

# Can We Have Healthy Living Environments in Mining-Impacted River Basins?

*An Activity Guide for the Coeur d'Alene River Basin Case*



Photo credit: Panhandle Health District



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If you use our case, we'd love to hear from you. Please contact us at [cwardropper@uidaho.edu](mailto:cwardropper@uidaho.edu) with specific case questions, answer keys, complete PowerPoint slide deck, or the mock dataset we use for the Beach Mapping Exercise (Exercise 1).

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## **Introduction**

This document includes a description of the four case activities developed to align with lecture and course materials for the Coeur d'Alene Case. The learning outcomes and objectives for these activities are included in the associated *teaching notes* document. The activities specifically help students learn how to represent diverse stakeholder perspectives, understand the complexities of public deliberation processes, and to work through complexity to identify opportunities for collaboration. *Table 1* on page 4 provides an overview of the four activities.

## **Recommended Prerequisites**

As described in our teaching notes, the Coeur d'Alene Case follows an introduction to fundamental terms and concepts in SE-Synthesis. These case activities are designed to build on each other. We recommend completing the activities in the suggested order (Table 1). Introductory knowledge of the ArcGIS online environment is also recommended. Our class spends a class period learning the basics of navigating ArcGIS Online with our on-campus GIS specialist prior to beginning this unit.

## **Modification Options**

Omitting activities is possible if students read the background materials associated with the activities. The unit can be expanded by providing additional time for developing the public service announcement included in activity 4. Activity 1 describes how to complete the activity in ESRI ArcGIS Online, the activity could be completed through an alternative mapping program.

## **Suggested Outside Materials**

- Student laptops
- Access to basic mapping tool (e.g., ArcGIS Online)
- Complementary dataset (available on request)
- EPA documents on Superfund planning (esp. Re: evacuation)
- "Heavy Metal: An American Pollution Story" documentary

Table 1. Summary of Associated Teaching Activities.

Activity	Purpose	Description	Estimated Class time	Assessment Measure
<b>1. Beach Map Activity</b>	Introduce data-driven decision-making and expose students to basic data analysis	Use data to determine the cost of cleaning up highly contaminated beaches	75 minutes. Additional homework required	Complete handout
<b>2. Stakeholder Analysis</b>	Consider how a local restoration project impacts people differently	Analyze stakeholder positions and discuss how these positions influence decision-making	20 minutes	Complete handout (can count for an entry or exit ticket)
<b>3. Public Hearing</b>	Introduce students to the complex and diverse viewpoints of stakeholders	Role play to emulate a public hearing regarding a proposed remediation project	90 minutes split between 2 classes. Additional homework required	Participation in public hearing and summary of position statement and hearing.
<b>4. Risk Communication</b>	Develop a tailored public service announcement	Use summary from the public hearing to create a public service announcement	75 minutes	Complete public service announcement

## Activity 1: Beach Map Exercise

### Teaching Notes

In this activity, students will take a guided dive into data, public health, and environmental clean-up. The activity asks students to individually map out lead contamination levels at several beaches across the Coeur d'Alene Basin. They will determine which beaches are the most contaminated and then estimate the cost required to remediate the beaches by installing riprap. The associated data is provided in the 'Beach Activity' Excel spreadsheet (email authors for the spreadsheet). Both the data and the scenario for this activity are *based* on real data, but were created for the purposes of this course. Students should be made aware of this early in the activity.

#### Associated Readings:

EPA (2012). "Coeur d'Alene Basin Record of Decision Amendment Site Update."

Gustavson KE, Barnthouse LW, Brierley CL, Clark EH, Ward CH. (2007) Superfund and mining megasites. *Environmental Science and Technology*, **41**:2667–2672.

#### Steps:

- 1) Fill in the highlighted information in the activity handout. If you do not plan on using a course file within ArcGIS online, delete the step asking students to share their map to the course folder. The questions are embedded in the worksheet. Consider adding specific point values to each question. You may also want to remove the page numbers from the handout to avoid confusion.
- 2) Distribute the worksheet (included below) and introduce the activity.
- 3) Provide 30 minutes of class time for students to work independently. Ask students to pair up to discuss the activity in the final 10 minutes of class.
- 4) Ask students to complete the exercise for homework. We estimate that it takes about an hour to complete but will vary depending on the student's level.
- 5) Reflect on which beaches are the most contaminated and decide which beaches should be remediated as a class. This information will be used again in the public hearing.

