Identifier: **SOP-5249**	Revision: **0**	Los Alamos NATIONAL LABORATORY EST.1943
Effective Date: 8/13/2009	Next Review Date: 8/13/2014	

Environmental Programs and Environmental Services Standard Operating Procedure

for

COLLECTION OF CRAWFISH IN THE RIO GRANDE

APPROVAL SIGNATURES:

Subject Matter Expert:	**Organization**	**Signature**	**Date**
Phillip Fresquez	WES-EDA	Signature on file	8/13/2009
Responsible Line Manager:	**Organization**	**Signature**	**Date**
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1.0 PURPOSE AND SCOPE

Crawfish (crayfish, crawdads, mud bugs), which prefer small fish and decomposing vegetation and unlike fish, do not travel far distances, may yield information as to the potential contamination of a particular site in water bodies.

The purpose of this procedure is to describe the process for the collection and processing of crawfish upstream and downstream of Los Alamos National Laboratory (LANL) in the Rio Grande.

This procedure applies to the individual(s) assigned to collect biota samples as part of the Soil, Foodstuffs and Biota (SFB) Monitoring Project, Environmental Surveillance Program.

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

This document establishes the basic requirements for collecting and processing crawfish samples upstream and downstream of Los Alamos National Laboratory (LANL) in the Rio Grande. The main objective of the procedure is to determine if there are any impacts to the Rio Grande from LANL operations. Whole-body samples will be analyzed for radionuclides, target analyte-list elements (mostly metals), and polychlorinated biphenyl congeners. Work performed under this procedure by LANL personnel will occur only after required training to applicable documents has been completed and documented.

This monitoring program is part of the Environmental Surveillance Program mandated by DOE Order 450.1.

Samples are collected in the Rio Grande at three locations with respect to being upstream or downstream of LANL:

Upstream:

1. Upstream of Otowi Bridge to Black Mesa

Downstream:

2. Downstream of the Los Alamos Canyon confluence
3. Downstream of the Chaquehui confluence near the south end of the LANL boundary

2.2 Precautions

Individuals are required to be trained in the following disciplines before performing this procedure.

- First aid
- Cardiopulmonary resuscitation (CPR)
- General field safety for all employees
- All participants near the water must know how to swim

A minimum of two (2) people is required in order to perform field work. Do not perform field work under conditions that you consider unsafe. Before beginning any work described in this procedure, review the hazards and safety controls in Attachment 1.

3.0 EQUIPMENT AND TOOLS

- 6.5 × 12 in. stainless steel mesh crawfish traps
- 15- to 20-ft sections of nylon rope
- Paper towels
- Chain-of-Custody (and sample description) forms
- Ice chest with ice
- Full-length, arm protecting Nalgene® gloves
- Ziploc® bags (one- and two-gal. sizes)
- Chest waders and belt
- Depth measuring pole
- Velocity meter
- Conductivity meter
- Dissolved oxygen meter
- pH meter
- Turbidity tube
- First-Aid kit, snake leggings, and bite kit

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Preparatory Activities

Field Team Leader	1.	Monitor the Rio Grande for water levels (depth and current). In general, crawfish traps should be placed into the Rio Grande after the main monsoon floods that occur in July/August and the currents are no greater than 3 ft/s in the proposed sampling sites.
	2.	Since some samplers will be placed in the Rio Grande within the Pueblo of San Ildefonso lands, it is required that the FTL check in with the PSI Environmental Department at least two weeks in advance and let them know in writing about the sampling.
	3.	Conduct a hazard review in accordance with Attachment 1, Hazard Review for Crawfish Sampling.
	4.	Before leaving the field, check the condition of the vehicle and the fuel level.
	5.	Identify a Point-of-Contact to provide pertinent information of destination, expected time-in, and methods of notifying the field team.
	6.	When leaving Los Alamos County, notify the group office to place you on travel status.
	7.	Ensure you have a working cell phone.

