boom Vane, Absorbent Boom
2400 ft.	Rope
4	On-Shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
4	In-Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
6 / 0	Hazmat Field Techs / Traffic Flagger
2 / 2	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Overhead view looking upstream



Nearest Address: 1823 Twin Rivers Rd, Moyie Springs, ID 83845

Site Contacts:

Site Direction From:

Bonnors Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area; Twin Rivers.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn right onto US-2 E
3. Turn right onto Co Rd 70A
4. Turn right onto Co Rd 70/Twin Rivers Rd
5. Turn left at Twin Rivers Resort office

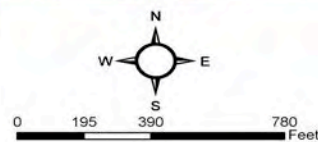
157.0 Habitat Restoration 2

RM 157.0

Site Lat Long:	48.70141 -116.24582 https://goo.gl/maps/MFuGEZrnnYv28jTV7
Strategy Objective:	Deployment of deflection/exclusion: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the restored habitat.
Implementation:	Kootenai River flow direction at strategy is south to northwest. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor at head of island. Shoreline: Mixed sheltered Rip-rap/log and gravel bars (type 8C).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	NO Nearest: Twin Rivers Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)

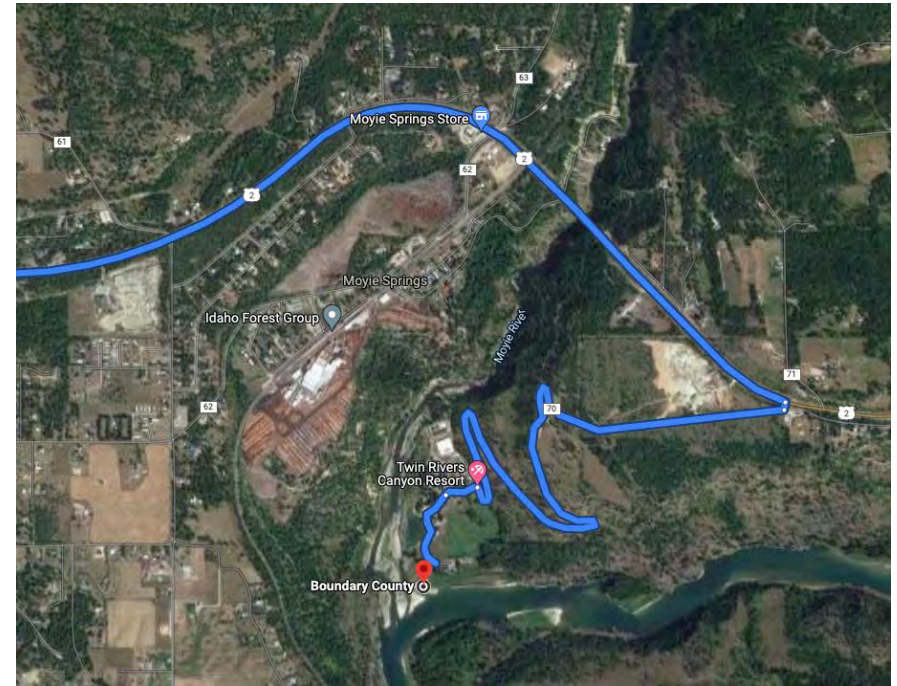


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment	
Quantity	Description
750 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
1000 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In-water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs/ Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Nearest Address: 1823 Twin Rivers Rd, Moyie Springs, ID 83845

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn right onto US-2 E
3. Turn right onto Co Rd 70A
4. Turn right onto Co Rd 70/Twin Rivers Rd
5. Turn left at Twin Rivers Resort office

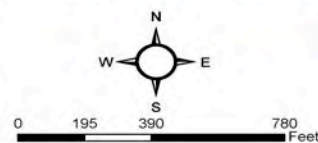
154.5 Habitat Restoration 3

RM 154.5

Site Lat Long:	48.700704 -116.280783 https://goo.gl/maps/xBy3RRnqZQK8rvcs5
Strategy Objective:	Deployment of deflection/exclusion: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the restored habitat.
Implementation:	Kootenai River flow direction at strategy is north east to south west. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchor on river right. Shoreline: Mixed Rip-rap/log and gravel bars (type 6).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March. .
Staging Area:	NO Nearest: Bonners Ferry SAR boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

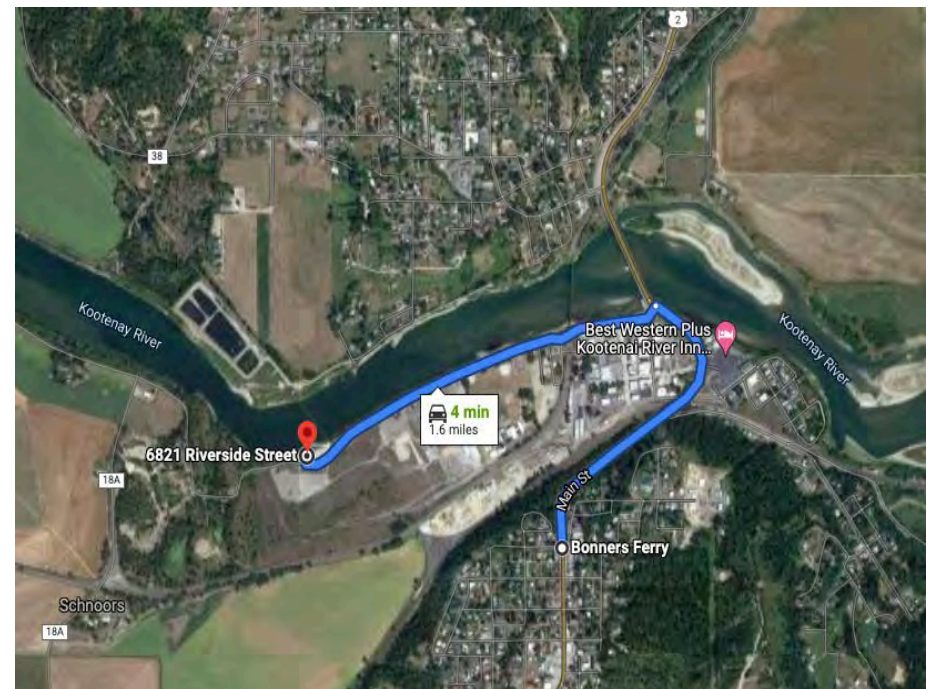


Suggested Equipment	
Quantity	Description
1800 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
2400 ft.	Rope
2	On-Shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
6 / 0	Hazmat Field Techs / Traffic Flagger
2 / 2	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Looking downstream at restored habitat on river right.



Nearest Address: 6821 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonners Ferry, ID

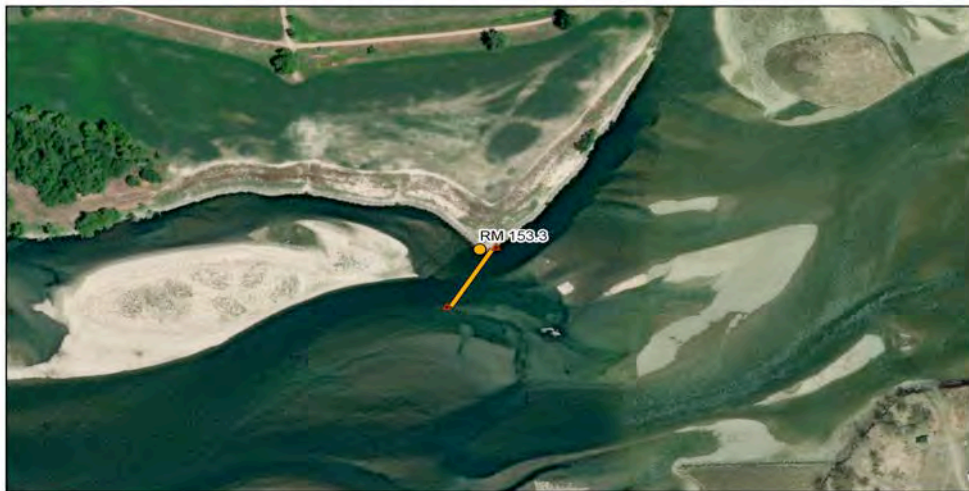
Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Turn Right

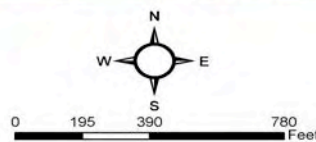
153.3 Habitat Restoration 4

RM 153.3

Site Lat Long:	48.696597 -116.295409 https://goo.gl/maps/DTBr78eTWDdUhbuS9
Strategy Objective:	Deployment of deflection/exclusion: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the restored habitat.
Implementation:	Kootenai River flow direction at strategy is northeast to southwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to in water anchor. Shoreline: Mixed Rip-rap/log and gravel bars (Type 6).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March. .
Staging Area:	NO Nearest: Bonners Ferry SAR boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

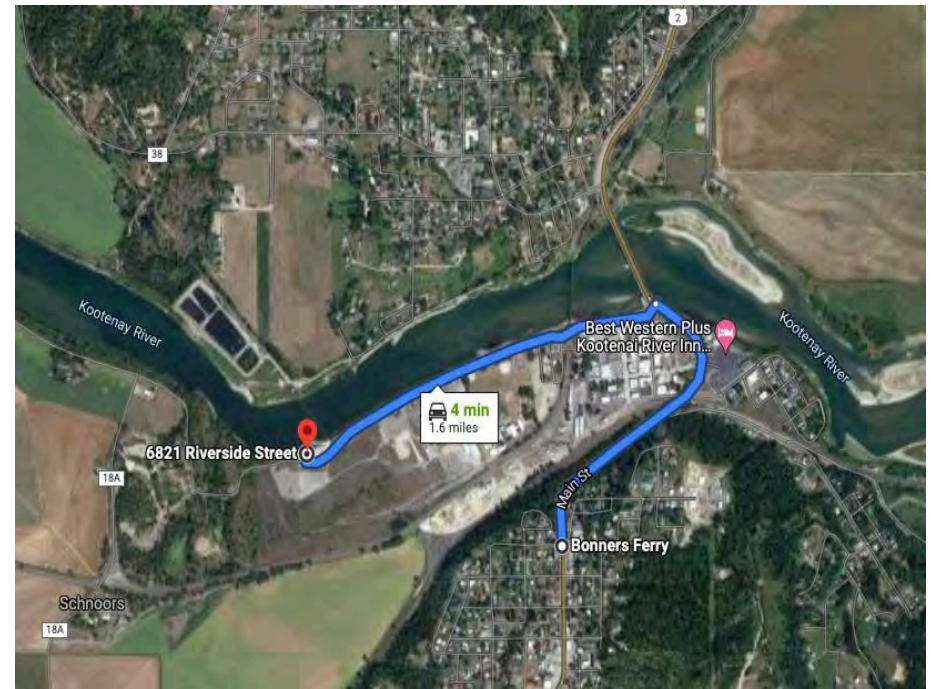


Suggested Equipment	
Quantity	Description
200 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
250 ft.	Rope
1	On-Shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
1	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Looking downstream at restored habitat on river right.



Nearest Address: 6821 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonners Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Turn Right

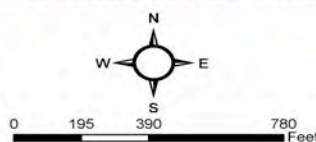
Bonnars Ferry Water Intake

RM 153.0

Site Lat Long:	48.695696, -116.303298 https://goo.gl/maps/wb2KKFyRxEYvLXtg6
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering City of Bonners Ferry Water Intake.
Implementation:	Kootenai River flow direction at strategy is southeast to northwest. Notify City of Bonners Ferry Public Works Department. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchor on river left below intake. Shoreline: Mixed cobble, rip-rap, vegetated steeply sloping bluff (type 8.)
Site Safety Note:	Slip, trips, fall hazards; traffic roadway hazards, water hazards, hazards from spilled material. Expect extreme winter conditions from November through March.
Staging Area:	NO Nearest: Equipment and vehicle parking areas at Bonners Ferry SAR boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY
Resources Targeted:	City Water Supply.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



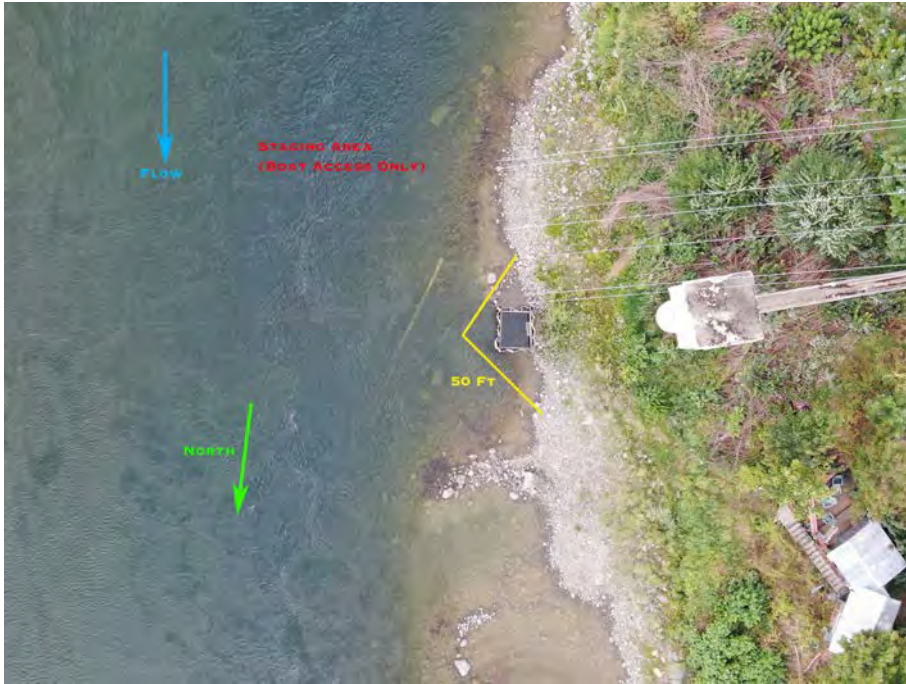
Suggested Equipment

Quantity	Description
50 ft.	Curtain Boom Tow Bridles
As Appropriate	Absorbent Boom
75 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In-water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

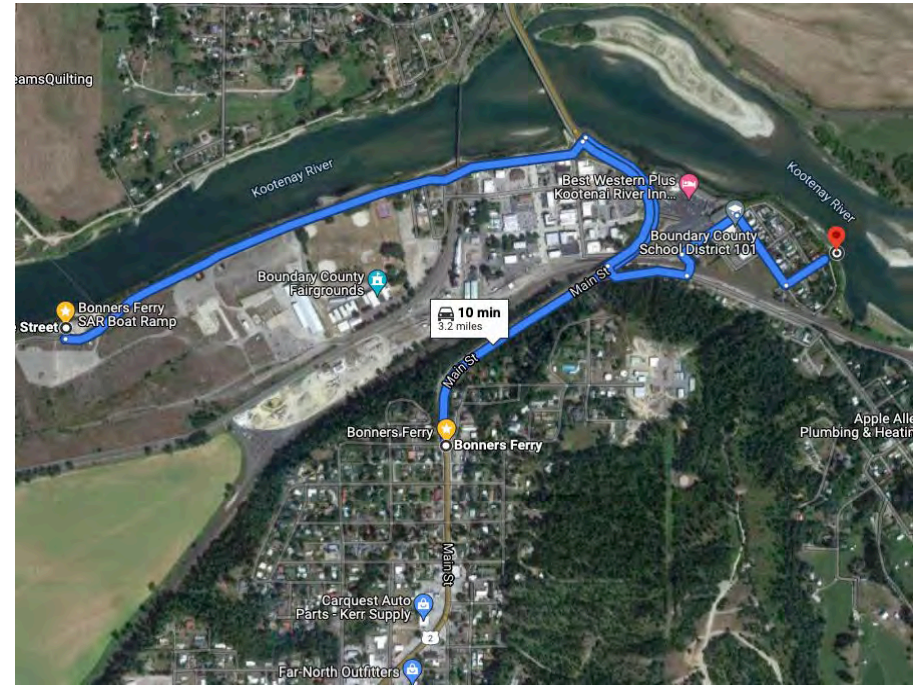
Suggested Personnel

Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Overhead view of City Water Intake



Nearest Address: 6821 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

City of Bonners Ferry Public Works (208) 267-3151

Site Directions From:

Bonnars Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area Bonners Ferry SAR Boat Ramp.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Turn Right

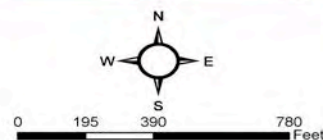
152.9 Habitat Restoration 5

RM 152.9

Site Lat Long:	48.696597, -116.295409 https://goo.gl/maps/Q7rDDHFwtD4QeAdLA
Strategy Objective:	Deployment of deflection/exclusion: Deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering the restored habitat.
Implementation:	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchor at head of island. Shoreline: Mixed log, gravel bars (type 6A).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	NO Nearest: Equipment and vehicle parking areas at Bonners Ferry SAR boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

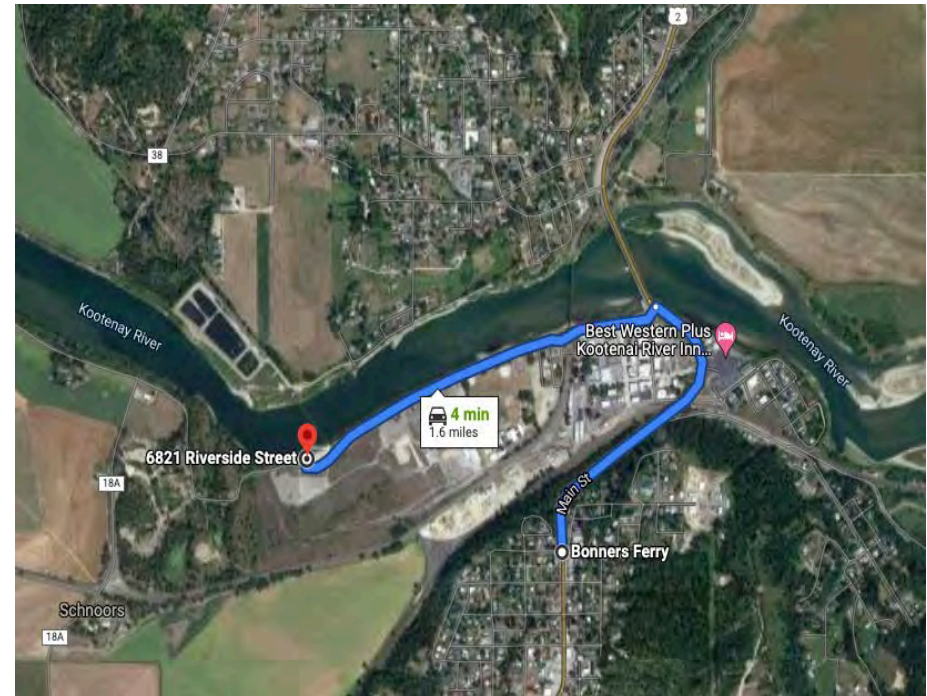


Suggested Equipment	
Quantity	Description
600 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
850 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River discharge in CFS: 9,000



View upstream from head of island of habitat restoration



Nearest Address: 6821 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonners Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Turn Right

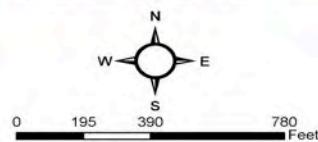
Bonnars Ferry SAR Boat Ramp

RM 151.5

Site Lat Long:	48.69409 -116.32875 https://goo.gl/maps/UwcGConm4u6xpVhd7
Strategy Objective:	Collection/Recovery: Collection and Recovery of spilled material flowing down the waterway from upstream source. Deploy boom to collect/recovery spilled materials.
Implementation:	Kootenai River flow direction at strategy is east to west. Secure upstream end of boom to existing anchor installed in rock on river right. Secure downstream end of boom to on-shore anchors on river left. Shoreline: Varied/mixed shore line of man-made structure and rip-rap (type 8B) and vegetated, steeply sloping bank (type 8F).
Site Safety Note:	Slip, trips, fall hazards; traffic roadway hazards, water hazards, hazards from spilled material. Expect extreme winter conditions from November through March.
Staging Area:	YES Large staging area across street
Field Notes:	4WD Access: NO Locked Gate: NO Developed deep water boat ramp
Resources Targeted:	Wildlife Habitat, and T & E species; Downstream Hatchery and irrigation water supplies; recreational use
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment

Quantity	Description
1700 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom, skimmer, vacuum truck, etc
2000 ft.	Rope
1	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

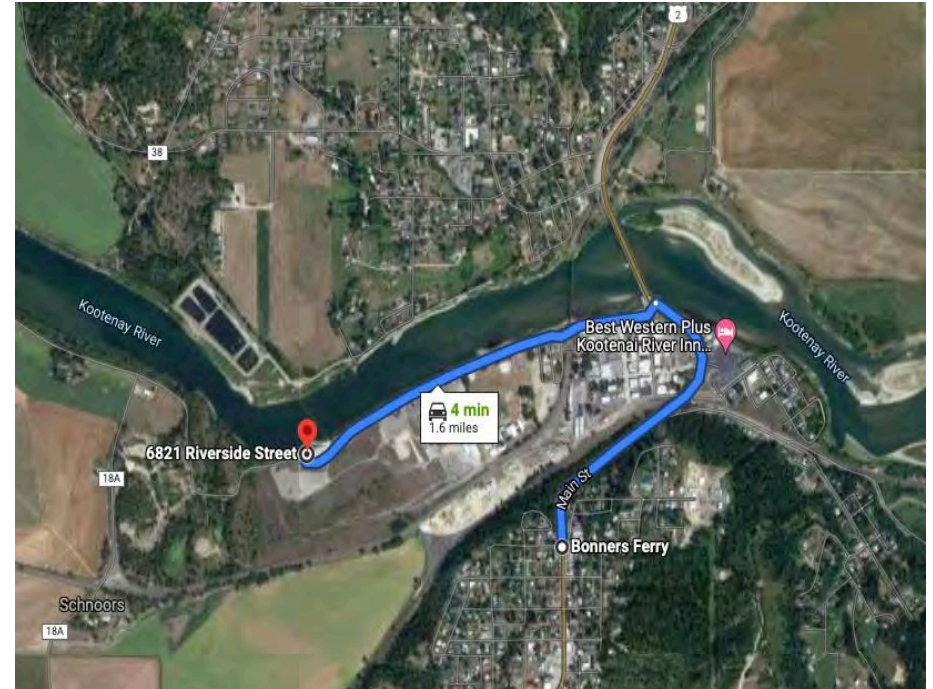
Suggested Personnel

Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
4 / 0	Hazmat Field Techs / Traffic Flagger
2 / 2	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View from above Bonners Ferry SAR Boat Ramp and River Access



6821 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonnars Ferry, ID

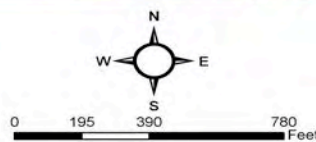
6821 Riverside St, Bonners Ferry, ID 83805

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Turn right arrive at Boat Launch

Site Lat Long:	48.705023, -116.369786 https://goo.gl/maps/QFLFFdQ5JzFhNoEm7
Strategy Objective:	Notification and deflection/exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to deflect/exclude spilled materials from entering hatchery water intake.
Implementation:	Kootenai River flow direction at strategy is east to west. Notify KTOI Fish Hatchery to shut off water intake. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchors on river right bellow intake. Shoreline: Varied/mixed shore line of man made structure and rip-rap (type 8B) and vegetated, steeply sloping bank (type 8F).
Site Safety Note:	Slip, trips, fall hazards; traffic roadway hazards, water hazards, hazards from spilled material. Expect extreme winter conditions from November through March.
Staging Area:	NO Nearest: Deep Creek Boat Launch
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY
Resources Targeted:	Wildlife Habitat, and T & E species; Downstream irrigation water supplies; Recreational use
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