#### Possible discussion questions for reflection:

- What are some possible issues with the dataset you were provided with for this exercise? Consider the source and method of data collection.
- Do you think the proposed remediation project is a good idea? Consider the social, cultural, and ecological implications of the project.
  - What additional information or data would help you to defend your position?

## Beach Map Activity

**Total Points:**

**Due Date:**

**Instructions:** *Read the introduction and scenario and complete the associated activities. The scenario is based on fictitious but feasible future data and events. Remember to save your work frequently.*

**Name:**

**Date:**

**Score:**

### Introduction

Toxic metal contamination is an issue throughout the Coeur d'Alene Basin. Recreation sites present a unique set of issues for environmental managers. Every year, recreation sites, especially beaches, are re-contaminated by high water events or floods. As a result, removing contaminated soil and replacing it with clean soil is not an effective remediation strategy on its own. Recreation sites can be remote, hard to access, and spread out. Imagine the challenge of cleaning up a 200-acre recreation area.

The Basin Environmental Improvement Project Commission (BEIPC) relies on multiple approaches for remediation and restoration at recreation sites. The overall goal of clean-up activities at recreation sites is to address and manage human health risks from exposure to lead and other toxic metals while maintaining the benefits of recreation for people's health and the local economy. In addition to remediation techniques, the approach relies on community outreach and education to help people manage health risks while recreating. Early in the environmental clean-up, a 72-mile strip of contaminated decommissioned railroad along the river was converted to a paved recreational trail, but the area around the bike trail is still contaminated because it is within a flood zone. The trail offers excellent recreation opportunities but also makes accessing beaches, which contain contaminated sediment, easier. People can also access beaches by boat. BEIPC must balance tradeoffs between public health concerns and new economic development.

### Scenario

Public beaches along the South Fork of the Coeur d'Alene River have recently become a heated public health debate. Spring flood events have left several beaches covered in highly contaminated sediment for multiple years in a row. The Panhandle Health District tested lead levels with their handheld XRF (a device used to test for lead) that exceeded 1,000 parts per million (ppm) lead at several popular beaches.

Unfortunately, these beaches are popular summer hangouts for residents and out-of-town visitors. In addition, a business owner is exploring the feasibility of building a recreation outfitter which would allow kayaking and tube rentals. While the addition of the outfitter would help boost the local economy, it would also make the contaminated beaches more accessible. These concerns have prompted the Idaho Department of Environmental Quality (IDEQ) to request remediation assistance from the EPA.

## Mapping Point Data in ESRI ArcMap Online

### Part 1: Exploring the data

- 1) Log on to ArcGIS online using the instructions provided on the library website. You will not be able to complete the activity without signing in through your school account. Additional instructions for logging on are available here.
- 2) Access the .csv file titled "lead\_data" on (DESCRIBE WHERE DATA IS LOCATED)
- 3) Save the data to your computer.
- 4) Navigate to the tab titled "map"
- 5) Select the "add data" option → "add layer from file"
- 6) Use the guide to navigate to the data file
- 7) Select "add to map". The points should be added to the mapping interface using columns in the CSV file that specify the latitude and longitude for each location.
- 8) Save your new map project to your "content" folder and add descriptive tags (e.g., beaches, lead) and information. Name your map "LastName\_CdAMap". This will allow you to come back to the project to keep working!!
- 9) Navigate to your content folder and find your map project → Select your map project and the "share" button to share the project with the class.
- 10) In the navigation pane on the left-hand side of the screen, select the attribute titled "Lead2022". This attribute represents hypothetical lead level data collected at boat ramps. Noticed that there are attributes for three years (2022-2024).
- 11) Click on the layer to display icons to visualize the data. Inspect the attribute table. Click on individual points to explore the data. You can edit the text boxes that appear when you click on points.
- 12) Label the points with the names of the boat launches (hint: look for the "create label" option).
- 13) Experiment with the display options. Which provides the most compelling style for evaluating where contamination is highest? Why?



**Part 2: Filter the data.** ArcMap online allows you to complete basic spatial analysis. We will experiment with the option to filter the data. For this activity, we are interested in filtering the data to include boat ramps with lead levels exceeding 1,000 ppm lead for three consecutive years. Remember to save your work.

- 1) Navigate to the tab titled "Analyze". Notice that the navigation pane on the left now displays several options for analysis.
- 2) Select the tab titled "find locations"
- 3) Select "find existing locations":



Step 1: choose the original data file.

Step 2: create a “query” to select only locations with lead levels exceeding 1000 ppm (the recommended threshold for environmental clean-up) in 2022.