4.2 Placing Samplers in the Rio Grande

Sampler	1.	All safety and health procedures should be in place and employed as per Attachment 1.
	2.	At each of the three major sampling locations, locate three potential sites within the reach that contain similar habitats—slow moving waters (0.2 to 3ft/s), pools, sediment dominated bottoms, and snag debris (overhanging grasses, weeds, trees, logs, etc.). Crawfish prefer shallow muddy waters.
	3.	Bait the traps with fresh fish cut into pieces. (Note: the fish may be frozen) Bait is placed into the center of the trap.

	4.	At each site, attach a rope to the trap and tie to a tree branch or rebar inserted on shore. Place sampler in river. Chest waders (with belt) may be used to place traps.
	5.	Fill in the sample location et al. data in Appendix 2. GPS site. Take temperature, EC, DO, and turbidity readings according to the manufactures instructions directly upstream and at the same depth as the rock baskets.

4.3 Collecting and Processing Samplers from the Rio Grande

Sampler	1.	Check traps after one or two days. Place into a five gallon bucket and wash thoroughly making sure all samples are free of mud. (Note: use arm length gloves as crawfish may pinch)
	2.	Number of individual crawfish needed for analysis is: one per TAL analysis into Ziploc bag, one per PCB analysis into a 500 mL amber glass jar, and five (+) per radionuclide analysis into a Ziploc bag. Cool all samples to 4 degrees C.

4.4 Maintaining Custody of Samples

Sampler	1.	Document chain-of-custody for all samples used to demonstrate compliance.
	2.	Verify the possession and handling of samples is traceable at all times. [NOTE: A sample is considered in custody if it is one of the following: • In one's physical possession; • In one's view after being in one's physical possession; • In one's physical possession and then locked up so that no one can tamper with it; or • Kept in a secure area where access is restricted to authorized and accountable personnel only. A secured area is an area that is locked (e.g., a room, cooler, vehicle, or refrigerator).]
	3.	If the area cannot be secured, use a custody seal to secure the area or the sample container

4.5 Transferring Custody of Samples

Sampler	1.	Whenever samples are transferred into the custody of another person or organization, complete the "relinquished by/received by" and "date" sections of the form. [NOTE: These sections of the form must provide a complete history of custody of the samples from collection to transfer to the analytical laboratory.]
Analytical Laboratory	2.	Transfer samples with COC to the analytical laboratory for analysis. Requested analysis should include radionuclides, TAL, and PCB congeners.

4.6 Broken Chain-of-Custody

FTL	1.	Whenever there is a break in the chain-of-custody of a sample, document the failure by initiating a deficiency report in accordance with P322-4, *Issues and Corrective Action Management Process*.

	2.	Document the occurrence, evaluate the potential impact (if any) on the samples, and propose a fix to prevent recurrence.
	3.	If the area cannot be secured, use a custody seal to secure the area or the sample container

4.7 Emergency Actions to Take in the Event of Control Failure

FTL	1.	Perform First Aid, as appropriate.
	2.	For all injuries, see that the injured person is taken to Occupational medicine (only if immediate medical attention is not required) or to the nearest hospital.
	3.	Notify the individual's supervisor and group office as soon as possible.

4.8 Records Management

FTL	1.	Submit the following records generated by this procedure to the Principal Investigator: • Completed Chain of Custody form. Sample location information.
Principal Investigator	2.	Maintains and submits records and/or documents generated to the Records Processing Facility according to EP-DIR-SOP-4004, Records Transmittal and Retrieval Process.

5.0 ATTACHMENTS

Attachment 1 Hazard Review for Crawfish Sampling (Page 1).

Attachment 2 Physical Characterization/Water Quality Field Data Sheets (Page 1 & 2).

6.0 REVISION HISTORY

Revision No. *[Enter current revision number, beginning with Rev.0]*	Effective Date *[DCC inserts effective date for revision]*	Description of Changes *[List specific changes made since the previous revision]*	Type of Change *[Technical (T) or Editorial (E)]*
0	8/13/09	New Document	T/E

Click here for "Required Read" credit.