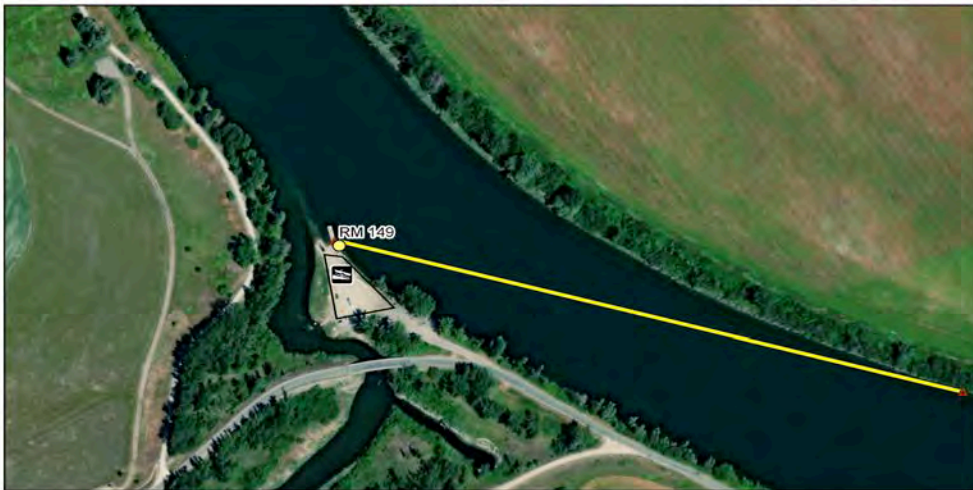
Suggested Equipment	
Quantity	Description
300 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom, skimmer, vacuum truck, etc
375 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000

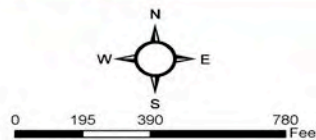
Kootenai/Deep Creek Confluence Boat Launch

RM 149.0

Site Lat Long:	48.70709, -116.38455 https://goo.gl/maps/dWPoxth5G584j98GA
Strategy Objective:	Collection/Recovery: Collection and recovery of spilled material flowing down the waterway from upstream source. Deploy boom to collect/recovery spilled materials.
Implementation:	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchors on river left. Shoreline: Varied/mixed shore line of man made structure and rip-rap(8B) and vegetated, steeply sloping bank (type 8F).
Site Safety Note:	Slip, trips, fall hazards; traffic roadway hazards, water hazards, hazards from spilled material. Expect extreme winter conditions from November through March.
Staging Area:	YES
Field Notes:	4WD Access: NO Locked Gate: NO Developed deep water boat ramp
Resources Targeted:	Wildlife Habitat, and T & E species; Downstream irrigation water supplies; Recreational use
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



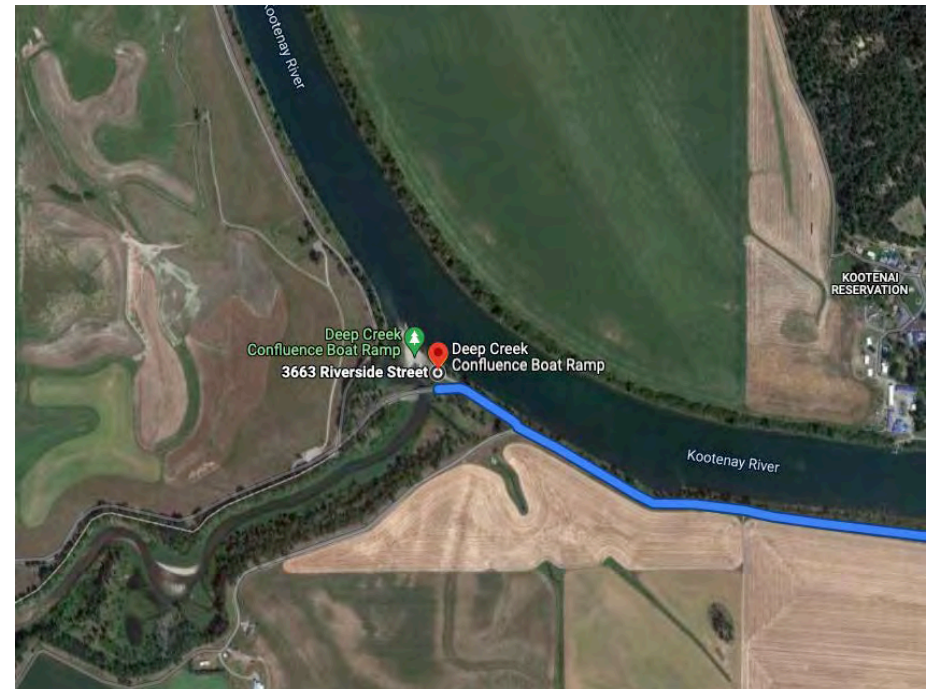
Suggested Equipment	
Quantity	Description
2000 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom, skimmer, vacuum truck, etc
2500 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
4 / 0	Hazmat Field Techs / Traffic Flagger
2 / 2	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking upstream at Deep Creek Confluence Boat Launch/River Access



Deep Creek Boat Launch 3663 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

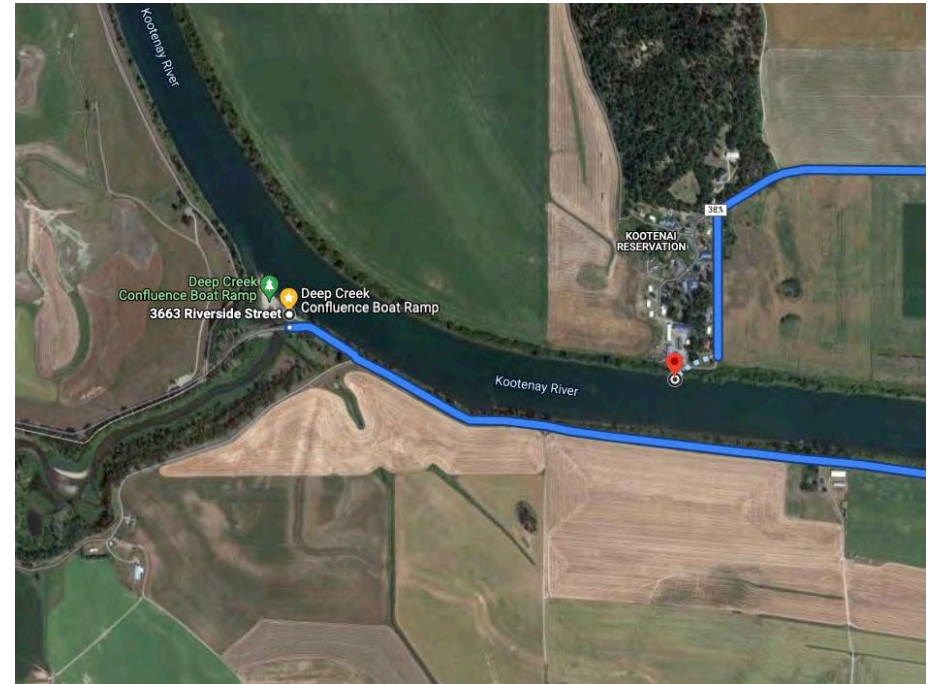
Bonners Ferry, ID

Deep Creek Boat Launch 3663 Riverside St, Bonners Ferry, ID 83805

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Stay on Riverside St for 3.8 mi
4. Arrive at Boat Launch



View looking upstream at Kootenai Tribal Fish Hatchery



Deep Creek Boat Launch 3663 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

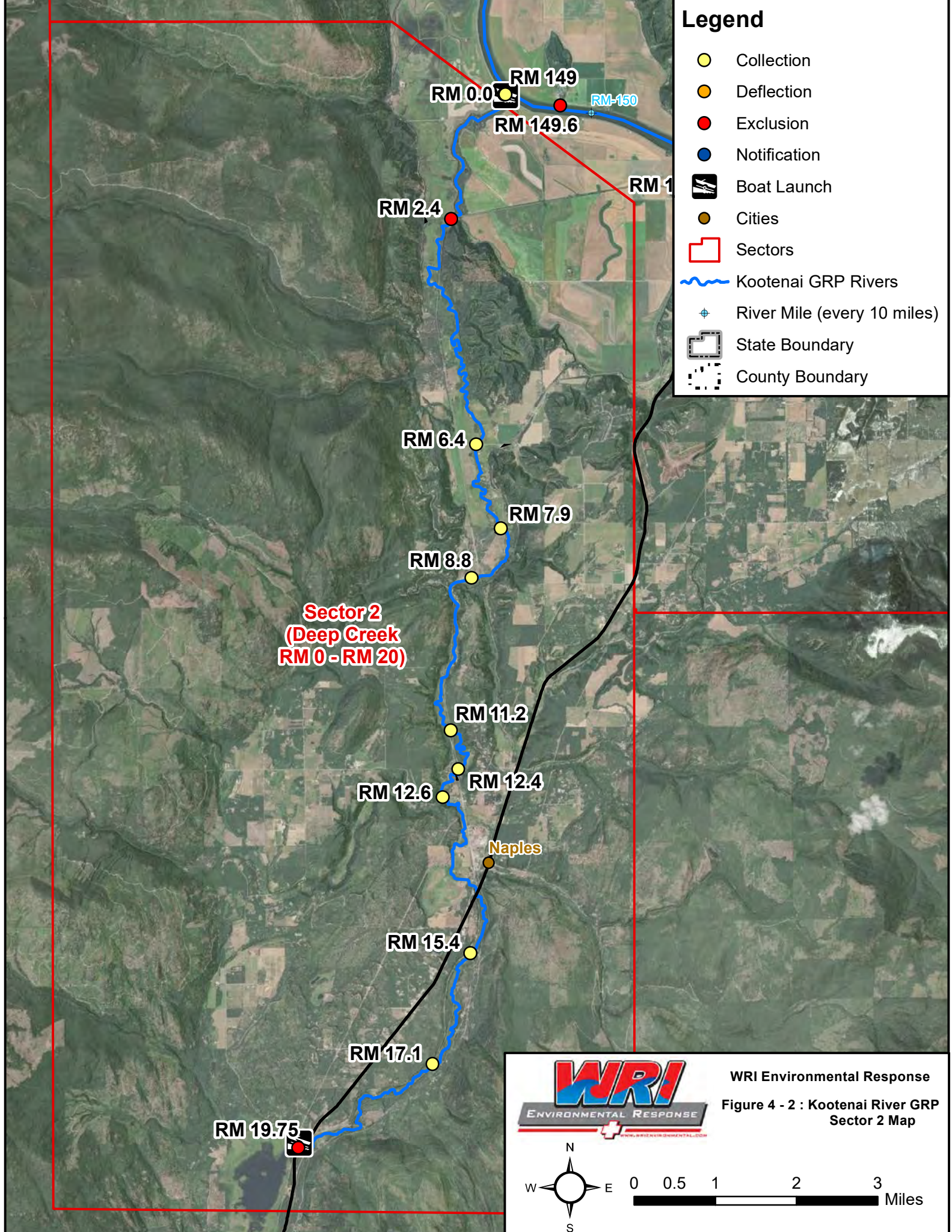
KTOI Fish Hatchery (208) -267-3620

Site Directions From:

Bonnors Ferry, ID

Access to deployment site is via boat - directions are to nearest boat ramp/staging area.


1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Stay on Riverside St for 3.8 mi
4. Arrive at Boat Launch



Legend

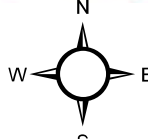
- Collection
- Deflection
- Exclusion
- Notification
- Boat Launch
- Cities
- Sectors
- Kootenai GRP Rivers
- River Mile (every 10 miles)
- State Boundary
- County Boundary

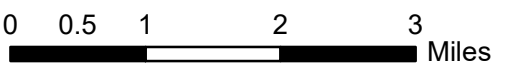
**Sector 2
(Deep Creek
RM 0 - RM 20)**



WRI Environmental Response
ENVIRONMENTAL RESPONSE
www.wrienvironmental.com

WRI Environmental Response
Figure 4 - 2 : Kootenai River GRP
Sector 2 Map





0 0.5 1 2 3 Miles

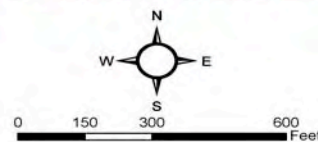
Table 4-2: Deep Creek Strategies RM 20.0 - RM 0.0-Booming Strategies, Staging Areas, and Boat Launches

Nearest Highway Milepost	Location Description	Site Type	Site Specific Notification	Location Latitude/Longitude decimal degrees	Shown on Sector Map	Adjacent Receiving Waterbody	Next Downstream Milepost (MP) and Downstream Arrow Indicator	Strategy Type					Onsite Resources		Site-Specific Notification Information and/or Strategy Implementation Notes	
								Collection and Recovery	Deflection	Exclusion	Boat Launch	Staging	Boom Length Recommended (feet)	Jet Boat Required to Implement?		Staging Onsite?
Sector 2: Deep Creek RM 20.0 - RM 0.0																
Deep Creek																
RM 20.0	McArthur Lake Wildlife Management Area Outlet	Boom and boat launch	NA	48.520805, -116.441889	2	Deep Creek	RM 17.1	X		x	X	X	100	NO	Yes	Lake outlet flow direction at strategy is northwest to southeast. Deploy exclusion boom across lake outlet structure, securing boom ends to the structure itself or on-shore anchors. If collection/recovery warranted, challenging vacuum truck access to river right at road bridge.
RM 17.1	Smokey Lane Bridge	Boom only	NA	44.535579, -116.406157	2	Deep Creek	RM 15.4	X					50	NO	Limited	Deep Creek flow direction at strategy is southwest to northeast. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Equipment and vehicle parking areas along Smokey Lane.
RM 15.4	Wilderness Road Bridge	Boom only	NA	48.554289, -116.395639	2	Deep Creek	RM 12.6	X					50	NO	Limited	Deep Creek Flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Equipment and vehicle parking areas along Wilderness Road.
RM 12.6	Highland Flats Bridge	Boom only	NA	48.582120, -116.402933	2	Deep Creek	RM 12.4	X					100	NO	Limited	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Equipment and vehicle parking areas along Highland Flats Road.
RM 12.4	Campground Bridge	Boom only	NA	48.587152, -116.398532	2	Deep Creek	RM 11.2	X					100	NO	Limited	Deep Creek flow direction at strategy is west to east. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Equipment and vehicle parking along Old US Highway 95
RM 11.2	East Naples Bridge	Boom only	NA	48.594030, -116.400767	2	Deep Creek	RM 8.8	X					100	NO	No	Deep Creek flow direction at strategy is east to west. Deploy containment boom and initiate spilled material recovery on river right/downstream of road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right.
RM 8.8	Deep Creek Loop Bridge	Boom only	NA	48.621192, -116.393639	2	Deep Creek	RM 7.9	X					100	NO	Limited	Deep Creek flow direction at strategy is west to east. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Equipment and vehicle parking areas along Deep Creek Loop Road.
RM 7.9	South Boundary Fire	Boom only	NA	48.630007, -116.385965	2	Deep Creek	RM 6.4	X				X	100	NO	Limited	Deep Creek flow direction at strategy is southeast to northwest. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river left. Equipment and vehicle parking areas along Deep Creek Loop Road. Small staging south at South Boundary Fire Station #2.
RM 6.4	Lions Den Road Bridge	Boom only	NA	48.645043, -116.391642	2	Deep Creek	RM 2.4	X					150	NO	Limited	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Off Site equipment and vehicle parking areas at intersection of Lions Den Road and Old Highway 95.
RM 2.4	Kootenai Wildlife Refuge Intake	Boom only	Kootenai National Wildlife Refuge- 208-267-3888	48.685200, -116.399398	2	Deep Creek	RM 0.0			X			100	NO	Limited	Deep Creek flow direction at strategy is southeast to northwest. Deploy exclusion boom at river left to exclude spilled materials from entering WaterIntake #4. Secure upstream end of boom to on-shore anchor river left. Secure downstream end of boom to on-shore river left. Intake normally operates between August and November during the year. Very Small Staging.
RM 0.0	Dee Creek Confluence	Boom and boat launch	NA	48.707234, -116.385006	2	Deep Creek	RM 124 Kootenai River	X				X	100	NO	Yes	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore River Right.

Site Lat Long:	48.520805 -116.441889 https://goo.gl/maps/eQGRENcmZx7khBhM6
Strategy Objective:	Exclusion and possible recovery: Exclude spilled material from flowing out of lake and into Deep Creek.
Implementation:	Lake outlet flow direction at strategy is northwest to southeast. Deploy exclusion boom across lake outlet structure, securing boom ends to the structure itself or on-shore anchors. If collection/recovery warranted, challenging vacuum truck access to river right at road bridge. Shoreline: Vegetated low bank (type 9B)
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	YES.
Field Notes:	4WD Access: NO Locked Gate: NO *head-gate structure is locked *Lake may be ice covered during winter conditions.
Resources Targeted:	Bull trout critical habitat. Downstream municipal & irrigation water supplies; recreational use; wildlife habitat.
Watercourse:	McArthur Lake Outlet: Low gradient/sand to gravel lake bed, width 50 feet (variable), depth 0.5 - 2 feet (variable).



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



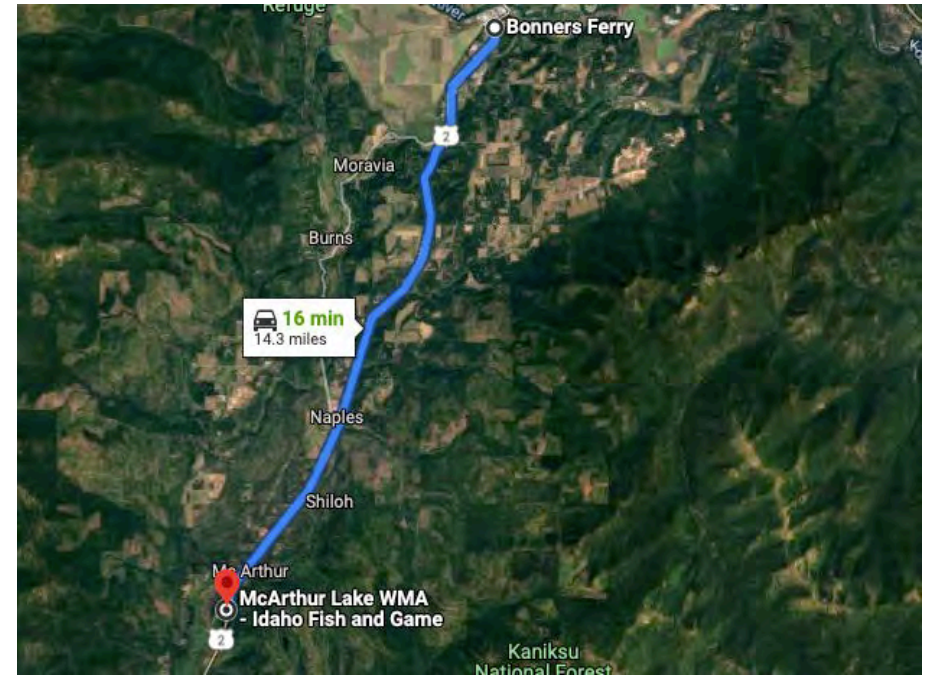
Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Portable skimmer, vac-truck, absorbent boom, etc
125 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021



Looking in the direction of flow out of McArthur Lake.



Nearest Address: McArthur Lake Rd. Naples, ID 83847

Site Contacts:

Site Directions From:

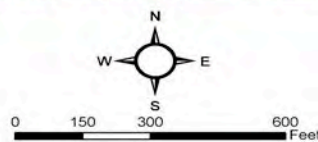
Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S
3. Destination will be on the right

Site Lat Long:	48.535579 -116.406157 https://goo.gl/maps/7ASTGs52JKApHK6p7
Strategy Objective:	Collection/Recovery. Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is southwest to northeast. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Shoreline: Vegetated low bank(type 9B).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	LIMITED Equipment and vehicle parking areas along Smokey Lane.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use, and wildlife habitat.
Watercourse:	Medium gradient. Sand to gravel river bed. Width 10-30 feet (variable), depth 0.5 to 2 feet (variable).

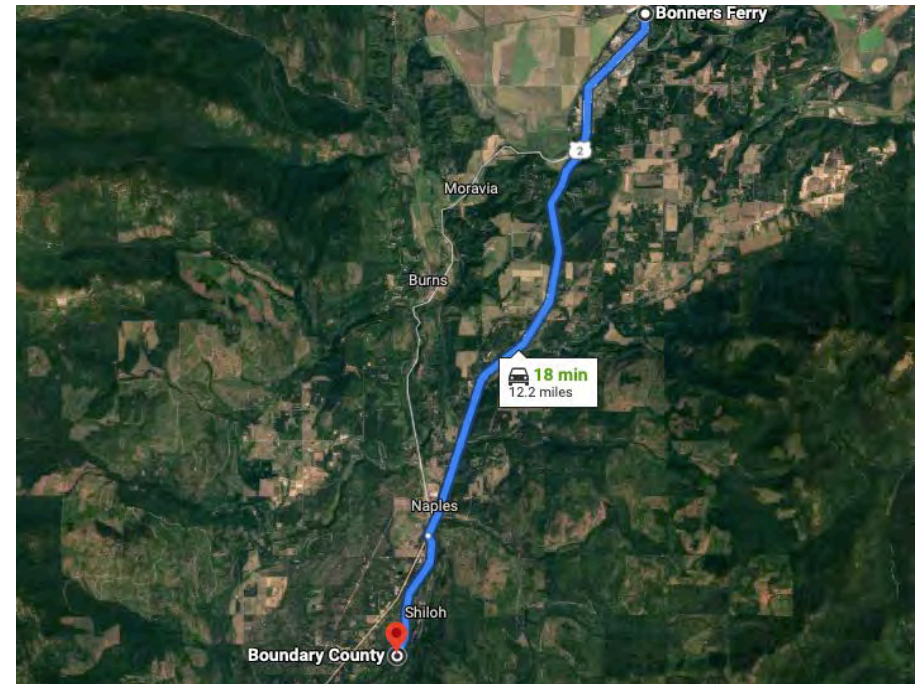


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment	
Quantity	Description
50 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
75 ft.	Rope
2	On-shore anchor
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Smokey Lane Bridge. Looking North East

Address: Smokey Lane, Naples, ID 83847

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 10.0 mi
3. Turn left onto Shiloh Loop 2.2 mi
4. Turn left onto Smokey Lane

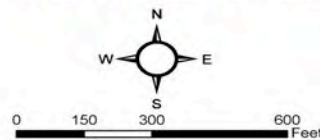
Deep Creek - Wilderness Road Bridge

RM 15.4

Site Lat Long:	48.554289 -116.395639 https://goo.gl/maps/2XNzwNV2H9jDB2SX6
Strategy Objective:	Collection/Recovery: Collect and Recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek Flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Shoreline: Vegetated low bank (type 9B).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	LIMITED Equipment and vehicle parking areas along Wilderness Road.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient. Sand to gravel river bed. Width 10-30 ft (variable), depth 0.5 to 2 ft (variable).