Step 3: name the new layer “2022 lead levels”

- 4) Select ‘run analysis’ and a new layer should appear in the interface. This layer should include only locations exceeding 1000 ppm lead in 2022.
- 5) Repeat steps 1-4 to create a map displaying only the beaches that exceeded 1000 ppm for each year. You will need to use the query feature again.
- 6) Which beaches exceeded 1000 ppm lead every year? Which beach is the least contaminated? Which beach is the most contaminated? *Hint: Find the average across all three years. You can do this by creating a new attribute in ArcMap or by opening the dataset in Excel.*

- 7) Why do you think some beaches are more contaminated than others? List three physical processes that influence how lead contamination is transported through a river system.

- 8) Make sure that your final map saves to the group folder. You will have to save the map as you go. **IT WILL NOT SAVE AUTOMATICALLY!**

Part 3: Calculating the cost of riprap. In the final part of the activity you will estimate the cost of installing riprap along the contaminated beaches. Riprap is a rock material used to protect beach areas from erosion.

- 1) Learn more about the cost of riprap here: <https://www.thebalancesmb.com/costs-and-installation-tips-when-building-a-riprap-844741>
- 2) Calculate the amount of shoreline (in meters) that is considered contaminated.

*Hint: open the original csv file or look for the variable titled "Beach\_len\_m".*

- 3) Write a paragraph estimating the cost of riprapping the contaminated shorelines. Estimate the cost of materials using the reference information in step 1. In your paragraph be sure to list what materials are needed and consider what other information and approvals you may need to riprap the beaches. For the purposes of this exercise, the beaches are all located near public boat ramps. Justify your estimate.

Is the proposed remediation a good solution for the contamination issues? There is no right answer.

## Activity 2: Stakeholder rainbow analysis

### Teaching Notes

The purpose of this activity is to explore stakeholder positions in the Basin. The activity is called a “rainbow analysis” and provides a relatively simple way to identify stakeholders and how they are affected by environmental problems. This is an important exercise for introducing the public hearing. The activity should be completed at the end of an introductory lecture about the importance of trust in resource management. It is important that students have a basic understanding of stakeholders in the Basin. In the public hearing exercise, they will receive additional information about the stakeholders.

#### Associated Reading and video:

Metcalf, E.C., Mohr, J.J., Yung, L., Metcalf, P., Craig, D., 2015. The role of trust in restoration success: Public engagement and temporal and spatial scale in a complex social-ecological system. *Restor. Ecol.* 23, 315–324. <https://doi.org/10.1111/rec.12188>

Rosenwinkel, Hans. “Heavy Metal - An American Pollution Story.” 2005. Available on Kanopy.

#### Steps:

- 1) Describe the exercise to the students.
- 2) Pass out the handout and ask students to pair up.
- 3) Allow 10 minutes for students to discuss with their partners.
- 4) Discuss the activity as a group.

#### *Extra Resources*

Rainbow Analyses are often used in SE-Synthesis projects. SESYNC has a reference document available with a collection of best practices:

Using Stakeholder Analysis in the Classroom, By Ramiro Berardo and Claudia Murphy:

[https://www.sesync.org/system/tdf/resources/stakeholder\\_analysis\\_berardomurphy\\_final.pdf?file=1&type=node&id=1666&force=](https://www.sesync.org/system/tdf/resources/stakeholder_analysis_berardomurphy_final.pdf?file=1&type=node&id=1666&force=)

