

AFWO Temp Monitoring 2007 HACCP

HACCP Step 1 - Activity Description	
Facility: Arcata Fish and Wildlife Office	Site: Klamath Basin
Project Coordinator: Paul Zedonis	Project Description: Deployment of water quality instrumentation
Site Manager: Mike Long	
Address: 1655 Heindon Rd Arcata, CA 95521	
Phone: 707 822-7201 (ext 5119)	

Project Description (Who, What, Where, When, How & Why)
<p>Water temperatures are monitored in the Klamath River basin by the Arcata Fish and Wildlife Office and tribal cooperators. The mainstem Klamath River is monitored from Iron Gate Dam (RM 189.9) to the Pacific ocean, and includes the mouths of many tributaries, including the largest of tributaries - the Trinity River. Monitoring in the Trinity River is also extensive and includes the region from Lewiston Dam (RM 112) to the mouth, in addition to many tributaries. Monitoring occurs all year and probes are checked one to two times per year to download data and redeploy probes. Usually in late March or early April, field crews gear up in preparation for monitoring. Field staff gathers necessary equipment (e.g. temperature probes, chain, and housings, waders, and wetsuits w/mask and snorkel) and load the gear into a vehicle. Equipment is driven to the first monitoring site where the field crew member suits-up, and walks to the waters edge in preparation to deploy or check on existing temperature probes. Waders are typically used to deploy/check instruments, but on occasion probes may be deployed by snorkeling so as to avoid vandalism. Deployment includes placing a temperature probe in a metal housing and chaining it to an anchor point in the stream or along the bank. Following deployment or inspection, field crews walk back to the vehicle, remove waders/wetsuits and travel to the next sample site. Temperature monitoring has occurred over many years and these data have been valuable in evaluating thermal regimes that result from altered dam releases. These data have also been useful to support ongoing biological investigations.</p>

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HACCP Step 2 - Potential Hazard Identification

Vertebrates:

Amphibian/fish transfer. Bullfrog eggs (*Rana catesbeiana*)

Invertebrates:

Aquatic/terrestrial invertebrates transfer. Polycheate (*Manyunkia speciosa*), various mollusk larvae known to be intermediate hosts for fish diseases in the Klamath River basin

Plants:

Seed and aquatic plant dispersal (variety of macrophytes and algae)

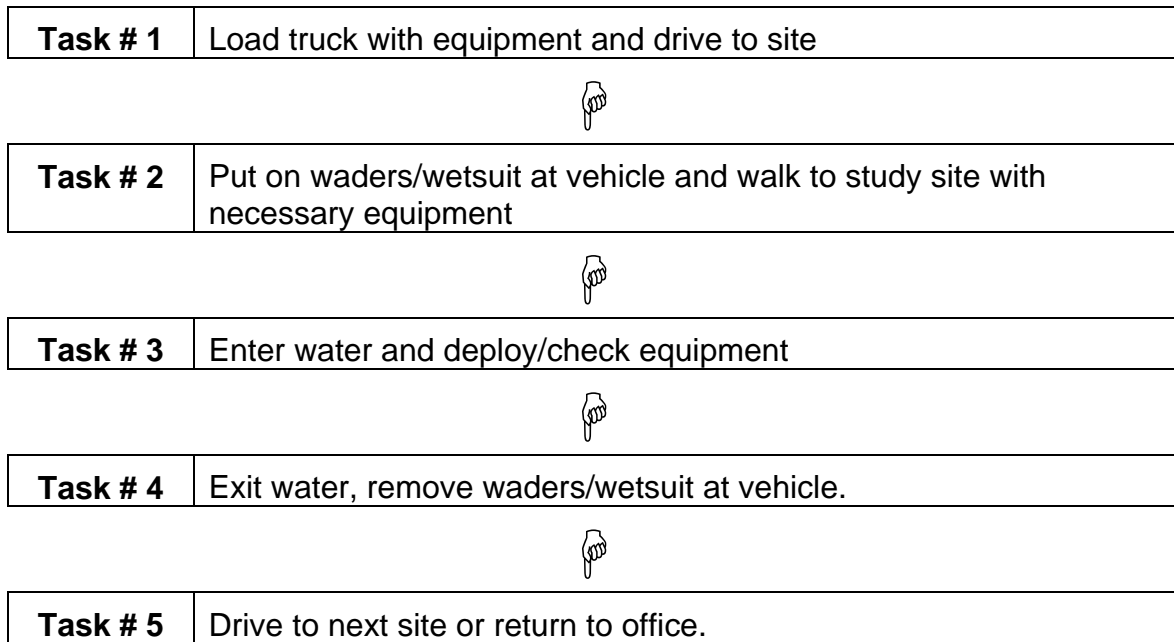
Other Biologics:

Fish Disease : (e.g. *Columnaris spp*, *Ceratomyxa shasta*, *Parvicapsula minibicornis*)

Others:

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HACCP Step 3 - Flow Diagram



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HACCP Step 4 - Hazard Analysis

Task	Hazard	Probable?	Justification	Control Measures	CCP?
Load truck with equipment and drive to site	Plant: Seed and aquatic plant dispersal	No	All equipment is cleaned prior to departure		No
	Other Biologic: Fish Disease	No	All equipment is cleaned prior to departure		No
	Invertebrate: aquatic/terrestrial invertebrates transfer	No	All equipment is cleaned prior to departure		No
	Vertebrate: Amphibian/fish transfer	No	All equipment is cleaned prior to departure		No
Put on waders/wetsuit at vehicle and walk to study site with necessary equipment	Plant: Seed and aquatic plant dispersal	Yes	Plant seeds may be collected on gear while accessing study site	Avoidance of the seeding period, avoidance of plants, and/or visual inspection of equipment	No
	Other Biologic: Fish Disease	No	All equipment is cleaned prior to departure		No
	Invertebrate: aquatic/terrestrial invertebrates transfer	No	All equipment is cleaned prior to departure		No
	Vertebrate: Amphibian/fish transfer	No	All equipment is cleaned prior to departure		No

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Enter water and deploy/check equipment	Plant: Seed and aquatic plant dispersal	Yes	Water may act as a transport medium	visual inspection prior to entering the water	No
	Other Biologic: Fish Disease	No	All equipment is cleaned prior to departure		No
	Invertebrate: aquatic/terrestrial invertebrates transfer	No	All equipment is cleaned prior to departure		No
	Vertebrate: Amphibian/fish transfer	No	All equipment is cleaned prior to departure		No
Exit water, remove waders/wetsuit at vehicle.	Plant: Seed and aquatic plant dispersal	Yes	Wet equipment and clothing may retain seeds	Visual inspection and/or rinsing of clothing and equipment	Yes
	Other Biologic: Fish Disease	Yes	Wet waders may contain disease organisms	Sample upstream regions first. Sample tributaries first followed by mainstem locations. Rinsing	Yes
	Invertebrate: aquatic/terrestrial invertebrates transfer	Yes	Wet waders may contain invertebrates	Sample upstream regions first. Sample tributaries first followed by mainstem locations. Visual inspection of clothing and equipment. Rinsing/brushing of equipment	Yes
	Vertebrate: Amphibian/fish transfer	Yes	Wet waders may contain eggs of amphibians	Sample upstream regions first. Sample tributaries first followed by mainstem locations. Visual inspection of	Yes

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				clothing and equipment. Rinsing/brushing of equipment	
Drive to next site or return to office.	Plant: Seed and aquatic plant dispersal	No	All equipment is cleaned prior to departure from previous site.		No
	Other Biologic: Fish Disease	No	All equipment is cleaned prior to departure from previous site.		No
	Invertebrate: aquatic/terrestrial invertebrates transfer	No	All equipment is cleaned prior to departure from previous site.		No
	Vertebrate: Amphibian/fish transfer	No	All equipment is cleaned prior to departure from previous site.		No

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HACCP Step 5 - HACCP Plan

Critical Control Point #1:

Task # 4: Exit water, remove waders/wetsuit at vehicle.

Significant Hazards: Plant: Seed and aquatic plant dispersal

Control Measures: Visual inspections. Limit contact with water and thoroughly clean all gear. Evaluate the efficacy as to whether entry by personnel into the water is critical for this program (i.e., can it be accomplished from land)

Limits for Control Measures:

No visible weed seeds or aquatic plant parts on clothing and equipment

Monitoring: What? Clothing and equipment

Monitoring: How? visual inspection

Monitoring: Frequency? After returning to vehicle from each site

Monitoring: Who? Field crews

Evaluation & Corrective Actions:

Remove seeds and aquatic plant parts.

Supporting Documentation: None

Critical Control Point #2:

Task # 4: Exit water, remove waders/wetsuit at vehicle.