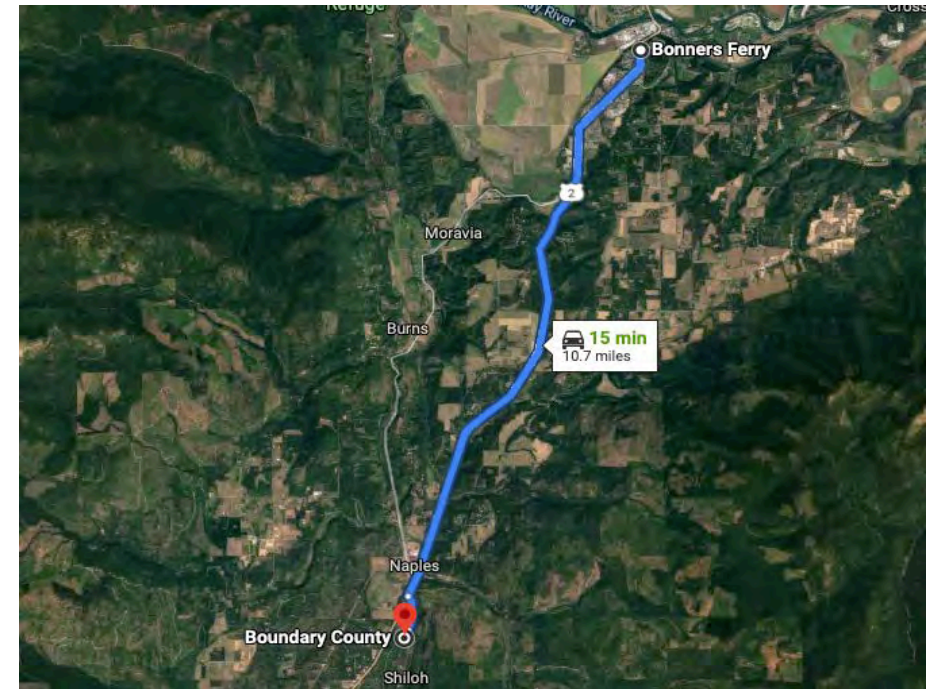


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment	
Quantity	Description
50 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
75 ft.	Rope
2	On-shore
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Looking NE at Wilderness Road Bridge

Address: Wilderness Road Bridge Naples, ID 83805

Site Contacts:

Site Directions From:

Bonners Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 10.0 mi
3. Turn left onto Shiloh Loop 0.6 mi
4. Keep left to continue on County Rd 3-A 0.1 mi
5. Turn right. Destination will be on the left

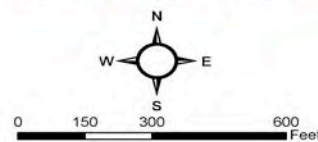
Deep Creek - Highland Flats Bridge

RM 12.6

Site Lat Long:	48.582120 -116.402933 https://goo.gl/maps/TyFuFvjL5AE7oX5z8
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Shoreline: Vegetated low bank (type 9B).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	LIMITED Equipment and vehicle parking areas along Highland Flats Road.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient, sandy river bed. Width 20-50 ft (variable). Depth 0.5-4 ft (variable).



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

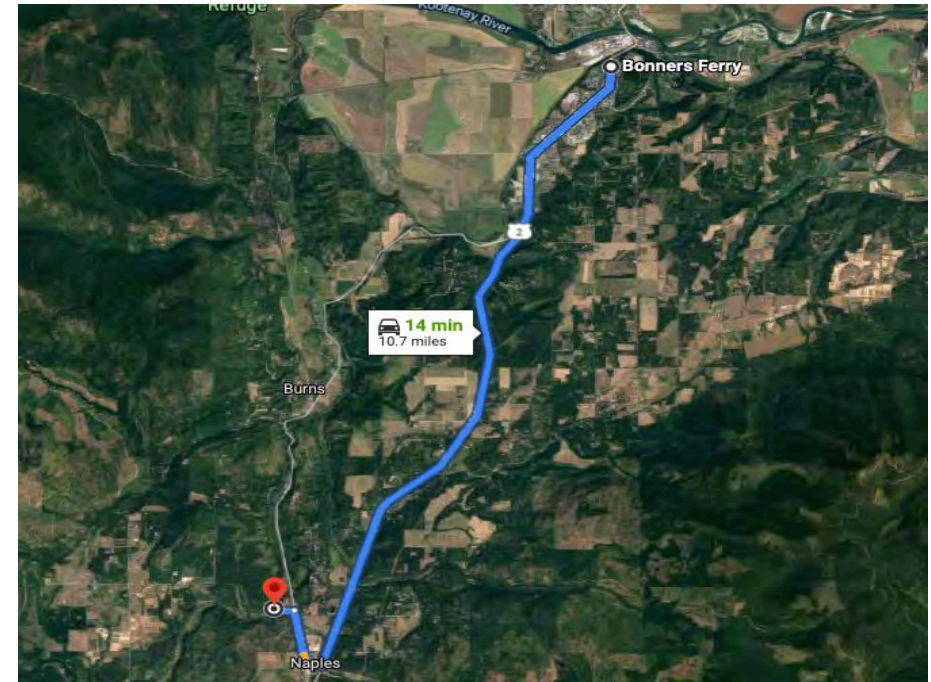


Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	On-shore Anchor
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs/ Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Looking upstream from Highland Flats Bridge



Address: Highland Flats Road, Naples, ID 83847

Site Contacts:

Site Directions From:

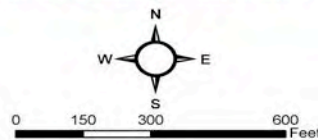
Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 9.5 mi
3. Turn right onto Schoolhouse Rd 0.2 mi
4. Turn right onto Old US Hwy 95 0.7 mi
5. Turn left onto Highland Flats Rd
6. Destination will be on the left 0.2 mi

Site Lat Long:	48.587152, -116.398532 https://goo.gl/maps/P1HWeicZjqw7tqbg8
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is west to east. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Shoreline: Vegetated low bank (type 9B)
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	LIMITED Equipment and vehicle parking along Old US Highway 95
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient. Sandy river bed. Width 20-50 ft. (variable). Depth 0.5-4 ft. (variable).



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

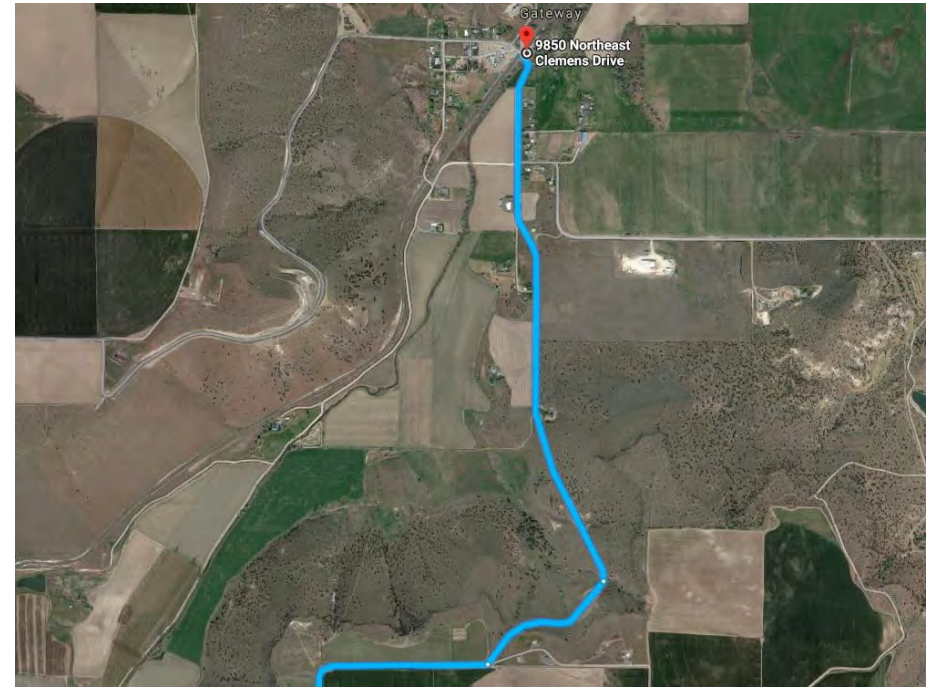


Suggested Equipment	
Quantity	Description
100ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Overhead view of Deep Creek Campground Bridge



Address: Old US Highway 95, Naples, ID 83847

Site Contacts:

Site Directions From:

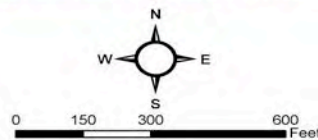
Bonnars Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 9.5 mi
3. Turn right onto Schoolhouse Rd 0.2 mi
4. Turn right onto Old US Hwy 95
5. Destination will be on the right 1.1 mi

Site Lat Long:	48.594030 -116.400767 https://goo.gl/maps/AXk9iKSU5UCXHCKaA
Strategy Objective:	Collection/Recovery: Collect and Recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is east to west. Deploy containment boom and initiate spilled material recovery on river right downstream of road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Shoreline: Vegetated low bank (type 9B).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	NO: Equipment and vehicle parking areas along Deep Creek Loop Rd/Old Hwy 95
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull trout critical habitat. Downstream municipal & irrigation water supplies; recreational use; wildlife habitat.
Watercourse:	Deep Creek: Medium gradient/sandy river bed, width 20-50 feet (variable), depth 0.5-4 feet (variable).

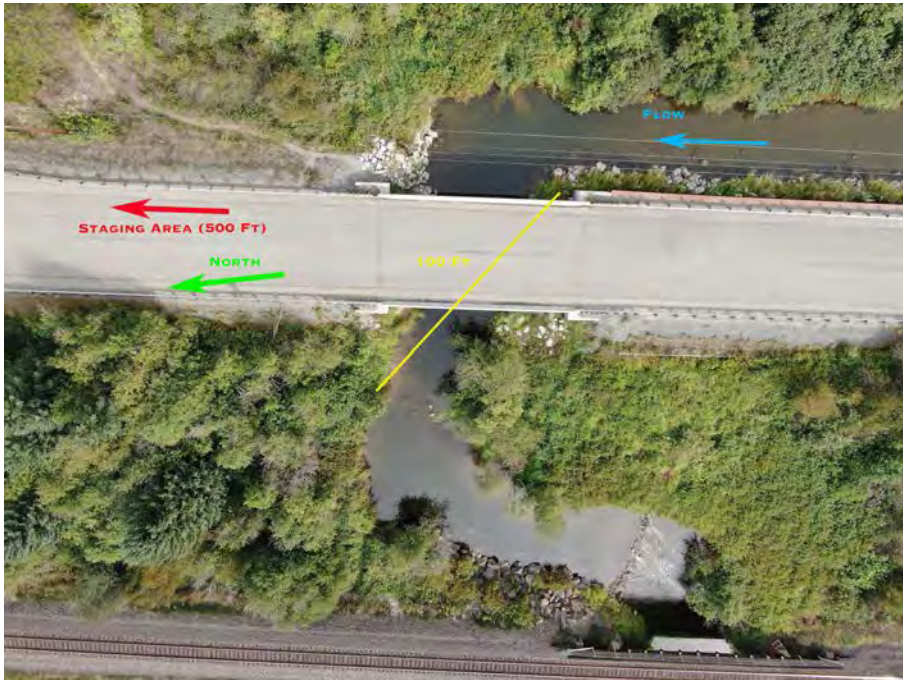


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

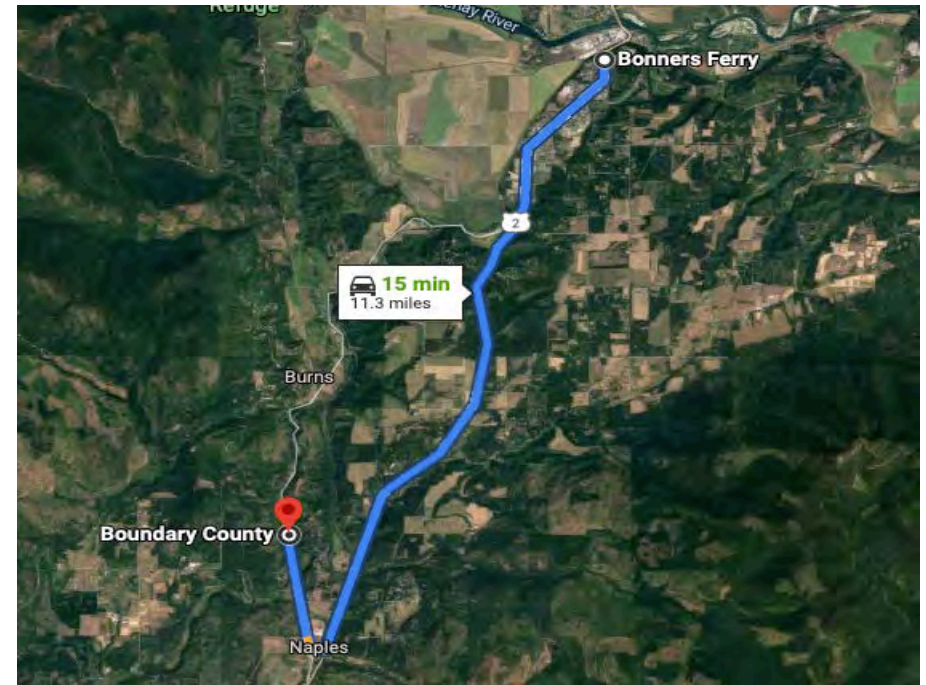


Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
4	On-shore
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Overhead view of East Naples Bridge



Address: Old Highway 95, Naples, Id 83847

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 9.5 mi
3. Turn right onto Schoolhouse Rd 0.2 mi
4. Turn right onto Old US Hwy 95
5. Destination will be on the right 1.6 mi

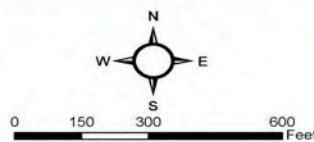
Deep Creek Loop Bridge

RM 8.8

Site Lat Long:	48.621192 -116.393639 https://goo.gl/maps/5PZXeHENyxfbNEzh7
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is west to east. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Shoreline: Vegetated low bank (type 9B)
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	Limited: Equipment and vehicle parking areas along Deep Creek Loop Road.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient/sand to cobble river bed. Width 20-50 ft (variable). Depth 0.5-4 ft (variable).



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

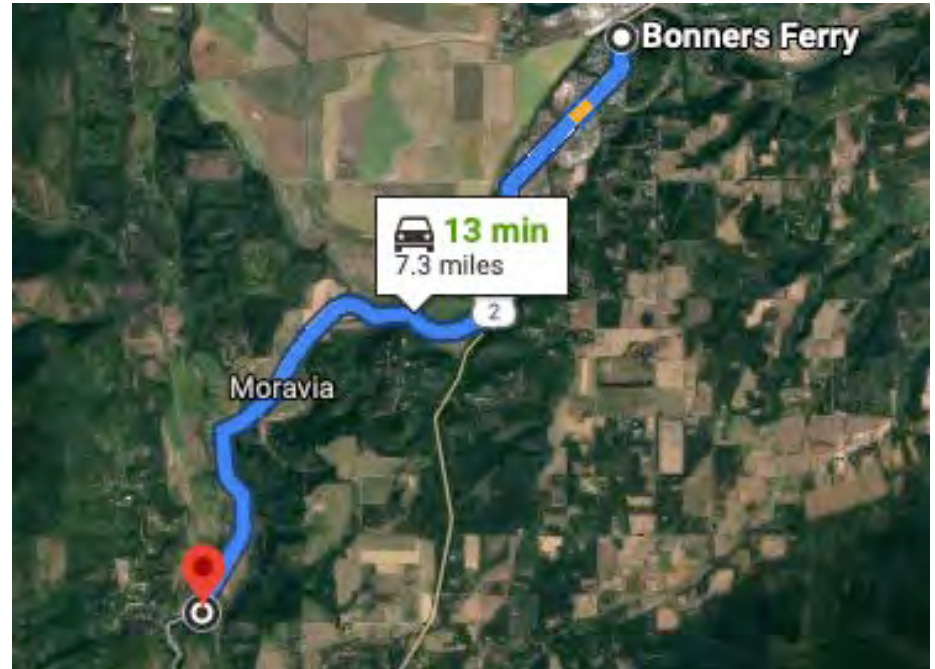


Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021



Overhead view of Deep Creek Loop Bridge



Nearest Address: 4419 Deep Creek Loop, Naples, ID 83847

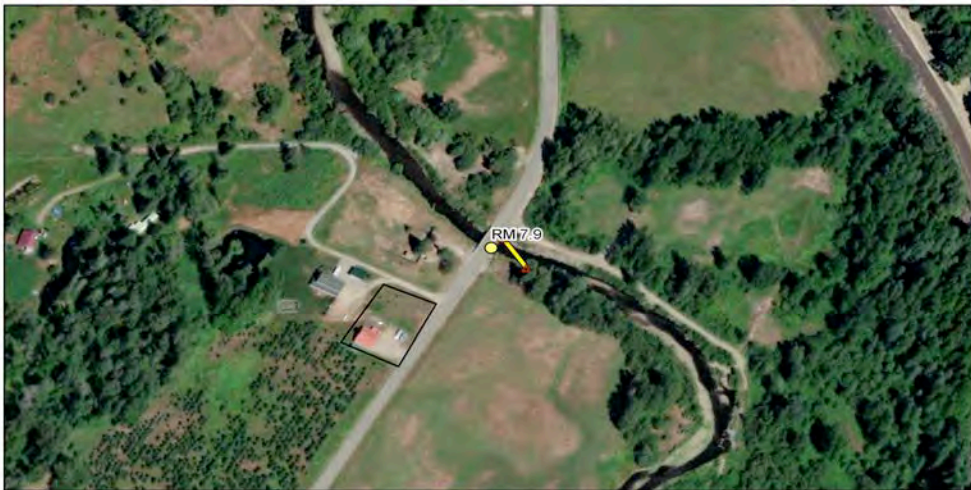
Site Contacts:

Site Directions From:

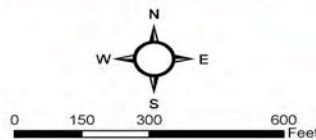
Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 2.5 mi
3. Turn right onto Deep Creek Loop
4. Destination will be on the left 4.9 mi

Site Lat Long:	48.630007 -116.385965 https://goo.gl/maps/QdN61rxiqQbaY9Ux7
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is southeast to northwest. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river left. Shoreline: Vegetated low bank (type 9B) and exposed rocky banks (type 1A).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	LIMITED Equipment and vehicle parking areas along Deep Creek Loop Road. Small staging south at South Boundary Fire Station #2.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient/sand to cobble river bed, width 20-50 ft (variable), depth 0.5-4 ft (variable).



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



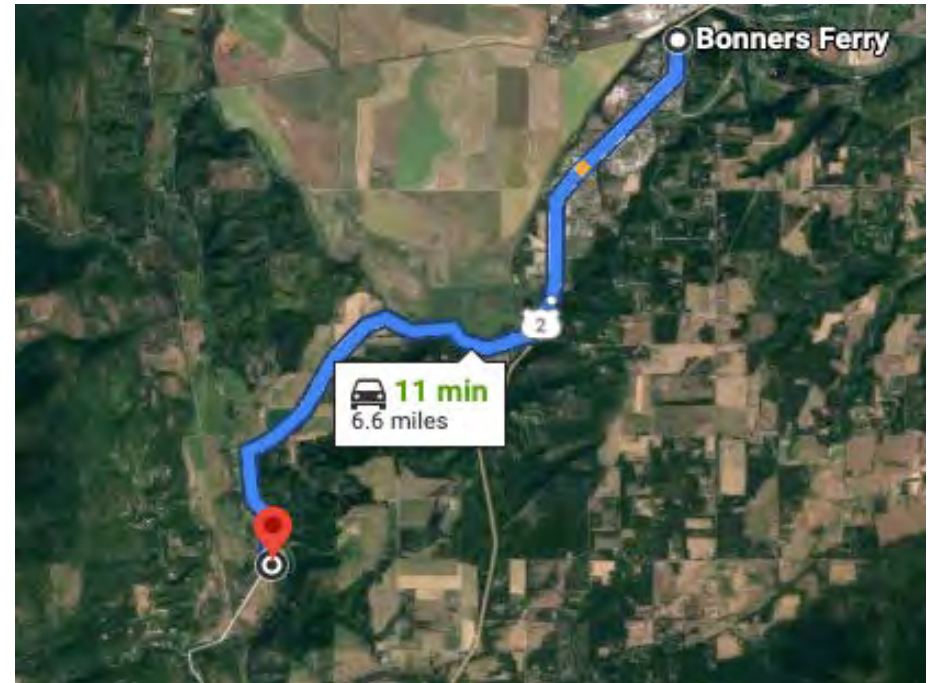
Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	Anchors, sling and clevices
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="text" value="No"/>	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021



View looking upstream at South Boundary Fire Collection site.



Address: 5078 Deep Creek Loop, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 2.5 mi
3. Turn right onto Deep Creek Loop
4. Destination will be on the left 4.1 mi

Site Lat Long:	48.645043, -116.391642 https://goo.gl/maps/vD9jFW9ApYwkbFsD9
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river left at road bridge. Secure upstream end of boom to on-shore anchor on river right. Secure downstream end of boom to on-shore anchor on river left. Shoreline: Vegetated low bank (type 9B).
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	Limited: Off Site equipment and vehicle parking areas at intersection of Lions Den Road and Old Highway 95.
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical habitat. Downstream municipal & irrigation water supplies, recreational use and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient/gravel to cobble river bed,. Width 30-50 feet (variable). Depth 0.5-5 feet (variable).



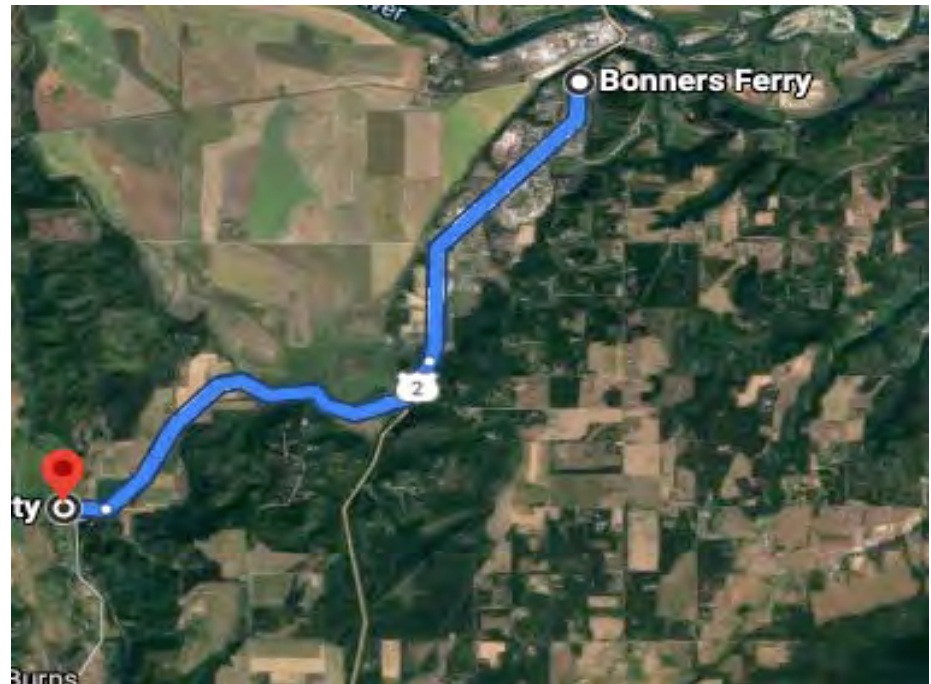
Suggested Equipment	
Quantity	Description
150 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
200ft.	Rope
2	On-shore
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 2	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021.



Overhead view of Lions Den Road Bridge



Address: 254 Lions Den Road, Bonners Ferry, ID 83805

Site Contacts:

Site Directions:

Bonners Ferry, ID

1. Head south on US-2 W/US-95 S/Main St toward Monroe St
2. Continue to follow US-2 W/US-95 S 2.5 mi
3. Turn right onto Deep Creek Loop 2.9 mi
4. Turn right onto Lions Den Road
5. Destination will be on the right 0.3 mi

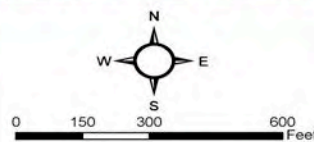
Deep Creek - Kootenai Wildlife Refuge Intake

RM 2.4

Site Lat Long:	48.685200, -116.399398 https://goo.gl/maps/Bntpa1yDfScPNLoB9
Strategy Objective:	Exclusion: Notify Refuge staff to shut off pump. Deploy boom to exclude spilled materials from entering the intake.
Implementation:	Deep Creek flow direction at strategy is southeast to northwest. Deploy exclusion boom at river left to exclude spilled materials from entering Water Intake #4. Secure upstream end of boom to on-shore anchor river left. Secure downstream end of boom to on-shore river left. Intake normally operates between August and November during the year. Shoreline: Vegetated low bank (type 9B).
Site Safety Note:	Slip, trip, fall hazards; water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	Limited: very small
Field Notes:	4WD Access: Yes Locked Gate: Yes Access to site is behind a closed/locked gate off of Lions Den Rd., 0.3 miles to intake
Resources Targeted:	Wildlife Refuge critical habitat. Downstream municipal & irrigation water supplies and recreational use.
Watercourse:	Deep Creek: Medium gradient/sand to gravel river bed. Width 30-60 ft (variable). Depth 1-5 ft (variable).