ATTACHMENT 1

SOP-5249-1

Hazard Review for Crawfish Sampling

Records Use only

Work Tasks/Steps	**Hazards, Concerns, and Potential Accidents; Likelihood/Severity**	**Controls, Preventive Measures** (e.g., safety equipment, administrative controls, etc.)	**Hazard Level** (from IMP 300-00-00, Hazard Grading Matrix)
Preparatory Activities • Travel to sampling sites in the field.	Vehicular traffic	At least two people should be involved in all field trips. Train to "General Field Safety for all Employees." Wear seat belts and obey all traffic signs. Communication equipment is required.	Low
	Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lighting, insects, reptiles, slips, falls, brush.	Wear PPE: eye protection, toe protection, long pants, long-sleeve shirt, sun and insect protection. Snake leggings are recommended and a snake bite kit should be carried on all field trips.	
• Monitoring river flows and collecting river data	Falling into river from bank.	Two-man rule. Know how to swim. Use safety pole. Take shower after exposure.	
Placing Samplers in the Rio Grande	Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lighting, insects, reptiles, slips, falls, brush.	Wear PPE: eye protection, toe protection, long pants, long-sleeve shirt, sun and insect protection. Snake leggings are recommended and a snake bite kit should be carried on all field trips. Carry first aid kit into field	Low
	River water exposure (human sewage wastes, pathogens, toxic pollutants)	Wear full-length arm gloves when placing samplers into river. Chest waders may also be worn. Avoid splashing. Immediately wash with soap and clean water or with ethyl alcohol wipes if exposed to river water. Tetanus, hepatitis, typhoid fever, and polio immunizations must be up to date.	
	Falling in river	Two-man rule. Know how to swim. Use safety pole. Take shower after exposure	

Collecting and Processing Samplers from the Rio Grande	Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lighting, insects, reptiles, slips, falls, brush.	Wear PPE: eye protection, toe protection, long pants, long-sleeve shirt, and sun and insect protection. Snake leggings are recommended and a snake bite kit should be carried on all field trips. Carry first aid kit into field	Low
	River water exposure (human sewage wastes, pathogens, toxic pollutants)	Wear full length arm gloves when retrieving and processing samplers. Chest waders may also be worn. Avoid splashing. Immediately wash with soap and clean water or with ethyl alcohol wipes if exposed to river water. Tetanus, hepatitis, typhoid fever, and polio shots must be up to date.	
	Falling in river	Two-man rule. Know how to swim. Use safety pole. Take shower after exposure.	

Wastes or Residual Materials

None generated.

Emergency Actions to Take in Event of Control Failure

For all injuries, provide first aid and see that injured person is taken to Occupational Medicine (only if immediate medical attention is not required) or the nearest hospital. Notify supervisor and group office as soon as possible.

ATTACHMENT 2	
SOP-5249-2 PHYSICAL CHARACTERIZATION / WATER QUALITY FIELD DATA SHEETS	Records Use only Los Alamos NATIONAL LABORATORY EST. 1943

Reference: Rapid Bio-Assessment Protocols for Use in Streams and Wadeable Rivers EPA 841-B-99-002

STREAM NAME: RIO GRANDE	DATE AND TIME:
LOCATION (Circle one): Upstream Reach (PSI), Downstream Reach (Los Alamos Canyon) OR (Sandia/Mortandad)	
SITE NUMBER (Circle one) (1 most upstream, 2, 3, 4, 5 most downstream) and GPS coordinates: Y (Northing) =	X (Easting) =
PRINCIPAL INVESTIGATORS: Philip Fresquez, WES-EDA	
FORM COMPLETED BY (Circle one): Louie Naranjo, Rhonda Robinson, Sherri Sherwoods Other(s) (Name):	
WEATHER CONDITIONS:	
SITE LOCATION MAP	

Sample

ATTACHMENT 2	
SOP-5249-2 (Cont'd) PHYSICAL CHARACTERIZATION / WATER QUALITY FIELD DATA SHEETS	Records Use only Los Alamos NATIONAL LABORATORY EST. 1943

WATERSHED FEATURES	
RIPARIAN VEGETATION	
SEDIMENT/SUBSTRATE	
WATER QUALITY	Temperature °C Conductivity Dissolved Oxygen pH Turbidity (Suspended sediment) Current Velocity

Sample