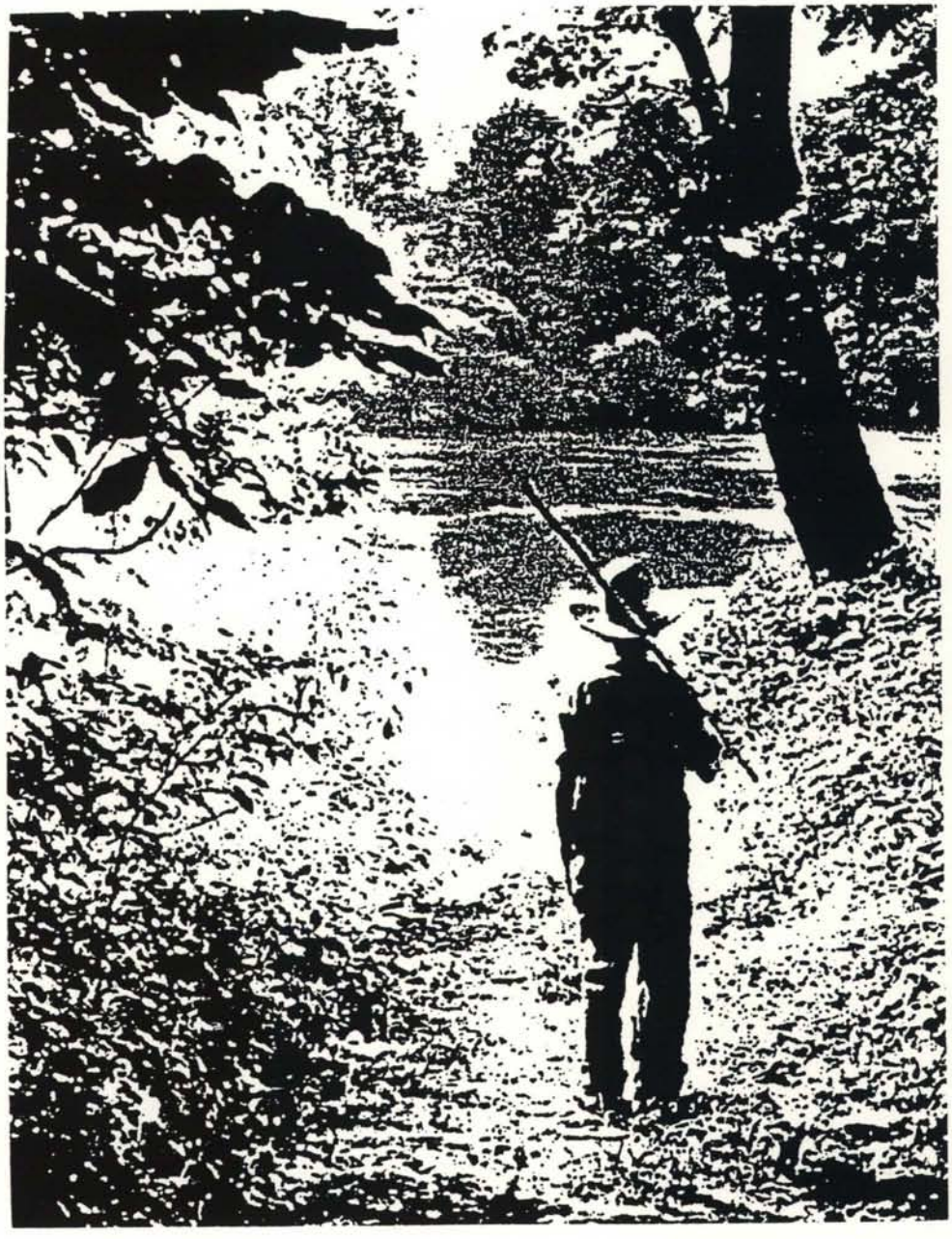
# Idaho Streamwalk

## A Stream Monitoring Tool for Citizens



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# STREAMWALK MANUAL

## Background

The Environmental Protection Agency (EPA) Region 10 office in Seattle was requested by several groups and agencies to create a standardized, easy to use screening tool for monitoring stream corridor health. EPA responded by forming a work group composed of several citizens and agency representatives to develop both a monitoring checklist and a data management system named Streamwalk.