○ Collection	▣ Boat Launch	▲ Anchors
○ Deflection	▬ Collection Boom	⊕ Staging Area
● Exclusion	▬ Deflection Boom	
● Notification	▬ Exclusion Boom	

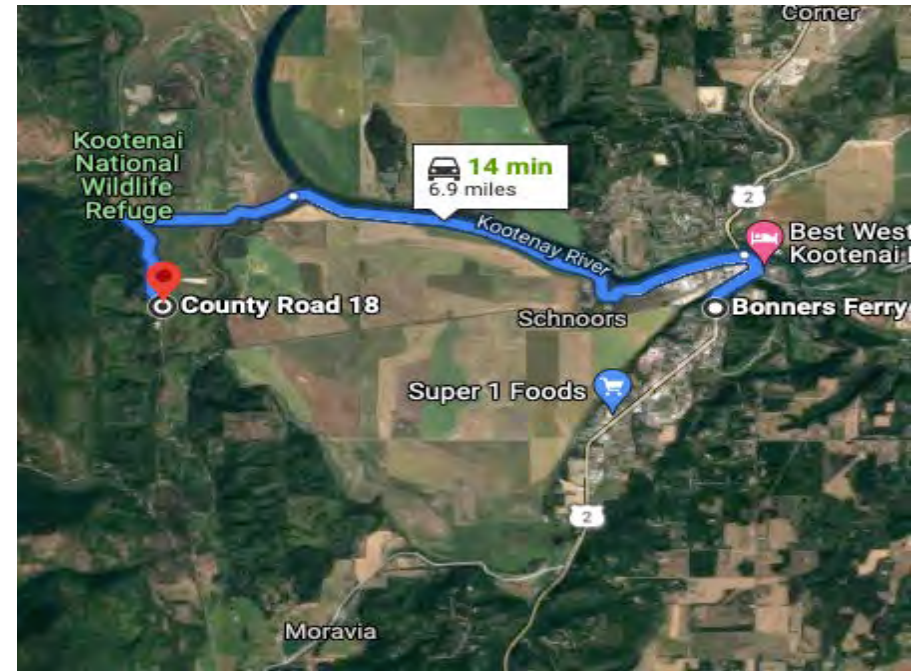


Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	On-shore anchor
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on: 09/17/2021



Overhead view of Intake at Kootenai Wildlife Refuge



Address: County Road 18, Bonners Ferry, ID 83805

Site Contacts:

Kootenai National Wildlife Refuge- 208-267-3888

Site Directions From:

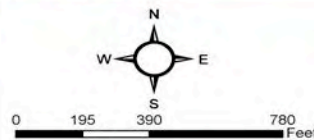
Bonners Ferry, ID

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Continue to follow US-2 E/US-95 N 0.7 m
3. Turn left onto Riverside St 3.8 mi
4. Continue onto Riverside St 1.4 mi
5. Sharp left onto West Side Rd
6. Destination will be on the left 1.0 mi

Site Lat Long:	48.707234, -116.385006 https://goo.gl/maps/gE6wqY61YhDdXJC77
Strategy Objective:	Collection/Recovery: Collect and recover spilled material flowing down the waterway from upstream source.
Implementation:	Deep Creek flow direction at strategy is south to north. Deploy containment boom and initiate spilled material recovery on river right at road bridge. Secure upstream end of boom to on-shore anchor on river left. Secure downstream end of boom to on-shore anchor on river right. Shoreline: Vegetated low bank (type 9B)
Site Safety Note:	Slip, trip, fall hazards; traffic/roadway hazards, congestion, water hazards, hazards from spilled material. Expect extreme winter conditions from November to March.
Staging Area:	YES
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Bull Trout critical and wildlife habitat.
Watercourse:	Deep Creek: Medium gradient/gravel to cobble river bed, width 30-100 ft (variable), depth 1-5 ft (variable).

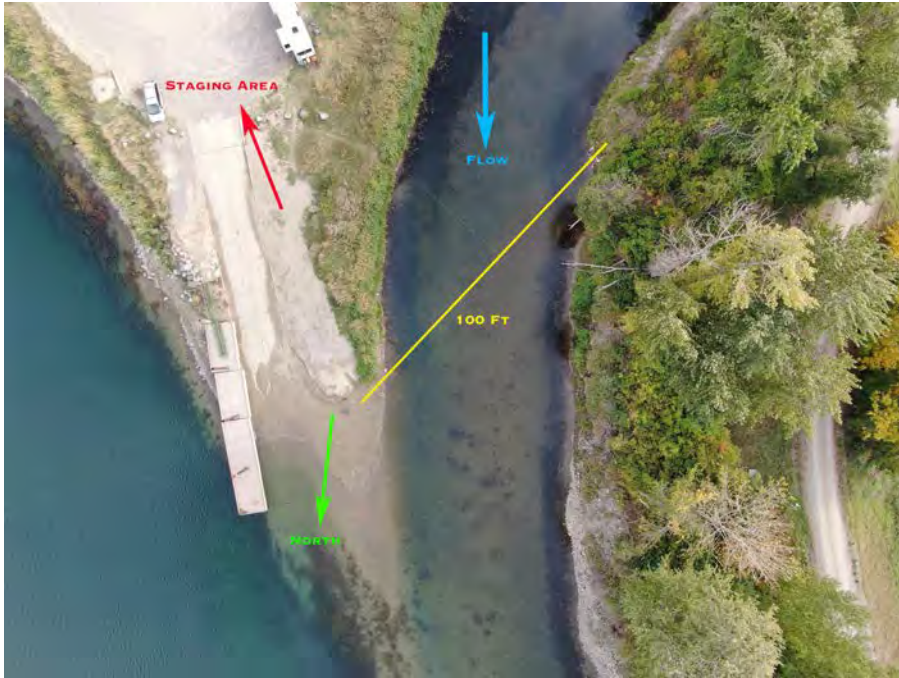


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

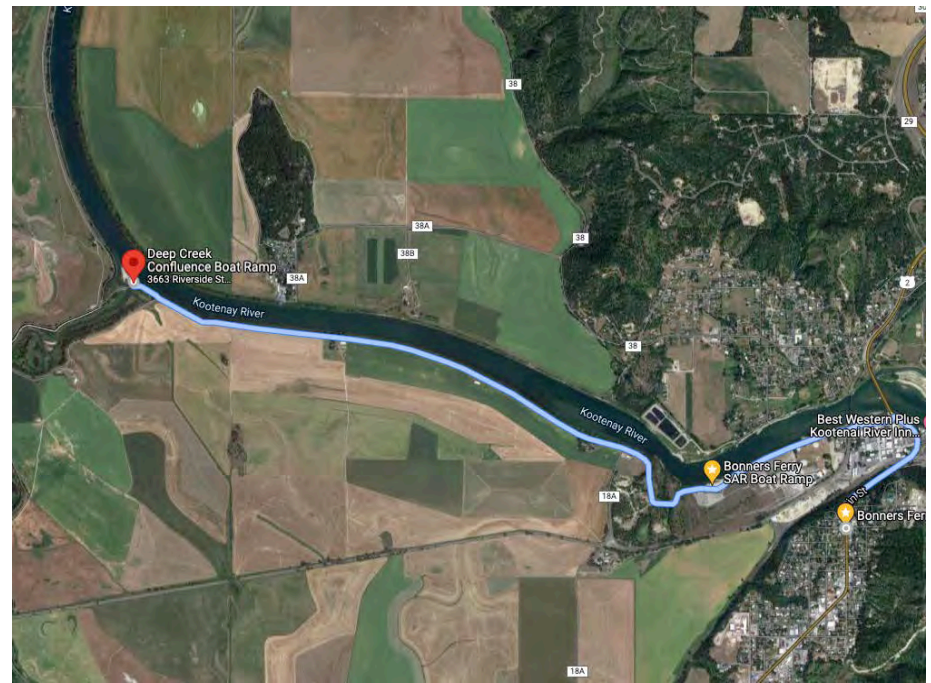


Suggested Equipment	
Quantity	Description
100 ft.	Curtain Boom / Tow Bridles
As Appropriate	Vaccum Truck; Portable Skimmer; Absorbent Boom
125 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Watercraft needed for strategy implementation? <input type="checkbox"/> No	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
0 / 0	Boat Operator / Swiftwater Tech

Visited on 09/17/2021



Overhead view of Deep Creek confluence



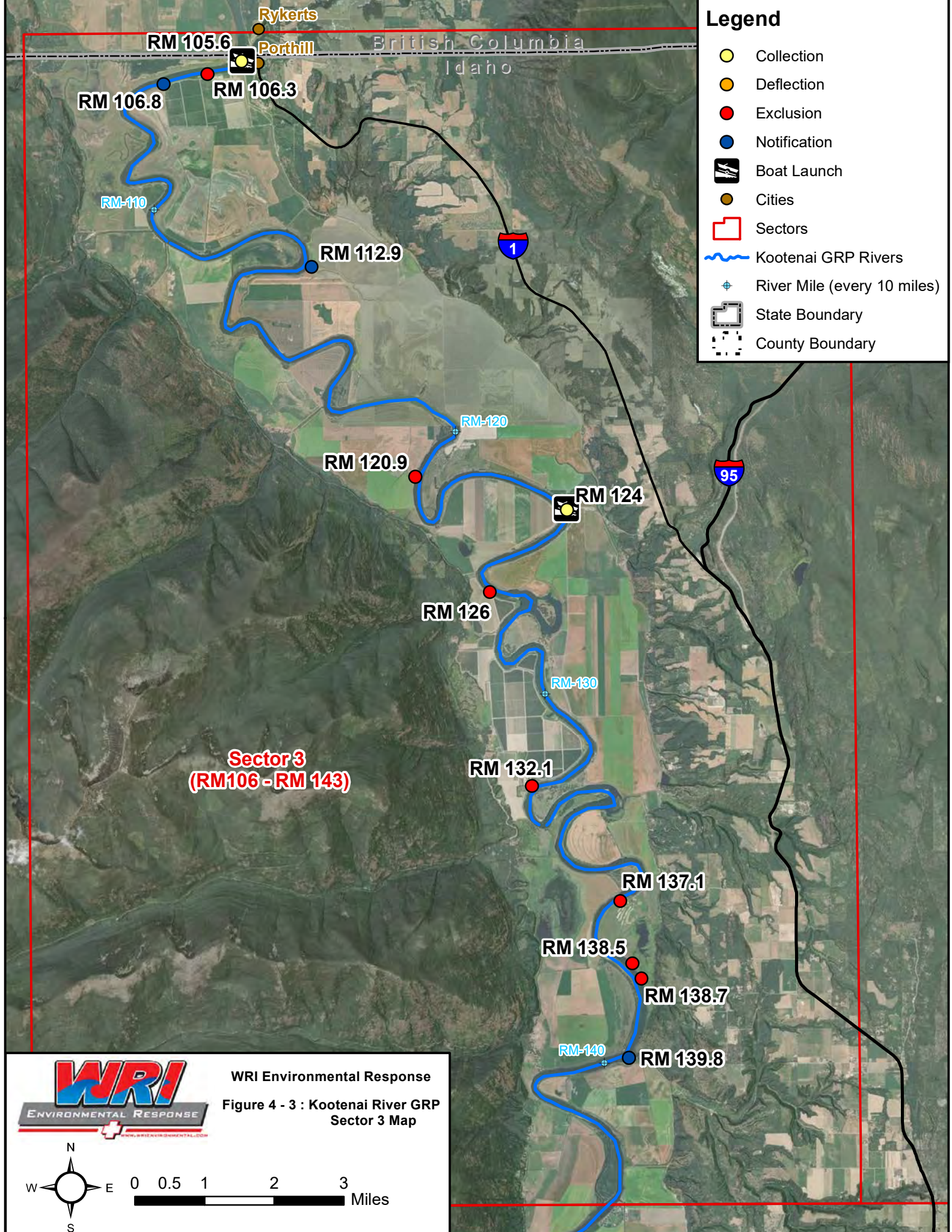
Address: 3663 Riverside St, Bonners Ferry, Id 83805

Site Contacts:

Site Directions From:

Bonners Ferry, ID

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Continue to follow US-2 E/US-95 N 0.7 mi
3. Turn left onto Riverside St
4. Destination will be on the right 3.7 mi



Legend

- Collection
- Deflection
- Exclusion
- Notification
- Boat Launch
- Cities
- Sectors
- Kootenai GRP Rivers
- River Mile (every 10 miles)
- State Boundary
- County Boundary

Sector 3
(RM106 - RM 143)



WRI Environmental Response
Figure 4 - 3 : Kootenai River GRP
Sector 3 Map

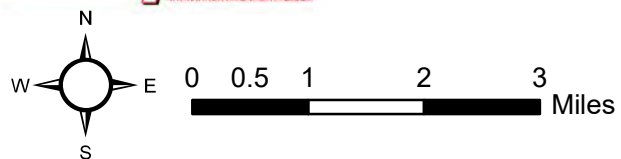


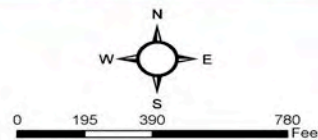
Table 4-3: Strategies RM 147.5 - 105.6 Booming Strategies, Staging Areas, and Boat Launches

Nearest Highway Milepost	Location Description	Site Type	Site Specific Notification	Location Latitude/Longitude decimal degrees	Shown on Sector Map	Adjacent Receiving Waterbody	Next Downstream Milepost (MP) and Downstream Arrow Indicator	Strategy Type					Onsite Resources		Site-Specific Notification Information and/or Strategy Implementation Notes		
								Collection and Recovery	Deflection	Exclusion	Boat Launch	Staging	Boom Length Recommended (feet)	Jet Boat Required to Implement?		Staging Onsite?	
Sector 3 : Kootenai River, Deep Creek Confluence RM 147.5 - Canadian Border RM 105.6																	
Kootenai River																	
RM147.5	National Wildlife Refuge Water Intake	Boom only	Kootenai National Wildlife Refuge (208) 267-3888	48.727451, -116.389625	3	Kootenai River	RM145.4		X	X				350	YES	No	Kootenai River flow direction at strategy is southwest to northeast. Notify Kootenai National Wildlife Refuge to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors river left.
RM145.4	Myrtle Creek	Boom only	NA	48.738241, -116.412473	3	Kootenai River	138.7		X	X				1200	YES	No	Kootenai River flow direction at strategy is east to west. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors river left below mouth of creek.
RM138.7	Nimzs Ranch 1	Boom only	Kootenai Tribal Fish Hatchery (208) 267-3620	48.807327, -116.379466	3	Kootenai River	138.5		X	X				150	YES	No	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000.
RM138.5	Nimzs Ranch 2	Boom only	Kootenai Tribal Fish Hatchery (208) 267-3620	48.810422, -116.382352	3	Kootenai River	137.1		X	X				150	YES	No	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000.
RM137.1	Nimzs Ranch 3	Boom only	Kootenai Tribal Fish Hatchery (208) 267-3620	48.823574, -116.386164	3	Kootenai River	132.1		X	X				500	YES	No	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000.
RM132.1	Elk Mountain Farm Intake 1	Boom only	Elk Mountain Farms (208) 267-8569	48.847474, -116.413227	3	Kootenai River	RM126		X	X				500	YES	No	Kootenai River flow direction at strategy is south to north. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors river left. Secure downstream end of boom to on-shore anchors river left below Intake.
RM126	Elk Mountain Farm Intake 2	Boom only	Elk Mountain Farms (208) 267-8569	48.88791, -116.42621	3	Kootenai River	RM124		X	X				250	YES	No	Kootenai River flow direction at strategy is east to west. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river left below intake.
RM124	Copeland Boat Launch	Boom and boat launch	NA	48.905024, -116.402077	3	Kootenai River	RM120.9	X			X	X		600	YES	Yes	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river right below Boat ramp. Vacuum truck and boat access at collection point.
RM120.9	Parker Creek Ranch	Boom only	Parker Creek Ranch (208) 267-2585	48.912032, -116.449328	3	Kootenai River	RM106.3		X	X				250	YES	No	Kootenai River flow direction at strategy is south to north. Notify Parker Creek Ranch to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river left below intake.
RM106.3	Lower Elk Mountain Farm Intake Right	Boom only	Elk Mountain Farms (208) 267-8569	48.996053, -116.514171	3	Kootenai River	RM105.6		X	X				250	YES	No	Kootenai River flow direction at strategy is southwest to northeast. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchors on river right below intake.
RM105.6	Porthill Boat Ramp	Boom and boat launch	NA	48.998756, -116.503311	3	Kootenai River	NA	X			X	X		750	YES	Yes	Kootenai River flow direction at strategy is south to north. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river right.

Site Lat Long:	48.727451, -116.389625 https://goo.gl/maps/LsYZGsCWVN6oZ9XV7
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering NWR Water Intake.
Implementation:	Kootenai River flow direction at strategy is southwest to northeast. Notify Kootenai National Wildlife Refuge to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors river left. Shoreline: Vegetated, steeply sloping bluff (type 8F).
Site Safety Note:	Slip, trip and fall hazards; water hazards, pump equipment and electrical; hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Deep Creek Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	National Wildlife Refuge, Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)

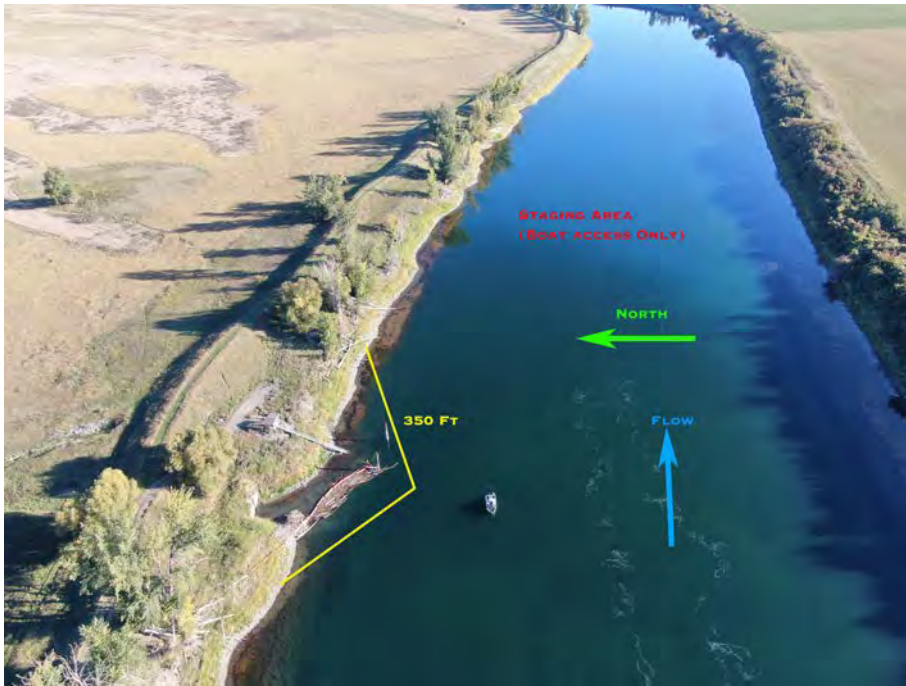


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

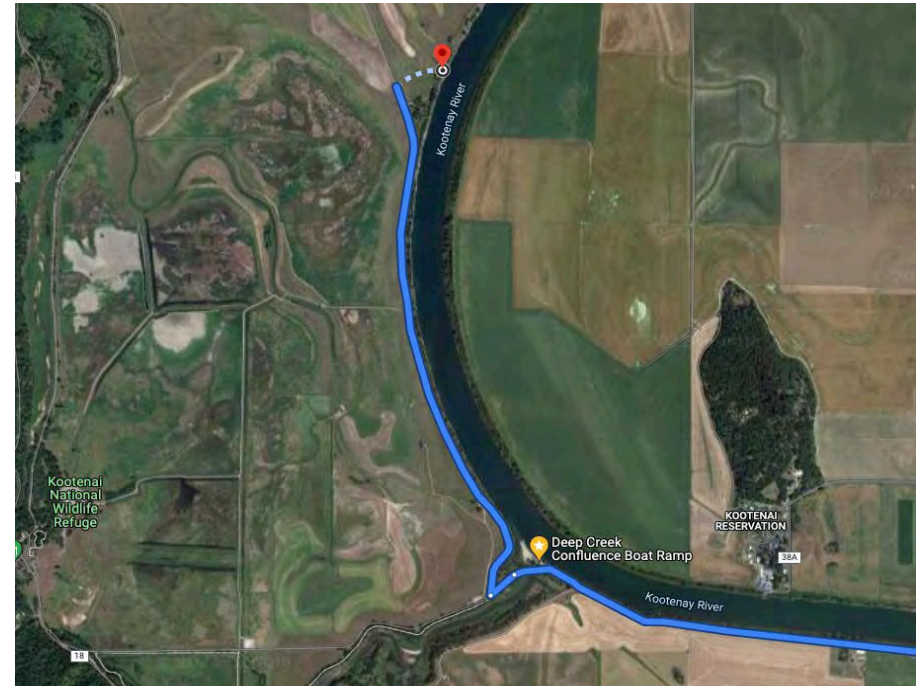


Suggested Equipment	
Quantity	Description
350 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
425 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In-water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking downstream at Refuge Water Intake



Nearest Address: 3663 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Kootenai National Wildlife Refuge (208) 267-3888

Site Directions From:

Bonners Ferry, ID

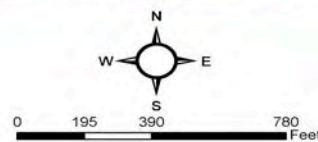
Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Stay on Riverside St for 3.8 mi
4. Arrive at Boat Launch

Site Lat Long:	48.738241, -116.412473 https://goo.gl/maps/8ZL6jz1p6vkmibdw6
Strategy Objective:	Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from entering Myrtle Creek.
Implementation:	Kootenai River flow direction at strategy is east to west. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors river left below mouth of creek. Shoreline: Sheltered vegetated, steeply sloping bluff (type 8F).
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Deep Creek Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	National Wildlife Refuge, Sensitive Habitat, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

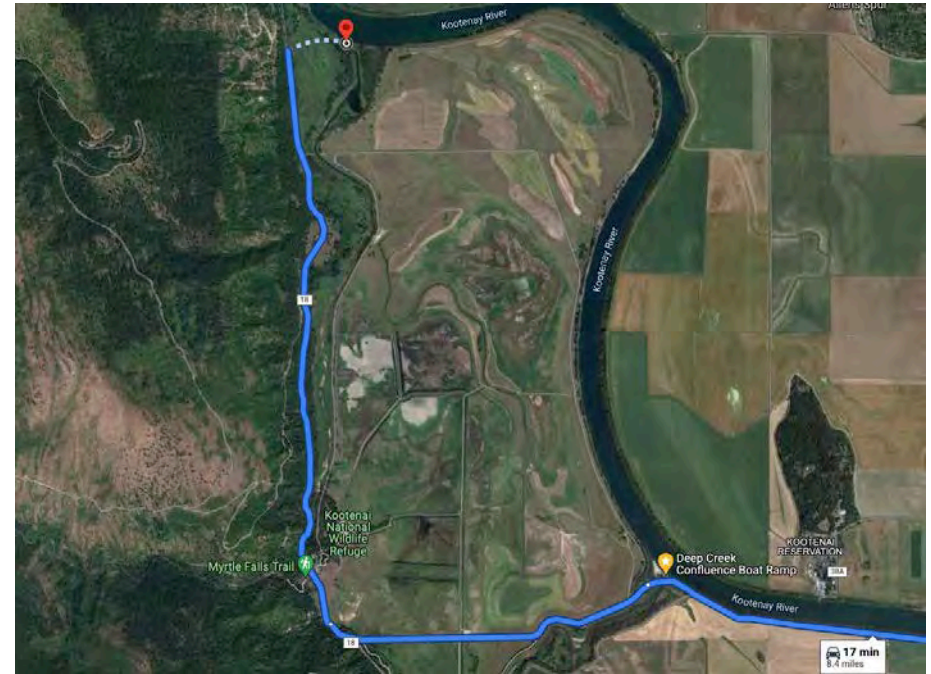


Suggested Equipment	
Quantity	Description
400 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
500 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View from above confluence of Myrtle Creek and the Kootenai River



Nearest Address: 3663 Riverside St, Bonners Ferry, ID 83805

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

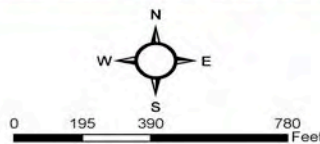
Access to deployment site is via boat - directions are to nearest boat ramp/staging area.