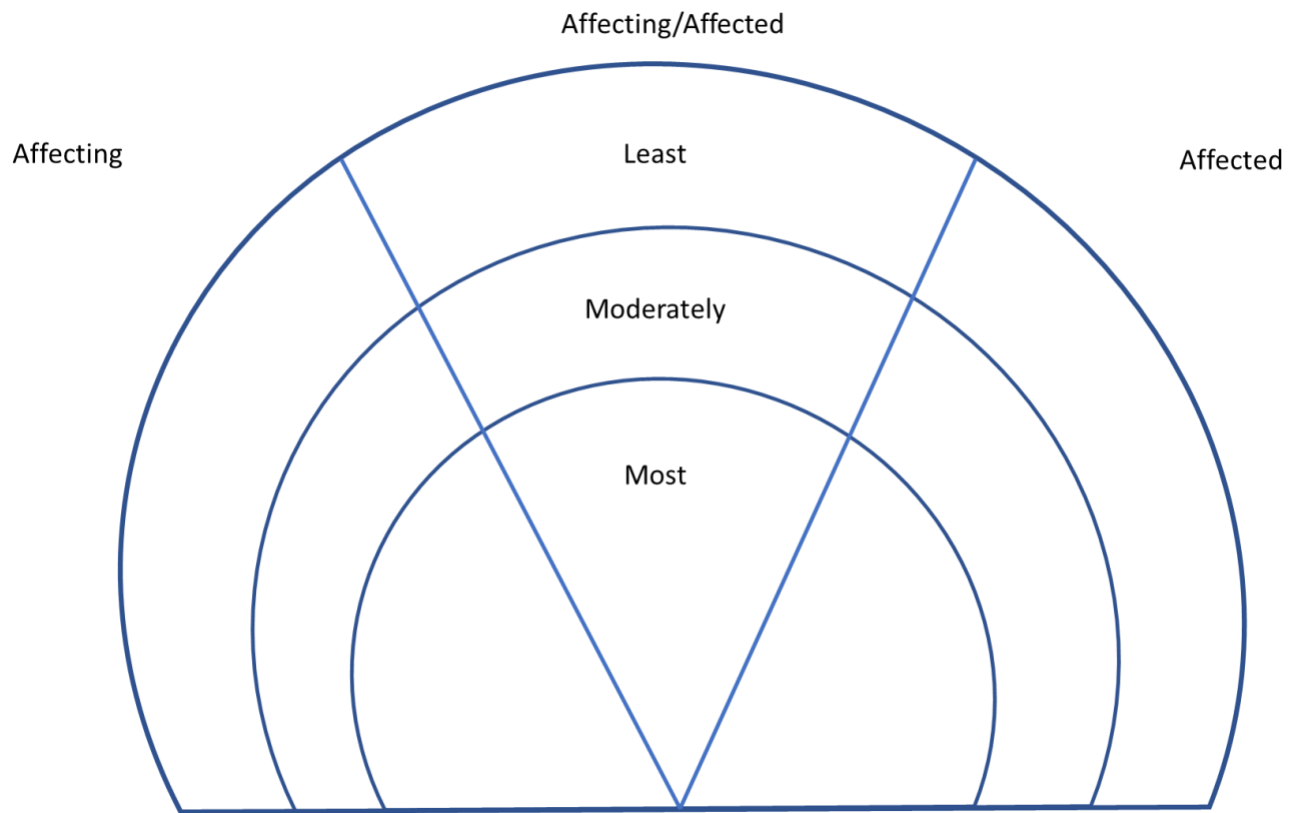
# Stakeholder Rainbow Analysis

## Total Points:

**Instructions:** *The Stakeholder Rainbow Analysis is used in environmental management to evaluate how different stakeholders are impacted by a problem or action and how they impact a problem or action.*

*Consider the riprap project you explored in the “Beach Map” activity and the class lecture about trust. Pair up with a partner and determine where stakeholders are likely located using the diagram provided below.*

<b>Name(s):</b>
<b>Date:</b>
<b>Score:</b>



Modified from: Chevalier and Buckles, 2008<sup>1</sup>

<sup>1</sup> Chevalier, Jacques M., and Daniel J. Buckles. *SAS2: A guide to collaborative inquiry and social engagement*. SAGE Publishing India, 2008.

## Activity 3: Public Hearing

### Teaching Notes

The public hearing is the core activity in this unit. Students prepare and participate in a public hearing and then compose a reflective summary of the hearing from the perspective of an EPA administrator. The activity requires portions of three class periods. Prior to the hearing, students must prepare a testimony based on their assigned roles. The public hearing format provides a way to explore differing viewpoints on a topic. The hearing is structured like a public meeting, some students will be role-playing as board members. Board members present their position and listen to other student groups present their viewpoints. After the presentations, there is time for question and answer. All students will write a summary of the comments from the position of an EPA administrator.

#### Associated Reading and video:

Metcalf, E.C., Mohr, J.J., Yung, L., Metcalf, P., Craig, D., 2015. The role of trust in restoration success: Public engagement and temporal and spatial scale in a complex social-ecological system. *Restor. Ecol.* 23, 315–324. <https://doi.org/10.1111/rec.12188>

Rosenwinkel, Hans. "Heavy Metal - An American Pollution Story." 2005. Available on Kanopy.

McComas, K. A., 2003. Citizen satisfaction with public meetings used for risk communication. *Journal of Applied Communication Research*, 31(2), 164-184.

#### Steps:

- 1) Fill in the highlighted portions to the student worksheet below.