Significant Hazards: Other Biologic: Fish Disease

Control Measures: Sample upstream regions first. Sample tributaries first followed by mainstem locations. Rinsing and desiccation. Limit contact with water and thoroughly clean all gear. Evaluate the efficacy as to whether entry by personnel into the water is critical for this program (i.e., can it be accomplished from land)

Limits for Control Measures: Ample time for equipment dessication.

Monitoring: What? All equipment/ clothing

Monitoring: How? Unknown at this time

Monitoring: Frequency? each site

Monitoring: Who? Field crews

Evaluation & Corrective Actions:

Confer with disease laboratory (CA/NV Health Center) on precautions to limit transfers.

Supporting Documentation:

Critical Control Point #3:

Task # 4: Exit water, remove waders/wetsuit at vehicle.

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Significant Hazards: Invertebrate: aquatic/terrestrial invertebrates transfer	
Control Measures: Sample upstream regions first. Sample tributaries first followed by mainstem locations. Limit contact with water and thoroughly clean all gear. Evaluate the efficacy as to whether entry by personnel into the water is critical for this program (i.e., can it be accomplished from land)	
Limits for Control Measures: No visible signs of invertebrates	
Monitoring: What? All equipment	
Monitoring: How? Visual inspection	
Monitoring: Frequency? Each site	
Monitoring: Who? Field crews	
Evaluation & Corrective Actions: Alter sampling program, including gear types used and whether entry into the water is critical for this program	
Supporting Documentation:	
Critical Control Point #4:	
Task # 4: Exit water, remove waders/wetsuit at vehicle.	
Significant Hazards: Amphibian/vertebrates transfers	
Control Measures: Sample upstream regions first. Sample tributaries first followed by mainstem locations. Visual inspection of clothing and equipment. Limit contact with water and thoroughly clean all gear. Evaluate the efficacy as to whether entry by personnel into the water is critical for this program (i.e., can it be accomplished from land)	
Limits for Control Measures: No visible signs of egg masses	
Monitoring: What? All equipment	
Monitoring: How? Visual inspection	
Monitoring: Frequency? Each site	
Monitoring: Who? Field Crews	
Evaluation & Corrective Actions: Removal of egg masses.	
Supporting Documentation: NA	
Facility: Arcata Fish and Wildlife Office	Activity: Deployment, maintenance, and retrieval of water quality instrumentation
Address: 1655 Heindon Rd Arcata, CA 95521	
Signature:	Date:

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HACCP Checklist:

Deployment of water quality instrumentation

Facility Arcata Fish and Wildlife Office
Site Klamath Basin
Coordinator Paul Zedonis
Manager Mike Long
Address 1655 Heindon Rd, Arcata, CA 95521

- Task # 1: Load truck with equipment and drive to site**
- Task # 2: Put on waders/wetsuit at vehicle and walk to study site with necessary equipment**
- Task # 3: Enter water and deploy/check equipment**
- Task # 4: Exit water, remove waders/wetsuit at vehicle.**
CRITICAL CONTROL POINT

- Hazards were contained**

Hazards: Plant: Seed and aquatic plant dispersal

- Control measures were implemented
Control Measures: Visual inspection and/or rinsing of clothing and equipment.
- Control limits were maintained
Control Limits: No visible seeds located and removed
- Corrective actions were (performed if necessary)
Corrective Actions: Seeds removed

- Hazards were contained**

Hazards: Other Biologic: Fish Disease

- Control measures were implemented
Control Measures: Sample upstream regions first. Sample tributaries first followed by mainstem locations. Rinsing and desiccation. Limit contact with water and thoroughly clean all gear. Evaluate the efficacy as to whether entry by personnel into the water is critical for this program (i.e., can it be accomplished from land)
- Control limits were maintained
Control Limits: NA : seek guidance from CA/NV Health Center

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- Corrective actions were (performed if necessary)
Corrective Actions: NA

- Hazards were contained**
Hazards: Invertebrate: aquatic/terrestrial invertebrates transfer

- Control measures were implemented
Control Measures: Visual inspection and/or rinsing of clothing and equipment
- Control limits were maintained
Control Limits: No visible
- Corrective actions were (performed if necessary)
Corrective Actions: Remove

- Hazards were contained**
Hazards: Amphibian/vertebrates transfers

- Control measures were implemented
Control Measures: Visual inspection and/or rinsing of clothing and equipment
- Control limits were maintained
Control Limits: No visible signs
- Corrective actions were (performed if necessary)
Corrective Actions: Remove/rinse