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Turn left onto Riverside St
3. Stay on Riverside St for 3.8 mi
4. Arrive at Boat Launch

Site Lat Long:	48.807327, -116.379466 https://goo.gl/maps/9mtMVLTN3cV1Pyg66
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from habitat water intake.
Implementation:	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. Shoreline: Rip-rap (type 6B) and Vegetated, sloping (type 8F). HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000 .
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)

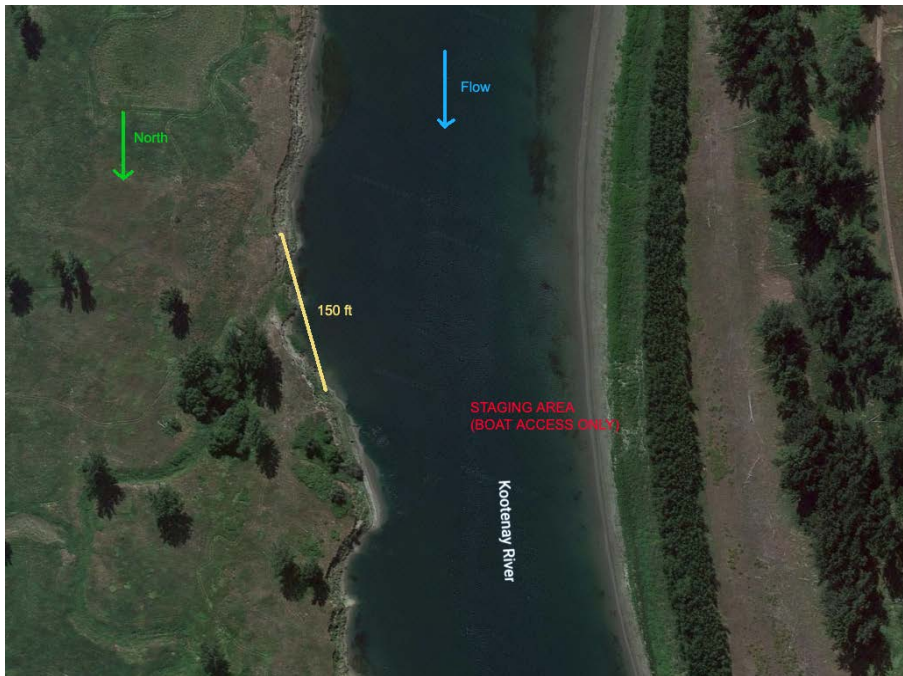


Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

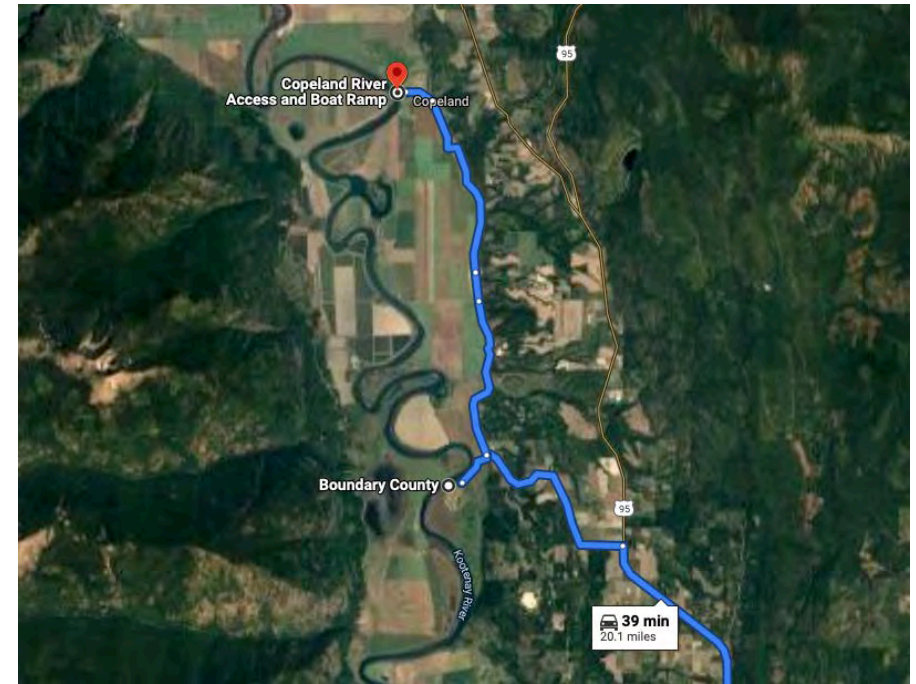


Suggested Equipment	
Quantity	Description
150 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
200 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



Looking from above Nimzs Ranch Intake



Nearest Address: 2918 Turner Hill Rd, Bonners Ferry, ID 83805

Site Contacts:

Kootenai Tribal Fish Hatchery (208-267-3620),

Site Directions From:

Bonners Ferry, ID

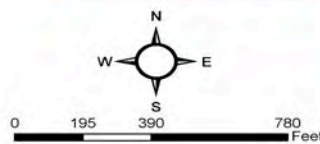
Access to deployment site is via boat - nearest boat ramp/staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.810422, -116.382352 https://goo.gl/maps/254G5LjZNbgVb37fA
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from habitat water intake.
Implementation:	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. Shoreline: Rip-rap (type 6B) and Vegetated, sloping (type 8F). HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000 .
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

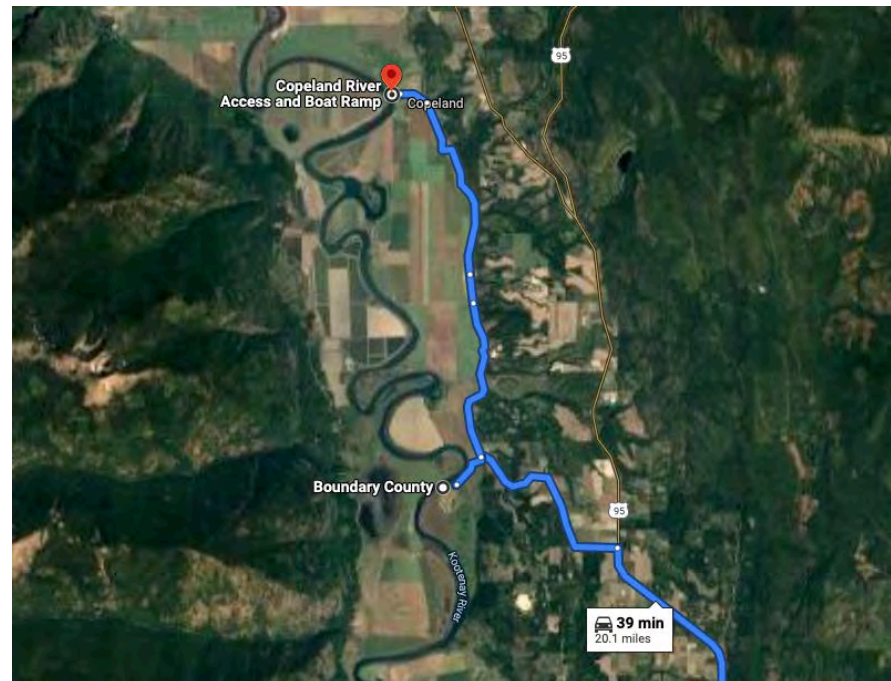


Suggested Equipment	
Quantity	Description
150ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
200ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking from above Nimzs Ranch Intake 2



Nearest Address: 2918 Turner Hill Rd, Bonners Ferry, ID 83805

Site Contacts:

Kootenai Tribal Fish Hatchery (208-267-3620),

Site Directions From:

Bonners Ferry, ID

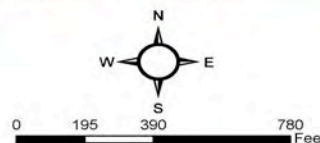
Access to deployment site is via boat - nearest boat ramp/staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.823574, -116.386164 https://goo.gl/maps/B8euWbd4169XK4Kj7
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from habitat water intake.
Implementation:	Kootenai River flow direction at strategy is southwest to northeast. Notify the KTOI Fish Hatchery. Secure upstream end of boom to on-shore anchors river right. Secure downstream end of boom to on-shore anchors river right below intake. Shoreline: Rip-rap (type 6B) and Vegetated, sloping (type 8F). HIGH FLOW ONLY - Applicable only when flows are above 57 ft on the Klockmann Ranch Gage: USGS 12314000 .
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



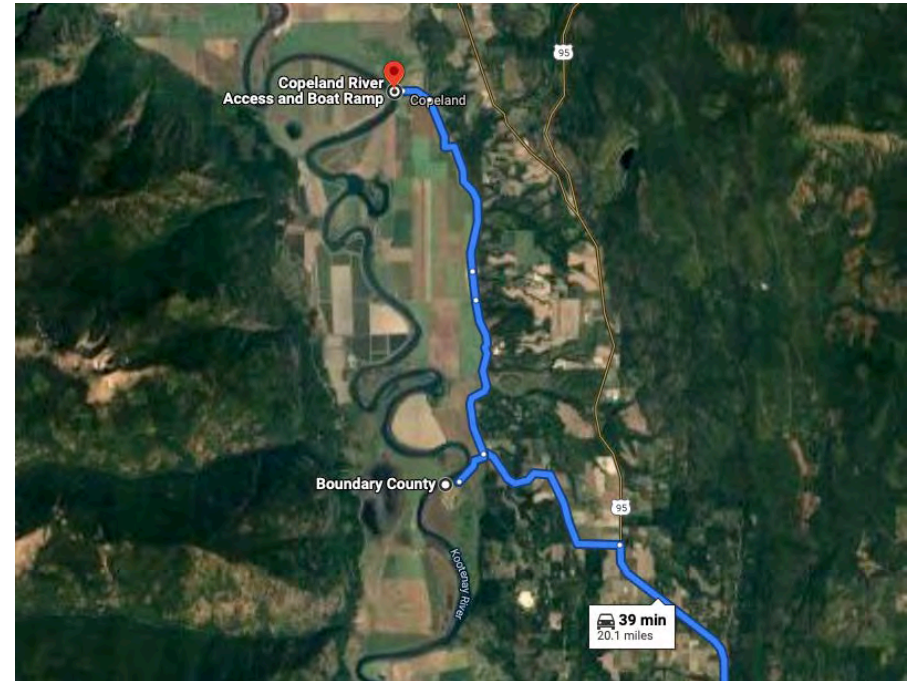
Suggested Equipment	
Quantity	Description
500 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
625 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking from above Nimzs Ranch Intake 3



Nearest Address: 2918 Turner Hill Rd, Bonners Ferry, ID 83805

Site Contacts:

Kootenai Tribal Fish Hatchery (208-267-3620),

Site Directions From:

Bonners Ferry, ID

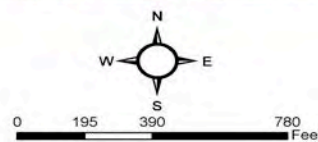
Access to deployment site is via boat - nearest boat ramp/staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.847474, -116.413227 https://goo.gl/maps/M5hM9JxCT9QcXv536
Strategy Objective:	Notification and Exclusion: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials from irrigation intake.
Implementation:	Kootenai River flow direction at strategy is south to north. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors river left. Secure downstream end of boom to on-shore anchors river left below Intake. Shoreline: Rip-rap (type 6B) and sheltered, solid man-made structures (type 8)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland Boat Launch.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY.
Resources Targeted:	Irrigation Intake, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



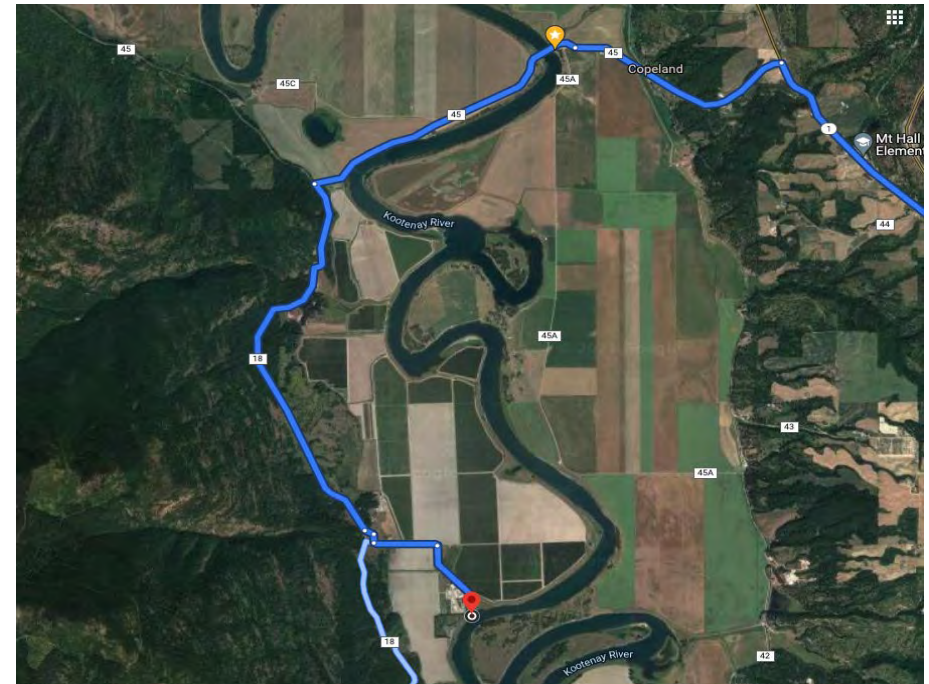
Suggested Equipment	
Quantity	Description
500 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
625 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking downstream at Elk MTN Irrigation Intake



Nearest Address: 822 Budwieser Loop, Bonners Ferry, ID 83805

Site Contacts:

Elk Mountain Farms (208) 267-8569

Site Directions From:

Bonners Ferry, ID

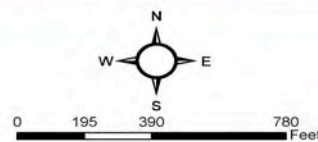
Access to deployment site is via boat - nearest boat ramp/staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.88791 -116.42621 https://goo.gl/maps/rAG5QVXSzVLTHWpN7
Strategy Objective:	Notification and Exclusion/Deflection: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials.
Implementation:	Kootenai River flow direction at strategy is east to west. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river left below intake. Shoreline: Rip-rap (6B) and sheltered, solid man-made structures (Type 8)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland boat launch area.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY
Resources Targeted:	Irrigation Intake.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



Suggested Equipment	
Quantity	Description
250 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
325 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
2 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

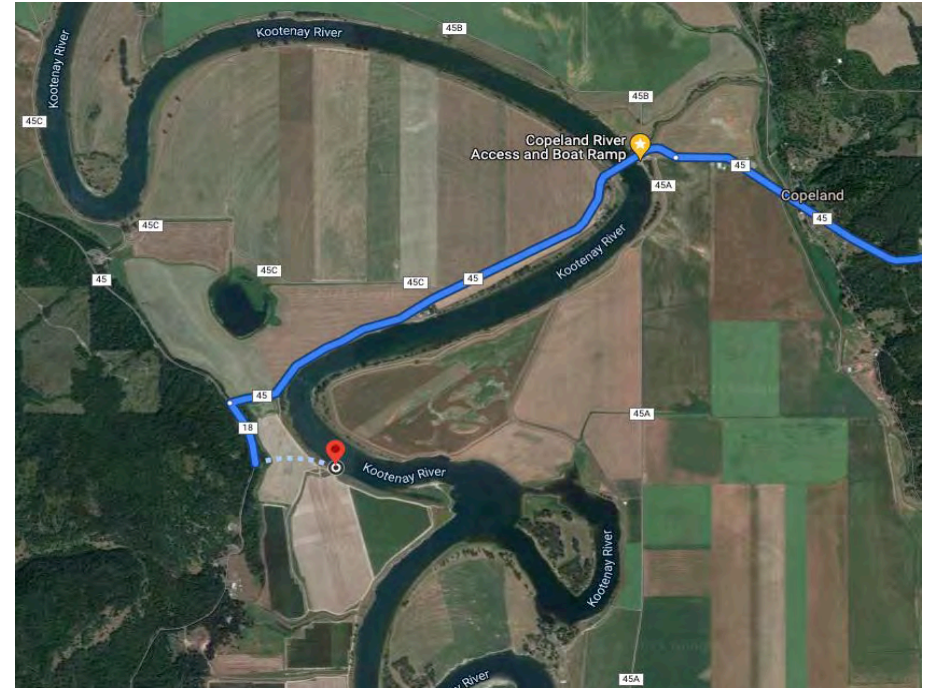
Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking downstream at Elk Mountain Farms Irrigation Intake

Site Contacts:

Elk Mountain Farms (208-267-8569)



Nearest Address: Copeland River Access and Boat Ramp - CO Rd 45

Site Directions From:

Bonnors Ferry, ID

Access to deployment site is via boat - nearest boat ramp/
staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.905024, -116.402077 https://goo.gl/maps/c6QWwWmAnsU68rFd8
Strategy Objective:	Collection/Recovery: Collection and recovery of spilled material flowing down the waterway from upstream source. Deploy boom to collect and recover spilled materials
Implementation:	Kootenai River flow direction at strategy is southeast to northwest. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river right below Boat ramp. Vacuum truck and boat access at collection point. Shoreline: Sandy bar/grass gently sloping (type 4); River right Rip-rap (type 6B) and sheltered, solid man-made structures (type 8)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	YES
Field Notes:	4WD Access: NO Locked Gate: NO
Resources Targeted:	Irrigation Intake, Wildlife Habitat, and T & E species.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)

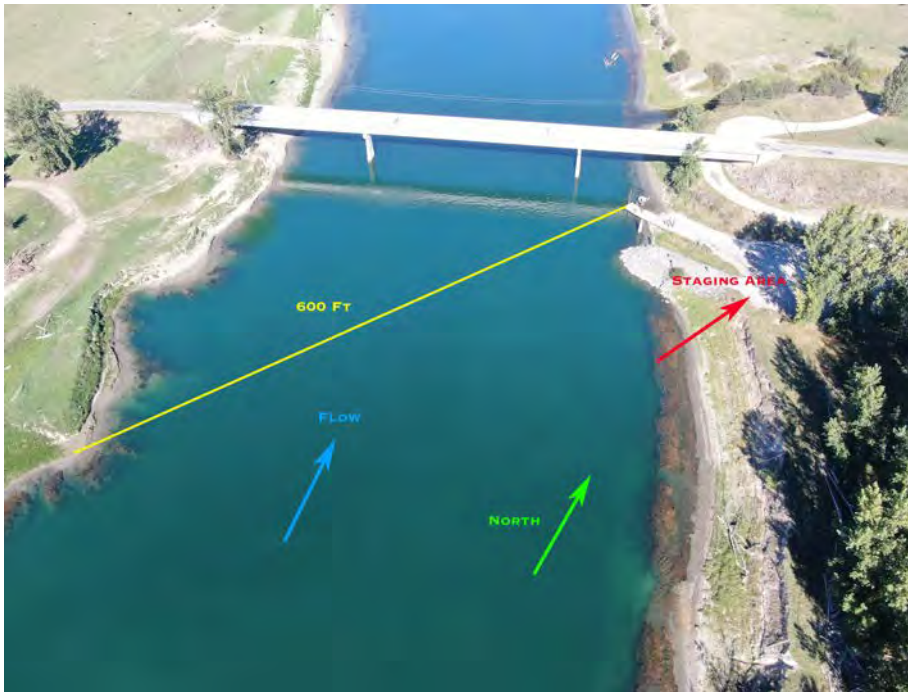


● Collection	Boat Launch	▲ Anchors
○ Deflection	Collection Boom	Staging Area
● Exclusion	Deflection Boom	
● Notification	Exclusion Boom	



Suggested Equipment	
Quantity	Description
600 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom, skimmer, vacuum truck, etc
900 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
4 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking downstream at Copeland Boat Launch



Nearest Address: Copeland River Access and Boat Ramp- CO Rd 45

Site Contacts:

Site Directions From:

Bonnors Ferry, ID

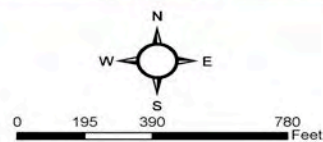
Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.912032, -116.449328 https://goo.gl/maps/rAG5QVXSzVLTHWpN7
Strategy Objective:	Notification and Exclusion/Deflection: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials.
Implementation:	Kootenai River flow direction at strategy is south to north. Notify Parker Creek Ranch to shut off pump. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river left below intake. Shoreline: Rip-rap (6B) and sheltered, solid man-made structures (type 8)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Copeland boat launch area.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY
Resources Targeted:	Irrigation Intake.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



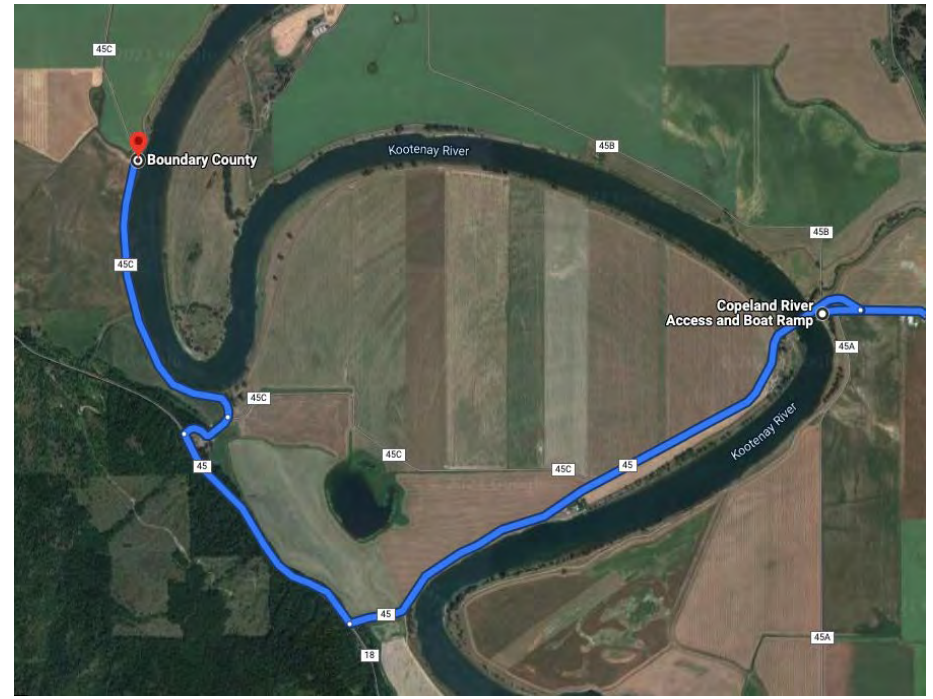
Suggested Equipment	
Quantity	Description
250 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
325 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking upstream at Parker Creek Ranch Irrigation Intake



Nearest Address: Copeland River Access and Boat Ramp- CO Rd 45

Site Contacts:

Parker Creek Ranch (208) 267-2585

Site Directions From:

Bonnors Ferry, ID

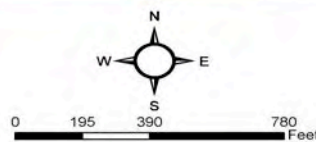
Access to deployment site is via boat - nearest boat ramp/
staging area - Copeland Boat Launch

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Co Rd 45
4. Left at Copeland Boat Launch