#### Day 1 (the end of class period with the Stakeholder Analysis Activity):

- 2) Provide background on public hearings and assigning students to a stakeholder group. Pass out the handout compiled with the activity instructions and stakeholder descriptions. Familiarize students with the required deliverables for the project and introduce the format for the hearing (described below in Step 3).
  - a. Students work in pairs and are expected to write a 200-word testimony about their position prior to the hearing.
  - b. Watching some sample public hearings in class. See the extra resources for recommendations about videos. Facilitate a class discussion on the following topics:
    - i. What tactics for developing arguments are most compelling in the examples?

- ii. Are arguments more compelling when they present to your emotions or when they are based on facts?
- iii. Ask students if they have ever attended a public hearing.
  - 1. Ask about the format of the meeting. Did the setting feel open? Was it a safe place to discuss ideas?
  - 2. Are there certain words or ideas that sound biased, unsupported, or unequal?
- iv. Describe a public hearing that you have participated in.
- v. Inviting a guest speaker to discuss their experiences with a public hearing may be helpful.

**Day 2, the public hearing:**

3) Meeting format:

- a. A facilitator should help to organize the meeting. This person can be the lead instructor or a teaching assistant (ideally one person facilitates, and another focuses on evaluation). The facilitator should begin the meeting by reminding the students of the scenario. Following the description, the facilitator should introduce the ground rules for the hearing:
  - i. Begin by introducing yourself (name and role)
  - ii. Position statements are limited to three minutes per group.
  - iii. Establish the order of presenters
  - iv. Provide an overview of the rules of conduct
- b. As described in the Stakeholder Description, some students will be board members while others will be meeting attendees. This format is similar to the format of quarterly meetings in the Coeur d'Alene Basin.
- c. With the remaining class time, remind students of the expectations for completing their hearing summary statement and have students reflect on the hearing. Possible discussion questions include:
  - i. Do you feel that your opinions informed are most informed by how your classmates delivered their message, the underlying scientific evidence presented, or through a personal bias that you had prior to starting the activity? You may have experienced several of these factors. Try to identify which one was the most influential.
  - ii. Were there certain words or ideas that sound biased or unequal?
  - iii. Why might external meeting facilitators be helpful in some situations?

- iv. What can be done to ensure that the perspectives of the primary stakeholders are included in the hearing?
- d. Conclude the discussion by reviewing the hearing format. This should include additional details about the format and expectations for the public hearing.

### *Extra Resources*

The internet includes many great resources for conducting public hearings within classroom settings. This recorded public hearing provides a good example of a public hearing related to issues about a sick killer whale off the coast of Washington:

<https://www.youtube.com/watch?v=HR9FbwzSHDk>

We recommend starting the video around the 30-minute break. The video can be used in class or assigned as homework. More details about this exercise are provided in the slide deck.

## Public Hearing

**Total Points:**

**Due Date:**

**Instructions:** *This activity involves a role-playing exercise. You and a partner will be assigned a specific stakeholder role and stance. You will then develop a testimony about the position and participate in a public hearing hosted by the Basin Commission. The purpose of the hearing is to discuss the beach contamination issue and potential remedies that you explored in the Beach Map Activity. You are expected to provide the following deliverables for this activity:*

**Name(s):**

**Date:**

**Score:**

**1. A 200-word testimony:** Prior to the hearing, you and your partner will develop a testimony to justify your position. You will develop the testimony based on available resources about the issue, the scenario described below, and your stakeholder description. Your testimony should include: (1) who you are, (2) your position statement, and (3) what you think should be done about the beaches (doing nothing is a possibility).

**2. Delivery of your testimony:** You will be guided through a mock public hearing by a facilitator. In your allotted 3-minute time frame, you or your partner (you choose) will provide your testimony. The facilitator will provide additional instructions.

**3. A 500-word summary statement:** You will complete a 500-word summary statement of the public hearing from the perspective of the EPA administrator. Did you notice any of the common issues experienced in public hearings? See the rubric for additional information.

## Extra Resources

While the specific scenarios and stakeholders are fictional, you should develop your testimony with support from the numerous websites that contain information. Please see the list below:

- 1) The Basin Commission Website: [www.basincommission.com](http://www.basincommission.com)
- 2) The Restoration Partnership Website: [www.restorationpartnership.org/](http://www.restorationpartnership.org/)