Site Lat Long:	48.996053, -116.514171 https://goo.gl/maps/CSTsZZGay7P3CRm36
Strategy Objective:	Notification and Exclusion/Deflection: Exclusion of spilled material flowing down the waterway from upstream source. Deploy boom to exclude spilled materials.
Implementation:	Kootenai River flow direction at strategy is southwest to northeast. Notify Elk Mountain Farms to shut off pump. Secure upstream end of boom to on-shore anchors on river right. Secure downstream end of boom to on-shore anchors on river right below intake. Shoreline: Rip-rap (6B) and sheltered, solid man-made structures (type 8)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	NO Nearest: Porthill boat launch area.
Field Notes:	4WD Access: NO Locked Gate: NO Response is by water ONLY
Resources Targeted:	Irrigation Intake.
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	

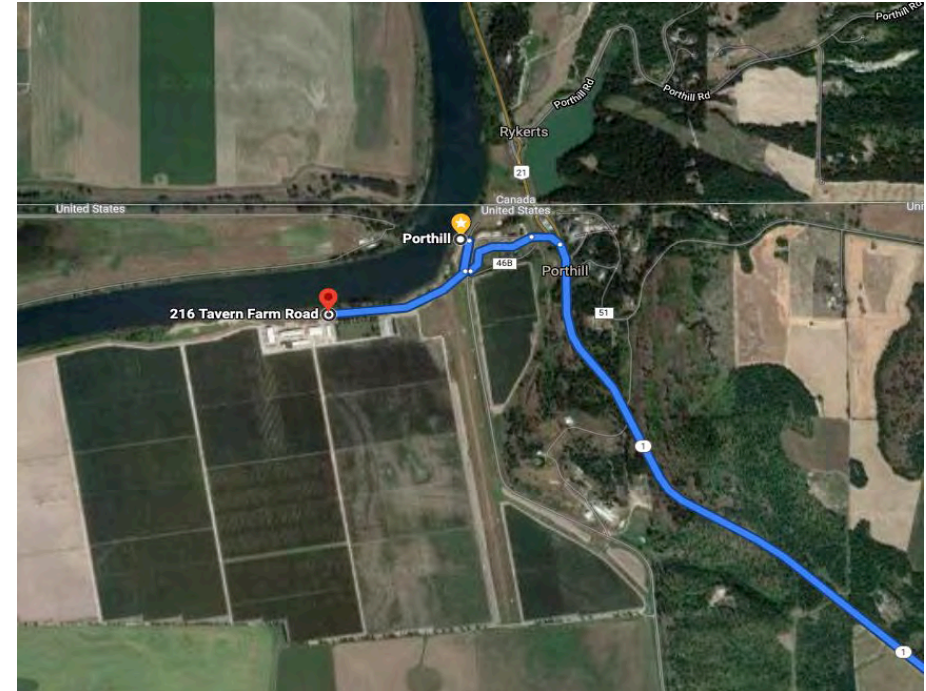


Suggested Equipment	
Quantity	Description
250 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom
325 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	
Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
1 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking upstream at Elk Mountain Farms Irrigation Intake



Nearest Address: Porthill River Access and Boat Ramp

Site Contacts:

Elk Mountain Farms (208-267-8569)

Site Directions From:

Bonnors Ferry, ID

Access to deployment site is via boat - nearest boat ramp/
staging area at Porthill River Access

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Main St
4. Left onto Farm to Market
5. Right into River access

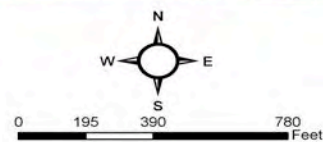
Porthill Boat Ramp

RM 105.6

Site Lat Long:	48.998756, -116.503311 https://goo.gl/maps/8haCJh3EDxKJCXw8
Strategy Objective:	Collection/Recovery: Collection and Recovery of spilled material flowing down the waterway from upstream source. Deploy boom to collect and recover spilled materials.
Implementation:	Kootenai River flow direction at strategy is south to north. Secure upstream end of boom to on-shore anchors on river left. Secure downstream end of boom to on-shore anchors on river right. Shoreline: sheltered, vegetated, low bank (type 9B)
Site Safety Note:	Slip, trip and fall hazards; water hazards, hazards from spilled materials; expect extreme winter conditions November to March.
Staging Area:	YES
Field Notes:	4WD Access: NO Locked Gate: NO Deep water boat ramp onsite
Resources Targeted:	Wildlife habitat, T & E species, recreational use, downstream Irrigation and municipal water supplies, international boundary
Watercourse:	Kootenai River: low gradient, discontinuous sand to cobble river bed, width 300-700 feet (variable), depth 5-35 feet (variable)



Collection	Boat Launch	Anchors
Deflection	Collection Boom	Staging Area
Exclusion	Deflection Boom	
Notification	Exclusion Boom	



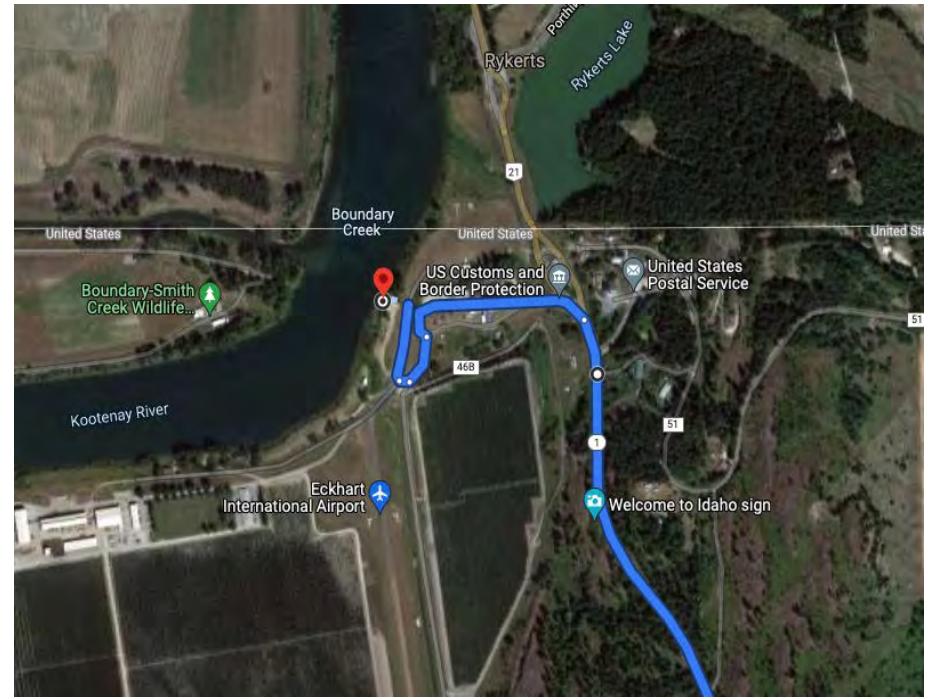
Suggested Equipment	
Quantity	Description
750 ft.	Curtain Boom / Tow Bridles
As Appropriate	Absorbent Boom, skimmer, vacuum truck, etc
1000 ft.	Rope
2	On-shore Anchors
As Appropriate	Post pounder, shovels, knife, wood saw
0	In Water Anchors
As Appropriate	PFD work vests/rubber boots
As Appropriate	Throw bags, first aid kit
Jet boat/raft needed for strategy implementation? <input checked="" type="checkbox"/> Y	

Suggested Personnel	
Quantity	Description
1	Hazmat Supervisor
1	Safety Supervisor
4 / 0	Hazmat Field Techs / Traffic Flagger
1 / 1	Boat Operator / Swiftwater Tech

Visited on 09/17/2021 River Discharge in CFS: 9,000



View looking upstream at Porthill Boat Ramp and River Access



Nearest Address: Porthill River Access and Boat Ramp

Site Contacts:

Site Directions From:

Bonnars Ferry, ID

1. Head north on US-2 E/US-95 N/Main St toward Madison St
2. Left onto ID-1N
3. Left onto Main St
4. Right onto Farm to Market

4.3 Protection/Collection Priorities for Kootenai River and Deep Creek Scenarios

The following table may be used as a guideline for initiating spill response action along the Kootenai River and Deep Creek. This table offers a general guideline. Spill location, response time, weather, water levels, and type of spill may all affect the responder's ability to initiate product recovery.

The Kootenai River upstream of Bonners Ferry is generally faster moving, braided and difficult to access. Most strategies on the Kootenai River require the use of a jet boat. Below the City of Bonners Ferry, there is more access, and the river slows and becomes more channelized, use of a motorized boat is still required.

Procedures:

The first priority in an emergency spill response is safety. Personal and group safety is paramount to the success of spill response operations. Ensure that everyone in the group has the proper equipment and training before engaging in spill response operations. The second priority of the responders is to contain the source of the spill. It is important to contain the source of the spill, and thereby limit the amount of product introduced into the river. Once the source of the spill has been contained, or concurrent to source containment if there are adequate personnel, begin initiating downstream collection and mechanical recovery.

Table 4-4: Priorities of Work

Priority	Strategy	Comments
1	Contain the Source of the Spill	Mobilize response units to contain the source of the spill.
2	Strategy 161.0 and 151.7	If spill is upstream of river mile 161, implement Hatchery intake exclusion/notification strategy 161.0 Twin Rivers and collection strategy 151.7 Bonners Ferry SAR boat ramp
3	Strategy 149.6 and 149.0	If spill is upstream of City of Bonners Ferry and there is the possibility of product passing Strategy 151.7. Implement notification of Hatchery per Strategy 149.0
4	Strategy 149.0, 124.0, 105.6	If spill is downstream of City of Bonners Ferry
5	Strategy 20.0, 12.6, 12.4 and 0.0 of Deep Creek	If spill is south of City of Bonners Ferry along Deep Creek
6	Work back upstream from Collection Site towards source containment	As resources become available, implement additional strategies and recovery efforts between downstream collection site and upstream source containment.

Refer to Strategy Tables and Maps for exact locations of strategies ([Section 4.2](#))

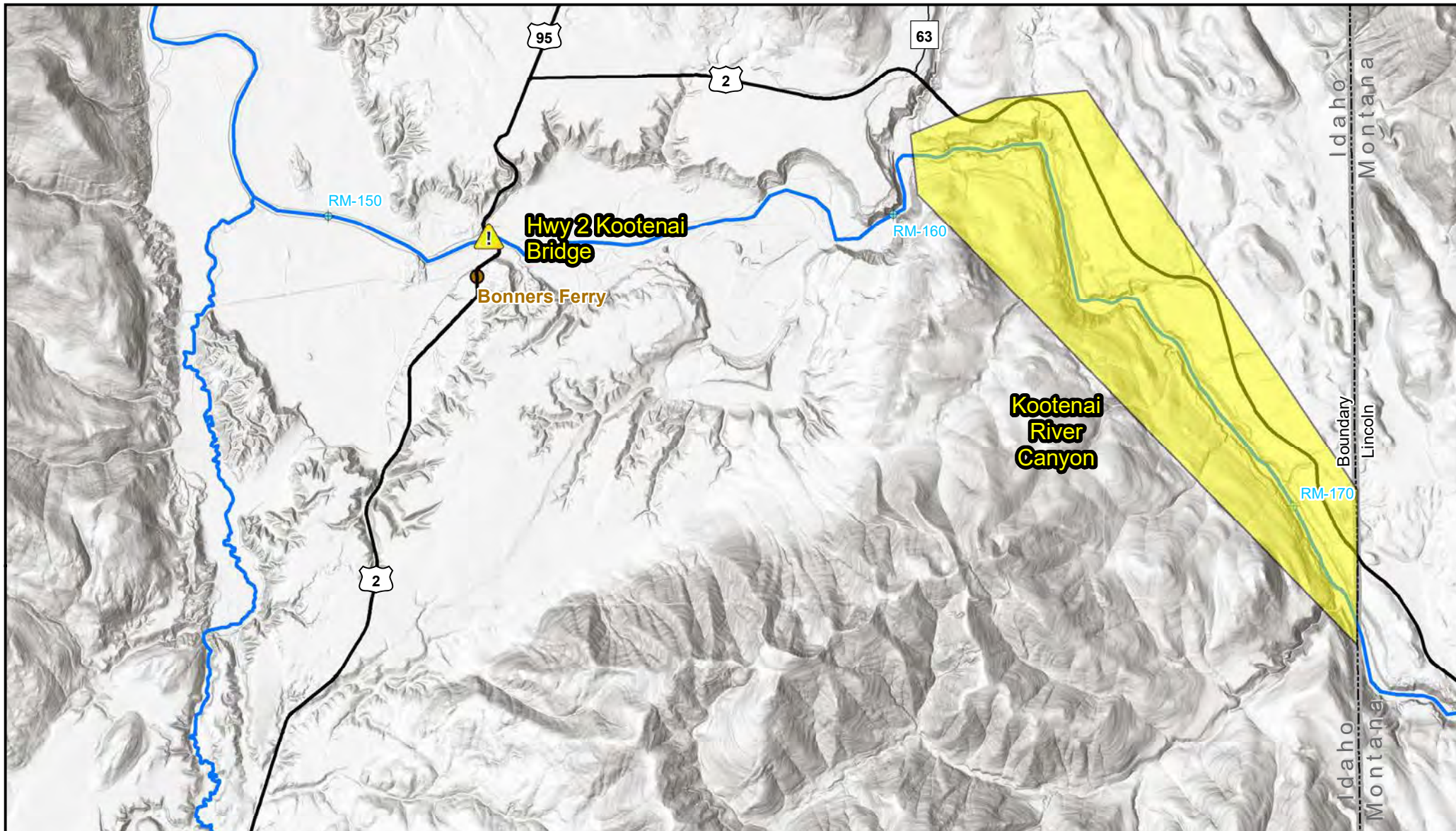
4.4 Priority Tables

Certain locations along Deep Creek and Kootenai River are more susceptible to rail or vehicle accidents. Lacking any formal study on the rail and highway corridors, sites were evaluated during the data collection process for sharp curves, bridges, tunnels, canyons and other areas where accidents are more likely. 3 areas of higher risk are identified:

- RM 172.0 (Canyon area)
RM 159.0
- RM 153.0 (Bonners Ferry)
RM 152.0
- RM 15.0 (Deep Creek)
RM 14.0

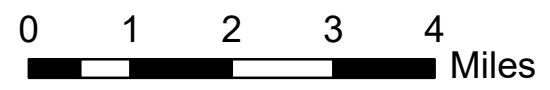
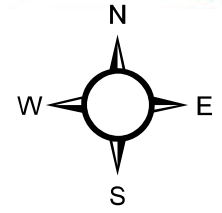
Table 4-5 attempts to give responders a realistic location for mobilization. These locations were determined by factoring in a 6-hour mobilization time from Spokane, WA (nearest response contractors). The mobilization time is to Bonners Ferry, ID, assumes that responders will require 1.5 hours to initiate mobilization, will be driving 35 mph, and will require 1.5 hours to complete a strategy. Current speed was estimated on high water/wet year flow rates and recreational float times on rivers. The assumption made was that the Kootenai River speed was 6 miles per hour and Deep Creek speed was 3 miles per hour.

The tables suggest staging areas, boat ramps, response strategies, and needed key equipment. The order in which the strategies are deployed is dependent entirely on the location of an accident in that hazard zone. The incident commander will need to make a field judgment on which strategy to deploy first.



Legend

- Cities
- ~ Kootenai GRP Rivers
- + River Mile (every 10 miles)
- State Boundary
- County Boundary



WRI Environmental Response
 Figure 4 - 4 : Kootenai River GRP
 Hazard Prioritization Map

High Risk Points Upper Canyon Area		RM 172.0 – RM 159.0					
		Sector Map 1					
General Strategy Description	Product Collection and Recovery and Resource Protection						
Staging Area	Site ID						
Twin Rivers	161.0						
Bonnars Ferry SAR	151.5						
Suggested Boat Launches	Site ID						
Twin Rivers	161.0						
Bonnars Ferry SAR	151.5						
Suggested Strategies	Site ID	Equipment Needs					
		Curtain Boom	Recovery Device	Rope	On shore Anchors	In-water Anchors	Boat?
Twin River Hatchery	161.0	300 ft	N/A	375 ft	1	1	No
Restored Habitat 158.6	158.6	1200 ft	N/A	2400 ft	4	4	Yes
Restored Habitat 157.0	157.0	750 ft	N/A	1000 ft	2	0	Yes
Restored Habitat 154.5	154.5	1800 ft	N/A	2400 ft	2	0	Yes
Restored Habitat 153.3	153.3	200 ft	N/A	250 ft	1	1	Yes
Restored Habitat 152.9	152.9	600 ft	N/A	850 ft	2	0	Yes
Bonnars Ferry Intake	153.0	50 ft	N/A	75 ft	2	0	Yes
Bonnars Ferry SAR	151.5	1700 ft	Skimmer, Vac Truck	2000 ft	2	0	Yes

High Risk Point		RM 153.0 – 152.0					
Bonnars Ferry		Sector Map 1					
General Strategy Description	Product Collection and Recovery and Resource Protection						
Staging Area	Site ID						
Bonnars Ferry SAR	151.7						
Suggested Boat Launches	Site ID						
Bonnars Ferry SAR	151.7						
Deep Creek Confluence	149.0						
Suggested Strategies	Site ID	Equipment Needs					
		Curtain Boom	Recovery Device	Rope	On-shore Anchors	In-water Anchors	Boat?
Bonnars Ferry SAR	151.7	1700 ft	Skimmer, Vac Truck	2000 ft	2	0	Yes
KTOI Hatchery Intake	149.6	300 ft	N/A (Exclusion)	375 ft	2	0	Yes
Deep Creek Confluence	149.0	2000 ft	Skimmer, Vac Truck	2500 ft	2	0	Yes

High Risk Point		RM 15-14					
Deep Creek		Sector Map 3					
General Strategy Description	Product Collection and Recovery and Resource Protection						
Staging Area	Site ID						
McArthur Lake WMA	20.0						
Deep Creek Confluence	0.0						
Suggested Boat Launches	Site ID						
Deep Creek Confluence	0.0						
Suggested Strategies	Site ID	Equipment Needs					
		Curtain Boom	Recovery Device	Rope	On-shore Anchors	In-water Anchors	Boat?
Highland Flats Bridge	12.6	100 ft	Skimmer, Vac Truck	125 ft	2	0	No
Campground Bridge	12.4	100 ft	Skimmer, Vac Truck	125 ft	2	0	No
Deep Creek Confluence	0.0	100 ft	Skimmer, Vac Truck	125 ft	2	0	Yes

Section 5: Shoreline Countermeasures

5. Shoreline Countermeasures

Note: At this time, shoreline type mapping has not been completed on the Kootenai River. Until such an effort is undertaken, a series of photographs showing example shoreline types is included. These shoreline types can be matched with the shoreline countermeasures matrix to determine appropriate cleanup response.

5.1 Chapter Overview

The following text and photos are in draft form, and are intended to serve as a training tool for countermeasure contingency planning and implementation for shoreline areas in Federal Region 10. Shoreline countermeasure processes evolve to reflect increasingly efficient treatment techniques. Accordingly, the following information will be altered as new information is added.

5.2 Shoreline Type Photos

Because shoreline type mapping has not been completed for this portion of the Kootenai River, photos of six typical shorelines (types 1, 4, 5, 6, 8, and 9) and their associated codes are shown on pages 5-2 through 5-4. A full list of shoreline types is provided in [Section 5.3.1](#).

5.3 Oil Countermeasure Matrix

Shoreline countermeasures following an oil spill are a critical element in determining the ultimate environmental impact and cost resulting from a spill. Local response organizations and agencies have developed mechanisms for identifying shorelines requiring treatment, establishing treatment priorities, monitoring the effectiveness and impacts of treatment, and for resolving problems as the treatment progresses.

The Northwest Area Committee has developed a manual and a series of matrices as tools for shoreline countermeasure response. The shoreline countermeasures matrices and manual will be included as a technical appendix to the Northwest Area Contingency Plan.

Each section of the manual has been adapted to the specific environments, priorities, and treatment methods appropriate to the planning area. These elements provide the information needed to select cleanup methods for specific combinations of shoreline and oil types. Local information on shoreline types (discussed in Chapter 2 of the Northwest Area Contingency Plan) can be obtained from Environmental Sensitivity Index (ESI) atlases prepared by NOAA for northern and southern Puget Sound, the Washington and Oregon coast, and the Columbia River.

The NW Area Contingency Plan can be obtained from the internet at <https://www.rrt10nwac.com/NWACP/Default.aspx>



Shoreline Type 1A: Exposed rocky banks.



Shoreline Type 4: Sandy bar and gently sloping banks (bottom left in photo)



Shoreline Type 5: Mixed sand and gravel bars and gently sloping banks.



Shoreline Type 6: Mixed Rip rap/log and gravel bars



Shoreline Type 6A: Gravel bars and gently sloping banks.



Shoreline Type 6B: Rip rap



Shoreline Type 8: Sheltered, solid, manmade structures.



Shoreline Type 8B: Vegetated steep sloping banks.



Shoreline Type 8F: Vegetated, steeply sloping bluffs.



Shoreline Type 9B: Sheltered, vegetated, low bank.

5.3.1 Shoreline Countermeasures Matrices

Table 5-1. Very Light Oil (Jet fuels, Gasoline)

- Highly volatile (should all evaporate within 1-2 days).
- High concentration of toxic (soluble) compounds.
- Result: Localized, severe impacts to water column and shoreline resources.
- Duration of impact is a function of the resource recovery rate.
- No dispersion necessary.

SHORELINE TYPES CODES

1 - Exposed rock shores and vertical, hard man-made structure	6C - Exposed rip rap
2 - Exposed wave-cut platforms	7 - Exposed tidal flat
3 - Fine to medium grained sand beaches and steep unvegetated river banks	8A - Sheltered vertical rock shores and vertical, hard man-made structures (e.g., docks, bulkheads)
4 - Course grained sand beaches	8B - Sheltered rubble slope
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material	9A - Sheltered sand and mud flats
6A - Gravel beaches - pebbles to cobble	9B - Sheltered vegetated low bank
6B - Gravel beaches - cobbles to boulders	10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Manual removal of oil														
Passive collection of oil			C	C	C	C	C	C						
Oiled debris removal	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal														
Ambient water flooding (deluge)														C
Ambient water flush <50 psi														
Ambient water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil														
Sediment reworking			C	C	C	C								
Sediment Removal - cleaning - replacement														
Cutting oiled vegetation														
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, or cleaning														
Nutrient enhancement														
Microbial addition														

- R** Recommend - May be Preferred Alternative
- C** Conditional (Refer to NW Shoreline Countermeasures Manual)
- Shaded areas are Not Applicable or Not Generally Recommended
- * Follow approved process defined in National Contingency Plan (NCP) and NW Area Contingency Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual in the NW Area Contingency Plan plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Table 5-2. Light Oil (Diesel, No 2 Fuel Oils, Light Crudes)

- Moderately volatile; will leave residue (up to 1/3 of spilled amount).
- Moderate concentrations of toxic (soluble) compounds.
- Long-term contamination of intertidal resources possible.
- Potential for subtidal impacts (dissolution, mixing, sorption onto suspended sediments).
- No dispersion necessary.
- Cleanup can be very effective.

SHORELINE TYPES CODES

1 - Exposed rock shores and vertical, hard man-made structure	6C - Exposed rip rap
2 - Exposed wave-cut platforms	7 - Exposed tidal flat
3 - Fine to medium grained sand beaches and steep unvegetated river banks	8A - Sheltered vertical rock shores and vertical, hard man-made structures (e.g., docks, bulkheads)
4 - Course grained sand beaches	8B - Sheltered rubble slope
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material	9A - Sheltered sand and mud flats
6A - Gravel beaches - pebbles to cobble	9B - Sheltered vegetated low bank
6B - Gravel beaches - cobbles to boulders	10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil			C	C	C	C	C	C		R	R		C	
Passive collection of oil	C	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	C	R	R	R	R	R	R	C	R	R	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C								
Ambient water flooding (deluge)			C	C	C	R	R	R			C			C
Ambient water flush <50 psi		C			C	C	C	C		R	C			C
Ambient water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil							C	C						C
Sediment reworking			C	C	C	C								
Sediment Removal - cleaning - replacement			C	C	C									
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, or cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
 Shaded areas are Not Applicable or Not Generally Recommended
 * Follow approved process defined in National Contingency Plan (NCP) and NW Area Contingency Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual in the NW Area Contingency Plan plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Table 5-3. Medium Oil (Most Crude Oils & Some Heavily Weathered Light Crudes)

- About 1/3 will evaporate within 24 hours.
- Maximum water-soluble fraction is 10-100ppm.
- Oil contamination of intertidal areas can be severe and long-term.
- Impact to waterfowl and fur-bearing mammals can be severe.
- Chemical dispersion is an option within 1-2 days.
- Cleanup most effective if conducted quickly.

SHORELINE TYPES CODES

1 - Exposed rock shores and vertical, hard man-made structure	6C - Exposed rip rap
2 - Exposed wave-cut platforms	7 - Exposed tidal flat
3 - Fine to medium grained sand beaches and steep unvegetated river banks	8A - Sheltered vertical rock shores and vertical, hard man-made structures (e.g., docks, bulkheads)
4 - Course grained sand beaches	8B - Sheltered rubble slope
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material	9A - Sheltered sand and mud flats
6A - Gravel beaches - pebbles to cobble	9B - Sheltered vegetated low bank
6B - Gravel beaches - cobbles to boulders	10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	R	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C							C	
Ambient water flooding (deluge)			C	C	C	R	R	R		R	R		C	C
Ambient water flush <50 psi	C	C			C	R	C	R		R	R		C	C
Ambient water flush <100 psi	C	C					C	C		C				
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	R	R		C	R	R		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal - cleaning - replacement			C	C	C	C		C			C			
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, or cleaning														
Nutrient enhancement			C	C	C	C	C	C			C			C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
 Shaded areas are Not Applicable or Not Generally Recommended
 * Follow approved process defined in National Contingency Plan (NCP) and NW Area Contingency Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual in the NW Area Contingency Plan plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Table 5-4. Crude Oils, Intermediate Fuel Oils, Bunker C & Heavily Weathered Medium Crudes)

- Heavy oils with little or no evaporation or dissolution.
- Water-soluble fraction likely to be <10ppm.
- Heavy contamination of intertidal areas likely.
- Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion).
- Long-term contamination to sediments possible.
- Weathers very slowly.
- Dispersion seldom effective.
- Shoreline cleanup difficult under all conditions.

SHORELINE TYPES CODES

1 - Exposed rock shores and vertical, hard man-made structure	6C - Exposed rip rap
2 - Exposed wave-cut platforms	7 - Exposed tidal flat
3 - Fine to medium grained sand beaches and steep unvegetated river banks	8A - Sheltered vertical rock shores and vertical, hard man-made structures (e.g., docks, bulkheads)
4 - Course grained sand beaches	8B - Sheltered rubble slope
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material	9A - Sheltered sand and mud flats
6A - Gravel beaches - pebbles to cobble	9B - Sheltered vegetated low bank
6B - Gravel beaches - cobbles to boulders	10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C		C					C	
Ambient water flooding (deluge)			C	C	C	R	R	R		R	R		C	C
Ambient water flush <50 psi	C	C			C	R	C	R		C	C		C	C
Ambient water flush <100 psi	C	C					C	C		C	C			
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	C	C	C	C	C	C		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal - cleaning - replacement			C	C	C	C		C						
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, or cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

- R** Recommend - May be Preferred Alternative
- C** Conditional (Refer to NW Shoreline Countermeasures Manual)
- Shaded areas are Not Applicable or Not Generally Recommended
- * Follow approved process defined in National Contingency Plan (NCP) and NW Area Contingency Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual in the NW Area Contingency Plan plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Section 6: Sensitive Resource/Wildlife Flight Restriction Information

6. Sensitive Resource/Wildlife Flight Restriction Information

6.1 Overview

The Kootenai River sub-basin affords a wide variety of aquatic, riparian, and upland habitats. These varied habitats support a complex diversity of wildlife species, including large and small mammals, passerine birds, raptors, upland birds, waterfowl and wading birds, reptiles, and amphibians. Some species are resident throughout the year; others are migratory either within the sub-basin or, in many cases, seasonally migrate outside the sub-basin. Populations of certain species are very tenuous and their future presence in the sub-basin will require improved information and decisive management actions. Some of the fish and wildlife species found in the Kootenai sub-basin are classified as threatened, endangered, sensitive, or of special concern under the Endangered Species Act (ESA).

6.2 Fish

This section addresses fish use in the mainstem Kootenai River from below Libby Dam in Montana, downstream through Bonners Ferry, Idaho, and eventually to Kootenay Lake, BC. Information included in this section is summarized from the Kootenai Sub-basin Plan (<https://www.nwcouncil.org/sub-basin-plans/kootenai-sub-basin-plan>), prepared by the Kootenai Tribe of Idaho and Montana Fish Wildlife and Parks for the Northwest Power and Conservation Council.

6.2.1 Kootenai River White Sturgeon

Kootenai River White Sturgeon (*Acipenser transmontanus Richardson*) is a genetically distinct and unique population of white sturgeon that has been geographically isolated from the ocean and other Columbia River sturgeon populations for over 10,000 years (Alden 1953; Northcote 1973). On September 6, 1994, the USFWS listed the Kootenai River white sturgeon as an endangered species (59 FR 45989) under the authority of the Endangered Species Act of 1973 (USFWS 1994). Kootenai River white sturgeon rely on a large, functional river-floodplain ecosystem and are susceptible to largescale alterations and perturbations. The Kootenai River white sturgeon population is small and isolated, and has been negatively impacted by the construction of the levee system and the implementation of Libby Dam. System alteration, over-fishing, loss of wetland habitat, and a decrease in system productivity have led to recruitment failure and a declining population.

The Kootenai Tribe considers the Kootenai River White Sturgeon a species of significant cultural importance, and has religious significance. Kootenai tribal canoes were shaped like a sturgeon (sturgeon-nosed canoe).

With the declining population, Kootenai River White Sturgeon's current range is similar to its historic range although it is hypothesized that very few sturgeon travel upstream of Bonners Ferry due to dramatic habitat alteration. Kootenai River White Sturgeon inhabit the north end of Kootenay Lake, BC to the Kootenai Falls in Montana, covering over 300 river km.

Male sturgeon generally mature between 10 to 20 years while female sturgeon mature between 15 to 30 years (Scott and Crossman 1973; Semakula and Larkin 1968; Conte et al.1988). Sturgeon migrate from Kootenay Lake in the early spring, and broadcast spawn in the high waters of May through late June. Sturgeon eggs are highly adhesive and will stick to cobbles and rocky substrate where they mature. Sturgeon eggs incubate for about 7 days until they hatch. These larvae are less than 1 cm in length, are free swimming, and have a yolk sac from which they receive nourishment for 12 to 14 days. After about 20 to 30 days after hatching, sturgeon metamorphose into fry, or young-of-the-year. Once the sturgeon reaches about 10 cm, it is considered a juvenile and can freely swim and actively feed on a variety of food items.

The Kootenai Tribe of Idaho has an operational sturgeon hatchery just downstream of Bonners Ferry. The conservation aquaculture program for Kootenai River White Sturgeon is to prevent extinction while also ensuring genetic diversity while mitigation efforts and habitat restoration occur throughout the basin.

6.2.2 Burbot

Burbot are endemic to the Kootenai River, and historically provided an important recreational and subsistence fishery. However, the burbot population has been in decline since the early 1970's, and it is hypothesized that the implementation of Libby Dam in 1972 has negatively impacted the population through the altered hydrograph, thermograph, and nutrient dynamics. The burbot are a culturally important fish species for the Kootenai Tribe as the fishery provided winter subsistence. In February 2000, the burbot in the Kootenai River in Idaho were petitioned for listing as endangered under the Endangered Species Act (ESA), but in 2003 the

Kootenai River Geographic Response Plan

US FWS determined that the listing was not warranted due to the population not being distinct. Kootenay Lake burbot have been red-listed by the BC Conservation Data Center and burbot can no longer be harvested. An International Burbot Conservation Strategy was developed in 2003 with the goal of restoring native burbot populations to sustainable numbers. The Kootenai Tribe of Idaho's Twin Rivers Hatchery, located near the Moyie River, rears burbot for the conservation aquaculture program. The program has been successful in increasing population numbers enough to open a recreational fishery in 2018. Burbot continue to be reared for release throughout the river, including BC and Kootenay Lake. Burbot have also been experimentally released into a number of wetlands in the lower Kootenai River below Bonners Ferry. These wetland releases have also been successful.

Burbot distribution includes in and upstream of the Koocanusa Reservoir. Burbot are also found in greater numbers in the mainstem Kootenai River, including below Libby Dam, MT all the way through to Kootenay Lake, BC. Burbot frequent the tributaries of the Kootenai River in the fall and winter during their spawning migration. They will travel into the tributaries to spawn under the ice in January and February, and the semi-buoyant eggs settle on the gravel substrates. The timing of egg hatching varies due to ambient water temperatures, but burbot larvae generally hatch between March and mid-June. Little is known about larval and juvenile burbot habitat use in the Kootenai River.

6.2.3 Kokanee

Kokanee (*Oncorhynchus nerka*) are a land-locked sockeye salmon that typically live 3 to 5 years. Native kokanee in the Kootenai basin are found downstream from Kootenai Falls in Montana. All other populations upstream from Libby Dam, in the Koocanusa Reservoir and elsewhere were most likely introduced, and are not considered native. Most of the lower Kootenai River fish assemblage, such as white sturgeon and burbot, used kokanee as a major food source. Kokanee are a culturally important component of the diet of Native Americans and First Nations peoples in the U.S. and Canada. Kokanee remain a culturally important species to the Kootenai Tribe of Idaho and the Lower Kootenay First Nation Bands in southeastern British Columbia.

Kokanee need high quality lake and stream habitat, and prefer low gradient streams with adequate gravel to build redds. They spawn in the fall after migrating to their natal streams, then die, providing much-needed nutrients to nutrient-poor streams. Kokanee eggs generally hatch in February, and these alevin remain in the gravel for 1 to 2 months. The fry emerge between March and April with the onset of the spring freshet and they leave the tributaries for the mainstem Kootenai River and South Arm Kootenay Lake.

Idaho – The native lower Kootenai River kokanee population that historically spawned in the tributaries and matured in the South Arm of Kootenay Lake is reported as functionally extinct in the early 1990's (Ashley and Thompson 1993). However, KTOI implemented eyed-egg plants in the early 2000's in some of the lower river tributaries (Long Canyon, Boundary, Parker, and the North and South Fork Trout creeks) and saw small returns of mature kokanee. To date, there are small runs of kokanee in a few of the lower river tributaries.

Montana – Kokanee are native to the Kootenai River below Kootenai Falls, about 34 river km upstream of the Idaho/Montana border. In Montana, kokanee populations are present in Lake Creek along with the mainstem Kootenai River.

British Columbia - The majority of native kokanee in the Kootenai River Sub-basin rear in Kootenay Lake in British Columbia. However, in recent years the Kootenay Lake kokanee populations have significantly declined.

Kokanee are obligate planktivores, and the decline in system productivity and change in water temperatures associated with Libby Dam operations have negatively impacted kokanee populations. Historic kokanee numbers have declined dramatically. Currently, few kokanee runs exist. The Kootenai Tribe of Idaho initiated their habitat restoration projects in the Kootenai River upstream of Bonners Ferry that included riparian habitat augmentation and side channel construction to bolster native fish populations, including kokanee. Future restoration plans include wetland reconnection and riparian habitat augmentation in key lower river areas including Anheuser-Busch/Elk Mountain farm property.

Kootenai River Geographic Response Plan

6.2.4 Westslope Cutthroat Trout

Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) can be found in the mainstem Kootenai River and its tributaries from the US border into Montana. The US Forest Service lists the westslope cutthroat trout as a sensitive species, and the state rank for both Montana and Idaho is S2, which means the species is considered imperiled and vulnerable to extinction throughout its range. In BC, westslope cutthroat trout are blue-listed, which means they are a species of special concern because the population is considered vulnerable (BC Ministry of Sustainable Resources 2003).

Westslope cutthroat trout thrive in high quality, cold water and require clean gravel to build their redds for spawning. They also live in complex stream systems that have large woody debris. Like bull trout, westslope cutthroat trout are considered an indicator of aquatic health.

Westslope cutthroat generally mature between 4 and 5 years, and they spawn mostly in small tributaries between March and July. These fish also return to their natal streams to spawn (Shephard et al. 1984). The eggs incubate for several weeks, depending upon ambient stream temperature, then hatch into fry that remain in the gravel for a few days before they disperse downstream.

There are three westslope cutthroat trout life-history types: (resident, fluvial, and adfluvial) (Trotter 1987; Liknes and Graham 1988; Behnke 1992; McIntyre and Rieman 1995). *Resident* fish spend their lives entirely within the natal tributary; *fluvial* fish spawn in small tributaries but the young migrate downstream to larger rivers where they grow and mature; and *adfluvial* fish spawn in streams but their young migrate downstream to mature in lakes. All three life-history types occur within the Kootenai River Sub-basin (Marotz et al. 1998).

Kootenai River Sub-basin westslope cutthroat trout populations are in decline along with populations in the Koocanusa Reservoir (Hoffman et al. 2002; Marotz et al. 1998).

6.2.5 Columbia River Redband Trout

The Columbia River Redband trout (*Oncorhynchus mykiss gairdneri*), are native to the Kootenai River, and are currently ranked 'S1' in Montana because "it is at extremely high risk of extirpation in the state due to very limited and/or rapidly declining population numbers, range and/or habitat" (<https://units.fisheries.org/montana/science/species-of-concern/>). Redband trout were historically found throughout the mainstem and tributaries.

The Columbia River redband trout is native to the Fraser and Columbia River drainages east of the Cascade Mountains upstream to barrier falls on the Pend Oreille, Spokane, Snake and Kootenai rivers in Idaho, Oregon, Washington and Montana. Columbia River Redband trout prefer cool, clean, and relatively low gradient streams.

Columbia River Redband Trout reach sexual maturity in 2 to 3 years, and they spawn from late April through mid-June, depending on ambient water temperatures. Fry emerge from the gravel in mid-July.

Changes in land and water use practices, habitat loss, over-harvest, and hybridization are factors contributing to the decline of redband trout abundance, distribution and genetic diversity in the Columbia River basin (Williams et al. 1989; Behnke 1992).

6.2.6 Bull Trout

Bull trout (*Salvelinus confluentus*) were historically found throughout the Kootenai River sub-basin, but few records of their distribution and abundance were recorded. Bull trout, globally, have a G3 ranking: very rare throughout its range, in a restricted range, or vulnerable to extinction. On November 1, 1999 (64 FR 58910), the coterminous population of bull trout in the United States were listed as threatened by the federal government. The USFWS recovery priority number for bull trout is 9C. The US Forest Service have listed bull trout as a sensitive species, and MFWP have listed them as a species of special concern due to "their limited distribution, sensitivity to environmental disturbances, and vulnerability to hybridization and/or competition with other fish species, and risk of over-exploitation." In British Columbia, the BC Conservation Data Centre has blue-listed bull trout are which means they are considered vulnerable or of special concern because of "characteristics that make them particularly sensitive to human activities or natural events" (BC Ministry of Sustainable Resource Management 2003).

Kootenai River Geographic Response Plan

Bull trout are a culturally important species to the Kootenai Tribe of Idaho and the Confederated Salish and Kootenai Tribe, and they consider them to be a sensitive species.

Bull trout occur within the Kootenai GRP, and the current distribution of bull trout populations in the Kootenai sub-basin includes most of the large river and tributary systems throughout the sub-basin. In the final ESA ruling for bull trout, five distinct sub-populations were identified within the Kootenai River sub-basin (USFWS 1998). Of these five sub-populations, three are within the mainstem Kootenai River: (1) Upper-upstream from Libby Dam, (2) Middle-from Libby Dam downstream to Kootenai Falls, and (3) Lower- downstream from Kootenai Falls through Idaho to the United States/Canada border.

Bull trout require high quality cold water, undercut stream banks, in-stream woody debris, shade, abundant and quality clean gravel substrates, and complex stream systems (USFWS 2002). Because of these strict requirements, bull trout are a good indicator of the health of an aquatic environment.

Bull trout spawn in the fall after migrating to the spawning areas generally in August and September. In some streams, bull trout move into the spawning tributaries in the spring during run-off in order to access habitat. Bull trout build redds in the fall and deposit their eggs after fertilization. These eggs hatch after 100 to 145 days of incubation, depending upon ambient stream temperatures (Heimer 1965; Allan 1980; Weaver and White 1984). For the next 65 to 90 days, the fry remain in the gravel while they absorb their yolk sac. Eventually the fry emerge from the gravel in the early spring, generally around April (Shepard et al. 1984). Juvenile bull trout sometimes out-migrate to the mainstem river after about 2 to 3 years, primarily living near the stream bottom in cobbles and boulder habitat.

6.2.7 Western Pearlshell Mussell

Historically, this freshwater mussel, the Western Pearlshell Mussell (*Margaritifera falcata*), occurred from “Southern Alaska to central California and eastward to western Montana, western Wyoming, and northern Utah” (Taylor 1981). The Idaho historical range includes sites in the Snake, Coeur d’Alene, Lost, and Salmon River drainages (Frest and Johannes 1997, Frest 1999). Populations are thought to persist in northern Idaho in the Coeur d’Alene, St. Joe, and St. Maries Rivers. In central Idaho, populations are thought to persist in north Idaho in the Pahsimeroi, Lost, Lower Salmon, and Little Salmon rivers and in Hells Canyon. In south Idaho, populations are thought to be extant in the upper tributaries of the Snake River, including the Blackfoot River (Frest and Johannes 1997, Frest 1999). The Kootenai River in Idaho has populations of Western Pearlshell mussels, but little is known about their population status and distribution. However, there is no current and detailed distributional information within these river systems. According to Frest (1999) the areas occupied, the number of sites occupied, and population sizes have decreased.

ESA lists species of concern or species of the greatest conservation needs, rankings with an ‘T’ for those species designated under a trinomial rank indicator, which denotes the global status of infra-specific species. The Western PearlshellMussel ranks as a T1 and T2 species. T1 ranked species are critically imperiled because of extreme rarity of because of somefactor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences). T2 ranked species are impaired because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).

Populations are sensitive to changes in water quality; livestock, agricultural runoff, housing or industrial development, and mining are potential causes of degraded water quality. Small dam construction and extensive diversions may also impact aquatic habitats. The loss of appropriate host fish populations is also a threat (Frest 1999).

Kootenai River Geographic Response Plan

Western pearlshell populations occur in cold, clear streams and rivers, often in reaches having fast current and coarse substrate. This species is intolerant of heavy nutrient loads, siltation, and water pollution (Frest 1999). Larval western pearlshells are fish parasites that attach to the fins or gills of host fish. The host species include Chinook salmon, rainbow trout, brown trout, brook trout, and speckled dace (Frest 1999).

6.3 Wildlife

The Kootenai Sub-basin is home to many birds, reptiles, mammals, and amphibians, with an estimated 364 terrestrial vertebrate species found (IBIS 2003). The diversity of habitats provide food and cover for many differing species.

Target species were selected based upon four criteria (Kootenai River Sub-basin Plan 2004):

- 1) designated as a Federal endangered or threatened species;
- 2) Has an important ecological role in the sub-basin;
- 3) Cultural or economic significance to the people of the Kootenai Sub-basin;
- 4) And/or represent a cross-section of the wildlife community.

Table 4.65, located on page 409 of the Kootenai River Sub-basin Plan, and provided below, lists these key Kootenai Sub-basin terrestrial wildlife. Shorebirds, waterfowl, and raptors are covered separately in section 6.5 as they are the wildlife species most likely to be affected in the case of an oil spill.

Table 4.65. Terrestrial target species.

MAMMALS	IBIS STATUS	BIRDS (CONT.)	IBIS STATUS	BIRDS (CONT.)	IBIS STATUS
American Beaver	CFLS	Barrow's Goldeneye		Long-billed Curlew	
American Pika	CFLS	Black Swift	FS	Merlin	FS
Big Brown Bat	CFLS	Black Tern	CFLS	Northern Goshawk	
Black Bear	CFLS	Black-backed Woodpecker		Northern Pygmy-owl	FS
Bushy-tailed Woodrat	CFLS	Black-chinned Hummingbird	CFLS	Olive-sided Flycatcher	
Deer Mouse	CFLS	Boreal Owl	FS	Peregrine Falcon	FS
Fisher	CFLS	Brewer's Sparrow		Pileated Woodpecker	
Golden-mantled Grnd Squirrel	CFLS	Brown Creeper		Red-eyed Vireo	
Grizzly Bear	CFLS	Brown-headed Cowbird	CFLS	Red-naped Sapsucker	
Lynx	FS	Calliope Hummingbird		Ruffed Grouse	
Mink	CFLS	Canada Goose	CFLS	Rufous Hummingbird	CFLS
Montane Vole	CFLS	Columbian Sharp-tailed Grouse		Snowy Owl	FS
Moose	CFLS	Common Loon		Three-toed Woodpecker	
Mule Deer	CFLS	Common Nighthawk	FS	Trumpeter Swan	
Northern Bog Lemming	FS	Cordilleran Flycatcher		Tundra Swan	CFLS
Northern Pocket Gopher	CFLS	Flammulated Owl		Turkey Vulture	FS
Nuttall's Cottontail	CFLS	Grasshopper Sparrow		Vaux's swift	
Raccoon	CFLS	Great Blue Heron	CFLS	Veery	
Red Squirrel	CFLS	Great Horned Owl	CFLS	Williamson's Sapsucker	CFLS
River Otter		Gyrfalcon	FS	Willow Flycatcher	
Rocky Mountain Elk	CFLS	Hammond's Flycatcher		Winter Wren	
Snowshoe Hare	CFLS	Harlequin Duck	FS	AMPHIBIANS	
Wolverine	FS	Hooded Merganser		Boreal Toad	
Mountain Caribou		Horned Grebe		Long-toed Salamander	CFLS
BIRDS		House Finch	CFLS	Northern Leopard Frog	
American Crow	CFLS	Lazuli Bunting		Spotted Frog	
Bald Eagle		Lewis's woodpecker			

¹FS = Functional specialist, species that have only one or a very few number of key ecological functions. Functional specialist species could be highly vulnerable to changes in their environment (such as loss of carrion causing declines or loss of carrion-feeder functional specialists) and thus might be good candidates for focal species.

²CFLS = Critical functional link species, species that are the only ones that perform a specific ecological function in a community. Their removal would signal loss of that function in that community. Thus, critical functional link species are critical to maintaining the full functionality of a system. See Appendix 65 (see links column) for the critical functions associated with each of these species.

6.4 Shorebirds, Waterfowl, and Raptors

The Kootenai sub-basin includes multiple shorebirds, waterfowl, and raptor species. Bald eagles and osprey are the raptors commonly associated with the Kootenai River. Numerous shorebirds and migratory waterfowl are also observed within the Kootenai sub-basin, these include the following; hooded merganser, horned grebe, Harlequin duck, common loon, and the tundra swan.

6.4.1 Harlequin Duck

Harlequin ducks are known to winter in the rocky surf zones along the northern Pacific Ocean and migrate to Idaho to breed in the summer. These ducks generally nest on the ground near mountain streams and are generally located in western red cedar-western hemlock forest associations between 900 and 3,600 feet in elevation. The average clutch size is approximately 5 eggs.

Harlequin ducks are uncommon summer residents of Idaho and surveys conducted in 1987 and 1990 concluded that over 70 percent of the Idaho harlequin duck population is located in the Lochsa and Priest rivers.

6.5 Aquatic Invasive Species (AIS)

Invasive species are non-native species that disrupt healthy ecosystem functions from the bottom up, causing a chain reaction which leaves nothing unaffected. Aquatic invasive plants such as Eurasian watermilfoil out-compete, displace, or otherwise harm native species and alter ecosystem dynamics. The cost of controlling and managing invasive species in Idaho is millions of dollars per year. The Idaho Invasive Species Strategic Plan 2017-2021 focuses on three goals:

1. Prevent the introduction of new species to Idaho,
2. Limit the spread of existing populations of invasive species populations in Idaho,
3. Abate ecological and economic threats that result from invasive species populations in Idaho.