## Scenario

As you learned in the Beach Clean-up activity, the Idaho Department of Environmental Quality seeks insight from the public about a controversial decision to remove contamination and riprap all public beaches that have exceeded 1,000 ppm lead for the past three years. The Idaho Department of Health and Welfare considers beaches that exceed this threshold a public safety hazard. Riprapping the beaches will keep people from sunbathing on fine sediments which include the highest levels of contamination. The public hearing promises to be controversial due to conflicting ideas about what should be done about contamination on the beaches. As you will see, many attendees feel like IDEQ has already decided on the alternative they will pursue. Others are frustrated and concerned about the potential economic effects of riprapping the beaches. An entrepreneur plans to open a tubing and kayaking outfitter. He fears that riprapping the beaches will detract from the success of the outfitter. Still others love spending hot summer days enjoying the beaches. You and your partner will represent a different community perspective at this meeting. Meeting attendees include EPA representatives, IDEQ, the outfitter developer, a member of the CdA Tribe, several community residents, the Panhandle Health District, and recreationists. Hearing attendees will provide their perspective on IDEQ's plans to install riprap along contaminated public beaches.

## Stakeholder Descriptions

*Please note that these descriptions are based on real stories. The characters and their storylines are fictitious.*

### **EPA Project Manager (Board Member)**

**Description:** I am a project manager with the Environmental Protection Agency and a member of BEIPC. I live in Seattle and only visit Coeur d'Alene during our quarterly meetings. I also manage 10 other project sites in my region. The EPA is responsible for managing the Coeur d'Alene Trust funds and oversees the clean-up and ecological restoration within the Superfund Site around Bunkerhill. The cleanup started in 1983 after the site was added to the National Priorities List. Over the next 30 years, we are cleaning up the site in three main areas or Operable units (OU); the 21 square mile area around the old smelter site (OU1 and 2); the Upper and Lower Basin through Lake Coeur d'Alene and on to the Spokane River in Washington (OU3); and in the Upper Basin, particularly at mine and mill source areas (OU2). The work includes repairing roads and streets in community areas, preventing flooding and recontamination in community areas, continuing property remediation, and completing source controls at mine sites. In addition, the Institutional Controls Program has help to complete commercial developments. To date, more than 1,800 acres of property have been transferred to the state of Idaho for economic development projects in OU 1 and 2. EPA has also finished converting nearly 400 acres of agricultural property near Medimont in the Lower Basin (OU3) to healthy wetland habitat. The area is now a clean feeding habitat for swans, ducks and other wetland birds.

**Stance:** Supportive

**Justification:** I have worked in this position for the past 10 years and have observed a lot of changes in the area. The EPA has worked with IDEQ in this area for over 50 years. Recreation and tourism are growing industries and our monitoring suggests that people are not following health advisory messages. Our data shows that the beaches are becoming too dangerous for people. We plan to work with IDEQ and other partners in the Coeur d'Alene Work Trust to install riprap on public beaches with consistently high levels of lead contamination. In addition to decreasing the public health threat by deterring public use, the riprap will prevent erosion. Residents can cool off at the Kellogg Community Pool. The City of Kellogg just received a grant for upgrades to the pool. Closing off the beaches is that best thing for community health.

### **IDEQ Representative (Board Member)**

**Description:** I am a project manager with the Idaho Department of Environmental Quality and a member of BEIPC. I live in Boise and come up to Coeur d'Alene for our quarterly meetings and big events. My friends in the area tell me that people are starting to recreate more on contaminated beaches.

**Stance:** Supportive

**Justification:** We need to try something new to keep children off the contaminated beaches. Every summer, more and more people are swimming in rivers and sunbathing on beaches that are extremely contaminated. EPA has funding available for the riprap project and we think it is a good time to initiate the project. We have tried informing people about safe habits, but people do not pay attention to the signs.

### **Public Health District**

**Description:** I have lived in the area for about 10 years now and love it. I moved here to join the Kellogg office of the Panhandle Health District and oversee the lead health intervention program. The Panhandle Health District administers the Institutional Controls Program (ICP). The ICP is a locally enforced set of rules and regulations designed to ensure the integrity of clean soil and other protective barriers placed over contaminants left throughout the Bunker Hill Superfund site. The ICP offers many services to help residents of the site maintain their barriers and protect their health. The ICP provides education, sampling assistance, clean soils for small projects that need less than one cubic yard of material, pick-up of soil removed from small projects and a permanent disposal site for contaminated soils generated site wide. The ICP regulates and helps with construction and renovation projects on building interiors that involve ceiling and attic work, insulation removal, and work in dirt basements and crawl spaces.

**Stance:** Supportive

**Justification:** The fundamental purpose of the ICP is to protect the public health and assist local land transactions within the Superfund site. A huge part of protecting public health is to be

an information source for residents and visitors to protect themselves from lead and other heavy metals exposure. The beaches have been increasingly contaminated during spring flooding. Our current program is no longer enough. Something more must be done.

### **Tribal Member and the Natural Resource Restoration Department**

**Description:** I am a member of a Tribe who depends on the lake for our cultural and spiritual practices. I live in Plummer with my husband and two kids and work as a natural resource scientist for the Tribe. Through the millennia, Mother Earth was the employer. We earned our livings through what was provided in nature: lakes and streams churning with trout and salmon; forests complete with elk, moose and deer, mountains and meadows with huckleberries and camas roots, wetlands with waterfowl and water potatoes. The mining industry in Idaho's Silver Valley dumped 72-million tons of mine waste into the Coeur d' Alene watershed. The State of Idaho, meanwhile, looked the other way. As mining and smelting operations grew, they produced billions of dollars in silver, lead and zinc. In the process, natural life in the Coeur d' Alene River was wiped out. The Coeur d'Alene watershed, especially the lower basin is very important and needs to be cleaned up and restored to what it was.

**Stance:** Opposed

**Justification:** Riprapping beaches will increase bank cut erosion downstream. We have worked with the EPA and the state for years on a basin-wide restoration plan. This project was not part of that plan. Protecting human health is important but the ecosystem must be considered too. We also do not think that the DEQ and EPA have properly completed the regulatory steps they

### **Employee at Local Grocery Store**

**Description:** I am a mother of four living in Kellogg. I work at a local grocery store and take care of the kids. My husband commutes to Post Falls for work. I am also friends with several people at the health district. We moved to the area a few years ago because the real estate was more affordable than in the Spokane Valley. It is a great community for us. We like being able to get out into the woods on the weekends and the kids have lots of friends. I feel safe letting them run around outside after school. I will admit, if we could afford a house in the Spokane Valley, we'd move there in a second.

**Stance:** Supportive

**Justification:** Even though they're told not to hang out on the contaminated beach, the river is too tempting in the hot summer as well as easy access and close to home. My friends at the health district tell me the lead poisoning is getting bad again. The Kellogg pool is free in the summer, but the kids still like to swim in the river. If the beach is covered with riprap, then the kids will stay away and go to the pool or run through a sprinkler. I didn't know much about the history of the area before moving here. As a mother, I am concerned that my children will have high blood lead again, last year at the blood lead screening two of my kids had elevated levels. I cannot always keep an eye on them. I am tired of worrying about it.

## Local Resident in the Mining Industry

**Description:** I am a father of 3, a miner, and a third generation Silver Valley resident. My great grandparents came to the Silver Valley in 1920 specifically to work at Bunker and mining has been in the family ever since. I met my wife in high school at Kellogg High back in 1988 when there were no jobs, unless you worked for the EPA. I worked hard in school and got a good college scholarship. My wife and I came back to the Valley to be close to our families and because I found work at a mine. I am one of the lucky guys who can still make a living in mining around here. The unions and strikes are tough, we need jobs, not more environmental cleanup but we keep to ourselves and look forward to retiring once we get our kids through school.

**Stance:** Opposed

**Justification:** We have never suffered anything, and our children have their checkups, both dental and medical. My favorite stretch of beach is one of the places they are talking about covering with riprap. My friends and I have swam in the river our whole lives and we are fine. When I was a kid, there were no trees on the hillsides, the rivers ran milky white, and the smelter sometimes made the air hard to breath. Things are so much better now. I can't understand why people still think there is such a problem. The EPA has spent millions of dollars cleaning up the contaminated soil and yet they still act like it is unhealthy to even be outside. My wife and I both work full-time jobs. We can't drive our kids to the Kellogg pool even if we wanted to. If the beach is covered with riprap, we won't have a place to cool off in the summer. Besides, we don't eat dirt so they will be fine.

## Retired Local Resident

**Description:** I have worked and lived in the area all of my life. Worked the mines, all of them, and mills also. Now, I am retired and spend my days playing with my grandkids. I am not saying this area is perfect, but it is ideal to me.

**Stance:** Opposed

**Justification:** I have been tested for lead many times and never tested high. While growing up in my area, I have seen the changes that have taken place. Lead poisoning has a commonsense approach, good hygiene makes the difference. You will never get all of the lead out of the soil; the Silver Valley sits on a natural lead seam that will never go away. It will always come out of the ground through runoff and groundwater. You can't stop it. The environmental clean-up has done a lot. Now, taxpayers don't want to keep putting money into something that has already been cleaned up. I think remediation has made all the difference but remember, you will never stop lead from coming out of the ground naturally.