Kootenai River Geographic Response Plan

6.5.1 Prevention of AIS Migration

Equipment for containment, clean-up, and removal of soiled aquatic plants could spread the distribution of unwanted plants and should minimize the likelihood of moving AIS. Implementing the following habits into response and clean-up is critical in stopping the introduction and spread of AIS in Idaho.

1. CLEAN – Before leaving any waterbody, always inspect equipment (boats, boom, skimmers, trailers, ect.) for visible plants and animals. Remove this material on site. Carefully check places that are still damp. Dispose of the removed material in a trash receptacle or on high, dry ground where there is no danger of it washing into a waterbody.
2. DRAIN – Eliminate water from all equipment, including motors, live wells, ballast tanks, boat hulls, waders, and boots.
3. DRY – Clean and dry anything that came in contact with water (boats, equipment, clothing, ect.)

Below are aquatic invasive plants known to occur within the Kootenai River watershed that have been designated as noxious by Idaho state law.

6.5.2 Eurasian Watermilfoil

Eurasian Watermilfoil (*Myriophyllum spicatum*) is a submerged perennial aquatic plant that is highly invasive and colonizes a variety of habitats including reservoirs, lakes, ponds, low-energy streams and rivers, and brackish waters from estuaries and bays. It adversely impacts aquatic ecosystems by filling the water column and forming dense canopies that shade out native aquatic vegetation. Eurasian milfoil can grow in 1 to 10 meters of water. Eurasian watermilfoil is adaptable, and is able to survive in a variety of environmental conditions. It grows in both lentic and lotic systems, can tolerate relatively high salinity and a wide range of pH levels, and can survive under ice. Because Eurasian watermilfoil develops from shoots started in the fall and is tolerant of low water temperatures, it can begin spring growth earlier than other aquatic plants, and grow quickly to the surfaceto form dense canopies, overtopping and shading out surrounding vegetation. This species regenerates readily from plant fragments which are easily transported to un-infested water bodies via fouled boats, boat trailers, and other watercraft. Eurasian watermilfoil can displace and out-compete native aquatic vegetation within a few growing seasons (ISDA 2008). In Idaho, the management strategy is for control. This means reducing or eliminating new or expanding weed populations. Because Eurasian watermilfoil is so highly invasive, one of the goals identified in the 2008 Idaho Statewide Strategic Plan is to contain Eurasian watermilfoil so that it does not spread from infested waters into un-infested water bodies.

6.6 Archeological Sites

6.6.1 General Site Locations

The Kootenai River basin contains numerous sites of historic cultural importance both to the Kootenai Tribe of Idaho and the Idaho State Historic Preservation Office. This document will not locate sites specifically.

6.6.2 Seasonal Sensitivity

Kootenai River Geographic Response Plan

There are no known seasonal differences in sensitivity to cultural resources in the basin.

6.6.3 Recommendations

It is recommended that a representative of the Idaho State Historic Preservation Office and the Cultural Resources Program of the Kootenai Tribe of Idaho be notified before cleanup of a spill commences. They should provide monitors to be present during cleanup operations.

6.6.4 Procedures for the Finding of Human Skeletal Remains

Any human remains, burial sites, or burial-related materials that are discovered during construction will be treated with respect at all times.

- If the Monitor or any member of the construction work force believes that he or she has encountered human skeletal remains, all work will be stopped immediately and the Incident Commander notified.
- The Incident Commander will be responsible for taking appropriate steps to protect the discovery. At a minimum, the immediate area of discovery will be flagged, and vehicles and equipment will not be permitted to traverse the discovery site. In no case will additional excavation be undertaken prior to consultation, and no exposed human remains will be left unattended.
- The Incident Commander or their representative will immediately contact the Idaho State Historic Preservation Office (SHPO); the Director of the Cultural Resource Program of the Kootenai Tribe; and either the Boundary or Lincoln County Medical Examiner. The Medical Examiner will determine whether the discovery is a crime scene or human burial.
- If the remains are determined to be Native American and not to be connected with criminal activity, the Idaho State Archaeologist and Incident Command will confer on a treatment plan for the remains.
- If the remains are determined to be non-Native American or connected with criminal activity, the Medical Examiner will take charge.

6.6.5 Procedures for the Discovery of Cultural Resources

- If the Monitor or any member of the construction work force believes that he or she has encountered cultural resources, all work will stop and the Incident Commander will be notified immediately. The area of work stoppage will be adequate to provide for the security, protection, and integrity of the materials. Prehistoric cultural resources may include:
 - Lithic debitage (stone chips and other tool-making byproducts)
 - Flaked or ground stone tools
 - Exotic rocks and minerals
 - Concentrations of organically stained sediments, charcoal, or ash
 - Fire-modified rock
 - Bone (burned, modified, or in association with other bone, artifacts, or features)
 - Shell.

Historic (i.e., over 50 years old) cultural material may include:

- Bottles or other glass
 - Cans
 - Ceramics
 - Milled wood, brick, concrete, metal, or other building material.
- If the Monitor believes that the discovery is a cultural resource, the Incident Commander will take appropriate steps to protect the discovery site. At a minimum, the immediate area of the discovery site will be flagged and vehicles and

Kootenai River Geographic Response Plan

equipment will not be permitted to enter the discovery site. Work in the immediate area will not resume until treatment of the discovery has been completed.

- The Incident Commander or their representative will contact the Tribal Cultural Program Director and the Idaho State Archaeologist and they will arrange for the discovery to be evaluated by a professional archaeologist. The archaeologist will determine whether the discovery is potentially eligible for listing on the National Register of Historic Places (NRHP). Criteria and integrity requirements for listing on the NRHP (36 CFR 60.4) will provide the standards for identification and evaluation of significance of cultural material.
- The archaeologist will contact the Tribal Cultural Resource Program Director and the Idaho State Archaeologist to seek consultation regarding the National Register eligibility of the discovery. If the Tribal Department Manager and SHPO determine that the discovery is eligible, they will consult with Incident Command to determine appropriate treatment of the discovery.

If adverse project affects to an eligible site cannot be avoided, a treatment plan will be developed and implemented. The Secretary of the Interior's *Standards for Archaeological Documentation* will apply, including provisions for a research design, reporting, and curation of recovered material and samples.

The particular data recovery measures applied to any given historic property will depend on the development of research questions and design of excavation strategies to acquire the data needed to answer those questions. Field notes, maps, plans, profiles, and photographs will document the process. The final report will follow style guidelines of the professional archaeological journal *American Antiquity*; it will synthesize the data collected and address the research questions posed.

6.7 Flight Restriction Maps

Not available at this time.

6.8 Wildlife Resource/Flight Restriction Tables

The Wildlife Resource/Flight Restriction Table details the location, protected resources, and applicable season for each flight restriction zone (no flight restriction zones are known at this time).

Table 6-8. Wildlife Resource/Flight Restriction Table

Note: No flight restriction zones are known at this time.

Sector	Specific Flight Restrictions
1	
2	
3	
4	
5	

Section 7: Logistical Information

7. Logistical Information

The following list includes information on command posts, county emergency management contacts, local support equipment, air support, boat ramps, staging areas, tribal resources, local elected officials, fire departments, wildlife rehab facilities, and fish hatcheries.

Table 7-1. Logistical Information

Subject	Name	Phone Number	Location
Command Posts	City of Bonners Ferry	208-267-3105	7232 Main St. Bonners Ferry, ID
	Boundary County	208-290-5316	6656 S. Main St. Bonners Ferry, ID
County Emergency Management Office	Boundary County Office of Emergency Management	208-290-5316	6656 S. Main St. Bonners Ferry, ID
Local Support Equipment	Whitewater Rescue Institute	406-207-2027	Missoula, MT
	USFS Idaho Panhandle National Forests	208-772-3283 208-267-5561	Bonners Ferry Ranger District Interagency Dispatch Center (seasonal)/ District Office
	Idaho State Police-District 1	208-209-8620	Coeur d’Alene, ID
	US Army Corps of Engineers Environmental Response	509-527-7121	Walla Walla, WA
	Clean Harbors Environmental Services	800-645-8265 509-535-3244	Spokane, WA
	NOAA Hydrology/Weather	509-244-0537	Spokane, WA
	US Ecology	800-899-4672	Spokane, WA
Air Support	Granite Aviation	208-263-9102	Sandpoint, ID
Boat Ramps	Twin Rivers		RM 161.0
	Bonners Ferry SAR Ramp		RM 151.7

Kootenai River Geographic
Response Plan

	Deep Creek/Kootenai Confluence		RM 149.0 / 0.0
	Copeland		RM 124.0
	Porthill		RM 105.6
	McArthur Lake	Deep Creek	RM 20.0
Staging Areas	Twin Rivers		RM 161.0
	Bonnars Ferry SAR Ramp	Across street	US 12 106.83
	Deep Creek/Kootenai Confluence		RM 149.0 / 0.0
	Copeland		RM 124.0
	Porthill		RM 105.6
	McArthur Lake	Deep Creek	RM 20.0
Tribal Resources	Kootenai Tribe of Idaho Ext	208-267-3519 208-597-2002 ©	
	Kootenai Tribe of Idaho Alternate Contact	208-267-7451	
	Cultural Resources Program	208-843-7313	
	Department of Fisheries	208-843-7320 ext 1	
Local Government Tribal/County/City	Tribal Headquarters	208-267-3519	
	Boundary County OEM	208-290-5316	
	Boundary Conservation District	208-267-3340 EXT#107	
	Moyie Springs, ID	208-267-2836	
	Bonnars Ferry, ID	208-267-0357	
Fire Departments	Bonnars Ferry Fire Dept.	208-267-4390	Bonnars Ferry, ID
	South Boundary Fire Dept.	208-267-2914	Naples, ID
Wildlife Rehab Facilities	Idaho Fish and Game	208-769-1414	Panhandle Region
	US Fish and Wildlife Services	509-891-6839	Spokane, WA
Fish Hatcheries	Twin Rivers Hatchery	208-267-1689	Moyie Springs, ID

Kootenai River Geographic
Response Plan

	Fisheries Habitat Biologist	208-267-3620 208-699-7613 ©	
	Tribal Sturgeon Hatchery	208-267-3620	
Water Resources	Idaho Department of Water Resources	208-762-2800	
	Idaho DEQ	208-373-0502 866-790-4337	
	Bonnors Ferry Utilities	1-800-626-4950	

Appendix A, B & C

Appendix A: Protection Techniques

Table A-1. Summary of Protection Techniques

Protection Techniques	Description	Primary Logistical Requirements	Limitations
ONSHORE			
Geotextiles	A roll of geotextile, plastic sheeting, or other impermeable material is spread along the bottom of the supra-tidal zone and fastened to the underlying logs or stakes placed in the ground.	<ul style="list-style-type: none"> • Geotextile - 3 m wide rolls • Personnel - 5 • Misc. - stakes or tie-down cord 	<ul style="list-style-type: none"> • Low sloped shoreline • High spring tides • Large storms
Sorbent Barriers	A barrier is constructed by installing two parallel lines of stakes across a channel, fastening wire mesh to the stakes and filling the space between with loose sorbents.	Per 30 meters of barrier <ul style="list-style-type: none"> • Wire mesh - 70 m x 2 m • Stakes - 20 • Sorbents - 30 m² • Personnel - 2 • Misc. - fasteners, support lines, additional stakes, etc. 	<ul style="list-style-type: none"> • Waves > 25 cm • Currents > 0.5 m/s
Inlet Dams	A dam is constructed across the channel using local soil to exclude oil from entering channel.	<ul style="list-style-type: none"> • Loader - 1 • Personnel - equipment operator and 1 worker or several workers w/shovels 	<ul style="list-style-type: none"> • Waves > 25 cm • Freshwater outflow
NEARSHORE			
Containment Booming	Boom is deployed at the source of the spill. The spill source will determine the strategy necessary to contain and remove spilled material. The objective is to stop any future material from entering river.	For 150 meters Slick: <ul style="list-style-type: none"> • Boom - 280 m • Boats - 2 • Personnel - boat crews and 4 boom tenders • Misc. - tow lines, drogues, connectors, etc. 	<ul style="list-style-type: none"> • High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s
Exclusion Booming	Boom is deployed across or around sensitive areas and anchored in place. Approaching oil is deflected or contained by boom.	Per 300 meters of Boom <ul style="list-style-type: none"> • Boats - 1 • Personnel - boat crew and 3 boom tenders • Misc.- 6 anchors, anchor line, buoys, etc. 	<ul style="list-style-type: none"> • Currents > 0.5 m/s • Breaking waves > 50 cm • Water depth > 20 m
Deflection Booming	Boom is deployed from the shoreline away from the approaching slick and anchored or held in place with a workboat. Oil is deflected away from shoreline.	Single Boom, 0.75 m/s current <ul style="list-style-type: none"> • Boom - 60 m • Boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit 	<ul style="list-style-type: none"> • Currents > 1.0 m/s • Breaking waves > 50 cm
Collection Booming	Boom is deployed from the shoreline at an angle towards the approaching slick and anchored or held in place with a workboat. Oil is diverted towards the shoreline for recovery.	Single Boom, 0.75 m/s current <ul style="list-style-type: none"> • Boom - 60 m • boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit 	<ul style="list-style-type: none"> • Currents > 1.0 m/s • Breaking waves > 50 cm

Kootenai River Geographic Response Plan

Protection Techniques	Description	Primary Logistical Requirements	Limitations
Skimming	Self-propelled skimmers work back and forth along the leading edge of a windrow to recover the oil. Booms may be deployed from the front of a skimmer in a "V" configuration to increase sweep width. Portable skimmers are placed within containment booms in the area of heaviest oil concentration.	Self-propelled (None) Towed <ul style="list-style-type: none"> • Boom - 200 m • Boats - 2 • Personnel - boat crews and 4 boom tenders • Misc. - towlines, bridles, connectors, etc. Portable <ul style="list-style-type: none"> • Hoses - 30 m discharge • Oil storage - 2000 liters 	<ul style="list-style-type: none"> • High winds • Breaking waves > 50 cm • Currents > 1.0 m/s

Source is R. Miller of Clean Sound Cooperative.

Table A-2. Fast Water Booming Techniques: Current Chip Log and Maximum Boom Deflection Angle

The table uses the time for floating debris to drift 100 feet. This is accurately determined by anchoring a line with two floating buoy markers attached at a spacing 100 feet apart. Floating debris is then thrown into the water approximately 20 feet upstream of the first buoy marker. Determine the time it takes the debris to transit the distance between the two marker buoys in seconds. This assumes that the minimum escape velocity under a boom perpendicular to the current (90 degrees) is 1.2 feet per second. The table provides an estimate of the length of boom required for deflecting oil at a specified angle for a 110-foot profile (perpendicular length) to the current. It also provides an estimate of the number of anchors or shoreline tiebacks required for that length of boom assuming anchor points are required every 50 feet.

Knot = 1.6 mile/hr or 6,080 ft/hr or 1.7 ft/sec

Time to Drift 100 Feet (seconds)	Velocity (ft/sec)	Max. Boom Deflection Angle (degrees)	Boom for 100 Foot Profile to Current (feet)	Anchors if Placed Every 50 Feet (number)
6	16.7	4.0	1,429	30
8	12.5	5.4	1,071	22
10	10.0	6.7	857	18
12	8.3	8.0	714	15
14	7.1	9.4	612	13
17	5.9	11.4	504	11
20	5.0	13.5	429	10
24	4.2	16.3	357	8
30	3.3	20.5	286	7
40	2.5	27.8	214	5
60	1.7	44.4	143	4
>86	<1.2	90.0	100	3

Table A-3. Current Drag Force on One-Foot Boom Profile to Current

The major force exerted on a boom is caused by the water drag on the skirt. Wave forces can increase the drag factor by a factor of two to three depending upon the wave height, period, and loading dynamics. Wind force is less than current and waves bit is also a factor. In high current situations, drag is sometimes increased by water piling upon the boom, causing some submergence and increased drag forces, often resulting in mooring failure. In this situation, the 100-foot section of 4 X 6 diversion boom (4-inch floatation and 6-inch draft) could take the hydrodynamic load. A replacement section 50 feet long was able to withstand the reduced forces with submerging.

The effects of current velocity and boom draft on boom drag force can be seen in the table. Drag increased with draft in a linear fashion while current increased drag more dramatically, to the square of the velocity.

Velocity (ft/sec)	Boom Drag Force (pounds)			
	Draft 0.5 Feet	Draft 1.0 Feet	Draft 1.5 Feet	Draft 2.0 Feet
0.8	0.7	1.3	2.0	2.7
1.7	2.7	5.3	8.0	10.7
2.5	6.0	12.0	18.0	24.0
3.4	10.7	21.3	32.0	42.6
4.2	16.7	33.3	50.0	66.6
5.1	24.0	48.0	72.0	95.9
5.9	32.6	65.3	97.9	130.6
6.8	42.6	85.3	127.9	170.6
7.6	54.0	107.9	161.9	215.9
8.4	66.6	133.3	199.9	266.5
9.3	80.6	161.2	241.8	322.5
10.1	95.9	191.9	287.8	383.8
11.0	112.6	225.2	337.8	450.4
11.8	130.6	261.2	391.8	522.3
12.7	149.9	299.8	449.7	599.6
13.5	170.6	341.1	511.7	682.2

Table A-4. Approximate Safe Working Loads/Tensile Strength of New Rope

Rope Diameter (inches)	Manila No. 1 (3-strand) (pounds)	Nylon (3-strand) (pounds)	Polyester (3-strand) (pounds)
5/16	200 / 1,000	500 / 2,500	500 / 2,500
3/8	270 / 1,350	700 / 3,500	700 / 3,500
7/16		1,140 / 5,700	
1/2	530 / 2,650	1,250 / 6,250	1,200 / 6,000
5/8	880 / 4,400	2,100 / 10,500	1,950 / 9,750
3/4	1,080 / 5,400	2,750 / 5,400	2,300 / 11,500

Towing load can be significant when a boom is anchored on one end and pulled against the current. Boats must have sufficient horsepower and be properly rigged to tow. Lines must be capable of withstanding the forces, and the boom must have a tension member capable of high loads. If the boom is extended behind the tow boat and pulled free in the current, there is only the frictional drag along the boom. Because this drag is a function of the boat speed, proper motor size becomes a function of boom size and length, boat size, and water velocity. Although free towing drag is low, when one end of the boom is anchored to the shore, a small boat may be incapable of positioning the boom because of the high current drag exerted on the boom. The boom must be able to withstand the forces. The tension member must not become detached from the boom due to differential expansion.

Attempting to moor a boom in a straight line across a current (90 degrees) is not recommended. The result is a sag in the boom that will trap free floating oil at a point inaccessible to the shore. In swift currents, the resulting forces on moorings can cause large lines of break and present possible safety hazards. The current can be so swift that the boom may tend to dip and become completely or partially submerged. If this happens, the boom's position should be adjusted. The total force on the mooring points will be a combination of the forces caused by current, wind, and waves.

Boom positioning is an important point. The first step is to decide where the boom should be located. It is likely that the boom would be on an angle to the current; therefore, the prime concern becomes the location of the upstream end. If the selected upstream location is inaccessible, a spot further upstream can be used for access and the boat and boom allowed to drift to the selected mooring site. The boom can be secured to trees, stakes, anchors, or other solid objects. Do not attach boom to vehicles of any type or size.

**Table A-5 – Simulated Results-
Approximate Arrival Time of Leading Edge of Released Material at Next Boat Ramp -
Upper Canyon**

Upper Canyon Leonia to Bonners Ferry	Leonia 170	Twin Rivers 161	Bonners Ferry SAR Boat Ramp 151.5	Deep Creek Confluence Boat Ramp 149	Copeland Boat Ramp 124	Porthill Boat Ramp 105.6
CFS	Time (in hours) from upstream release point to next boat ramp					
5000	-	3.6	7.3	10.1	37.4	61.6
10000	-	2.6	5.4	7.4	27.0	45.8
15000	-	2.2	4.5	6.1	22.0	36.7
20000	-	2.0	4.0	5.4	19.5	32.7
25000	-	1.9	3.8	5.1	18.3	30.4
30000	-	1.8	3.8	5.0	17.2	28.3
35000	-	1.8	3.7	4.9	16.6	27.0
40000	-	1.8	3.7	4.8	16.0	25.3
45000	-	1.8	3.6	4.6	15.0	23.9

**Table A-6 – Simulated Results-
Approximate Arrival Time of Leading Edge of Released Material at Next Boat Ramp-
Town Stretch**

Town Stretch Mi 155 to 149	Twin Rivers 161	Bonners Ferry SAR Boat Ramp 151.5	Deep Creek Confluence Boat Ramp 149	Copeland Boat Ramp 124	Porthill Boat Ramp 105.6
CFS	Time (in hours) from upstream release point to next boat ramp				
5000	-	3.8	6.3	29.4	58.9
10000	-	2.8	4.6	21.2	44.1
15000	-	2.3	3.8	17.3	35.2
20000	-	2.1	3.4	15.3	31.4
25000	-	2.0	3.2	14.4	29.1
30000	-	1.9	3.1	13.4	26.9
35000	-	1.9	3.0	12.9	25.5
40000	-	1.9	2.9	12.4	23.8
45000	-	1.9	2.8	11.6	22.4

**Table A-7 – Simulated Results-
Approximate Arrival Time of Leading Edge of Released Material at Next Boat Ramp- Lower Reach**

Lower Reach Deep Creek Confluence to Border	Deep Creek Confluence Boat Ramp 149	Copeland Boat Ramp 124	Porthill Boat Ramp 105.6
CFS	Time (in hours) from upstream release point to next boat ramp		
5000	-	25.0	43.4
10000	-	27.3	51.5
15000	-	19.6	38.4
20000	-	15.9	30.6
25000	-	14.0	27.3
30000	-	13.2	25.3
35000	-	12.2	23.3
40000	-	11.7	22.1
45000	-	11.2	20.5

Appendix B: Geographic Response Plan Contributors Local Representatives

Local Representatives

Jim Woodward
Heather Scott
Sage G. Dixon

Industry and Response Contractors

Whitewater Rescue Institute, Inc.
U.S. Ecology
Clean Harbors Environmental Services
Northwest Archaeological Associates, Inc.

Federal Representatives

United States Environmental Protection Agency

<http://www.epa.gov/faca/all-federal-advisory-committees-epa>

United States Department of the Interior
Deb Haaland

United States Fish and Wildlife Service
Margaret Everson

State Representatives

Idaho Department of Environmental Quality
Jess Byrne
Idaho Bureau of Disaster Services
Brad Richy
Idaho Department of Transportation
Scott Stokes
Idaho State Police
Colonel Kedrick Wills

Tribal Representatives

Kootenai Tribe of Idaho
Jennifer Porter
(208)267-3519
jennifer@kootenai.org

Phone Numbers

Environmental Protection Agency Idaho Operations Office 208-378-5746

Environmental Protection Agency Federal On-Scene Coordinators
Stephen Ball
Ball.Stephen@epa.gov
208-530-9107

Eric Vanderboom
Vanderboom.Eric@epa.gov
208-530-3180

Environmental Protection Agency Region 10 Office in Seattle, WA 206-553-1200 or
1-800-424-4372 (toll-free within AK, ID, OR, WA only)

Idaho State Dept. of Environmental Quality Northern Idaho (Coeur d'Alene) DEQ Regional Office
208-769-1422

Regional Administrator
Daniel McCracken
Dan.McCracken@deq.idaho.gov
208-666-4602

Internet Addresses

Environmental Protection Agency
Idaho State Dept. of Environmental Quality Northwest Area Committee

<https://www.epa.gov/aboutepa/forms/contact-epas-region-10-office-seattle>

www.rrt10nwac.com

<https://www.epa.gov/aboutepa/epa-idaho>

Addresses

Environmental Protection Agency Emergency Response Branch 1200 Sixth Avenue, Suite 155, Seattle,
WA 98101

Environmental Protection Agency Idaho Operations Office 950 West Bannock, Suite 900, Boise, Idaho
83702

Idaho Department of Environmental Quality Coeur d'Alene Regional Office in Northern Idaho - 2110
Ironwood Parkway Coeur d'Alene, ID 83814

Idaho Department of Environmental Quality Waste Management & Remediation Division 1410 North
Hilton Boise, ID 83706

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