## Vacation property owners

**Description:** I am a mother of 5 from Spokane. About 10 years ago, my husband and I finally saved up enough money to purchase 10-acres of beautiful beachfront property along the river

for weekend visits and large family functions. We love this area just the way it is. The river is quiet around our property. The kids can play outside all day while my husband and I recharge from our busy work week.

**Stance:** Opposed

**Description:** We are not concerned about the mining contamination and wish the government would stop meddling. We've heard that there's some contamination on the beach, so we make everyone wash their hands before eating--we are fine!! We've heard that there is a recreation outfitter looking at nearby property and that the government is going to cover all the public beaches. We know that this will only make trespassing on our beach more common. We recently posted 'no trespassing' signs along the beach because we noticed trash on the beach from weekend parties. They (Shoshone County) already makes us pay double for property taxes since we don't live here full-time. If the government ripsraps public beaches and the new tubing company comes in, our beach will be overrun with unwanted visitors.

### **Tourist Industry Representative**

**Description:** As a hotel owner, I depend on the bike trail and river for business in the summer months. Our customers love the bike trail. The last few years have been great for business. My company is hoping to expand business operations by opening a kayak outfitter on the South Fork of the CdA River.

**Stance:** Opposed

**Justification:** The river used to have problems, but it is beautiful now. Signs and difficulties accessing the river just scare tourists away. The EPA's latest idea is just another way to deter economic development.

### **Recreationalist**

**Description:** I am newly married and in my twenties. I currently live in Coeur d'Alene and have a good job at a car dealership in Spokane. I spend my free weekends on the rivers, I even met my wife while kayaking the Coeur d'Alene River in the lower basin. We love to camp on the beaches and to bird watch.

**Stance:** Opposed

**Justification:** Riprap is unsightly, and we are afraid that we will be unable to access the river safely at some of our favorite places. We have only been spending weekends recreating in the area for the past few years. We had no idea that there was any sort of problem until we saw the notice about this public meeting. Riprapping the beaches sounds unnecessary and will ruin weekend fun for a lot of folks. The South Fork of the river is so easy to access. We hate having to drive a lot on the weekends.

## Angler

**Description:** I live and work as a banker in the city of Coeur d'Alene. I like to meet up with my best friend from Wallace at the Cataldo Boat Launch all summer long to fish the Coeur d'Alene River. It is a perfect halfway point between us.

**Stance:** Opposed

**Justification:** The riprap project will disrupt our access to the river. We catch huge Cutthroat Trout and don't have any issues with the metals. I wear waders and don't spend any time on the beaches. We do not eat the fish.

## Activity 4: Public Service Announcement

### Teaching Notes

The Public Service Announcement activity is a reflective activity to wrap-up the public hearing. The activity is completed in one class period. Students should read the complementary reading prior to class.

#### Associated Reading:

Witte, K., Meyer, Gary, & Martell, Dennis. (2001). *Effective health risk messages: A step-by-step guide*. Thousand Oaks, Calif.: SAGE.

#### Steps:

Step 1. Lead a discussion about risk communication using the reflective questions as a guide.

Step 2: Allow students to work with their partners from the public hearing to develop a sign design (instructions in worksheet).

Step 3: Provide time for students to briefly discuss their sign designs. Optionally, vote on a class favorite.

#### Reflective Questions:

- Which slogan best captures the lead contamination risk?
- What messaging strategies might improve risk communication campaign?
- How might health risk announcements fail to consider sensitivities of a vulnerable population?
- What challenges may inhibit interactive risk communication?

#### Materials:

Students should bring their computers to class on this day, although it is fine if students choose to hand draw designs.

## Public Health Message

**Total Points:**

**Due Date:**

**Instructions:** *Develop a public health message based on your reflections from the public hearing. Create a sign that is both sensitive to the historical context and issues and alerts people about the health risks of lead contamination. You will briefly present your design idea to the class.*

**Name(s):**

**Date:**

**Score:**

### Scenario

The IDEQ has read through the public hearing responses and is now beginning planning stages for the beach riprap project. They are looking for ideas for new signage to be posted at all the beaches that will be riprapped. You and your partner are a contractor trying to win the bid to develop the signs. Sign designs should include a brief slogan as well as a visual. If you cannot produce the visual, you can describe it instead. The IDEQ has noticed that in the past people have failed to notice signs. As a result, they have asked contractors to include a brief strategy about how signs can be strategically placed to draw more attention. You should include a brief description of how you would suggest overcoming the challenge when presenting your sign.



## Draft Sign for Public Health Campaign

**Sign Design:**

**Strategy for improving visibility of signage:**