## Purpose

Streamwalk is designed to be used by lay people, people who are interested in learning more about their streams and rivers. It is anticipated that the data people collect will be used as a screening tool to focus attention on areas that might be of concern, and to help direct further evaluation by experts. EPA's goal is to collect enough good data so that agencies can make comparisons and evaluate trends, over time, for rivers or streams.

The Idaho Water Resources Research Institute is endorsing Idaho Streamwalk through the sponsorship of EPA, Region 10. We feel the program has enormous potential for growth, serving both youth and adult audiences, as well as providing a useful tool to state and federal agencies.

## Streamwalk Objectives

- Develop a screening tool to identify potential problem areas
- Provide a standardized data collection method so regional and trend comparisons can be made
- Focus experts' limited resources on suspected problem areas
- Encourage citizen commitment to protecting streams
- Educate people about the relationship between streams and watersheds
- To develop a useful program takes time and feedback from users.

So, go out there, give it a try! At the very least, you will have spent an enjoyable day outside getting to know a stream.

**Now you are ready to begin your Streamwalk. But please, consider the following Streamwalk-related precautionary tips:**

- ☞ Get the permission of landowners to cross any private land, posted or not. Do not enter areas without permission. It is recommended that you use public access points (such as city/county/state parks and campgrounds).

- ☞ Always work with someone.

- ☞ Do not put yourself in danger to gather survey information. Be careful of ticks, poison oak, nettles, insects. Bring repellent. Wear long pants and boots; wind breakers help to block nettles.

- ☞ Watch out for irate dogs.

- ☞ The water is not safe to drink.

- ☞ Do not walk on unstable banks; your footsteps could speed erosion.

- ☞ Be alert for spawning areas (redds) in the stream. Do not walk on them. They will look like a round or elliptical area of clean gravel about 1-3 feet long. During fall through spring, when redds are evident, try not to walk in the stream. In the summer, if you are careful, the stream bed might be the easiest route for conducting your streamwalk. Be aware that the stream bed can be very slippery and uneven, sometimes at unpredictable times and places.

- ☞ Do not attempt to walk across streams that are swift and above the knee in depth. These can be dangerous.

- ☞ Be careful of streamside vegetation - disturb it as little as possible.

- ☞ **IF FOR ANY REASON YOU FEEL UNCOMFORTABLE ABOUT THE STREAM CONDITIONS OR SURROUNDINGS, PLEASE STOP YOUR STREAMWALK. YOU AND YOUR SAFETY ARE MUCH MORE VALUABLE THAN ANY OF THE OBJECTIVES OF THE STREAMWALK!**

The following is a recommended list of items to have on your Streamwalk:

- PHOTOCOPIES OF TOPO MAP OF STREAM TO BE WALKED
- COMFORTABLE RUBBER BOOTS
- SNAG AND THORN-PROOF CLOTHING THAT IS APPROPRIATE FOR THE WEATHER
- CLIP BOARD WITH WATERPROOF COVER
- STREAMWALK DATA FORMS
- TWO PENCILS
- FOLDING RULER OR TAPE MEASURE
- CAMERA, AND FILM IN WATERPROOF BAG

- LEATHER GLOVES
- WHISTLE
- IF YOU ARE AWAY FROM URBAN OR RESIDENTIAL AREAS, THE FOLLOWING ARE ALSO RECOMMENDED FOR SAFETY
  *Extra clothes in a waterproof bag; Fire starter (candle and cheap lighter); Small first aid kit; Flashlight and extra batteries*

## Documentation

### Survey Data Sheets

Please keep your original data sheet and topo map. You may want to use the information you have generated to note trends and changes. The information may also be of use to your local environmental organization or government [see also: Data Management].

### Photos

Pictures taken during your Streamwalk can be of great value. It is a good idea to keep your camera, unless it is waterproof, inside a zip-type plastic bag until ready to take a picture. For easy identification of the site, we recommend that you place a sheet identifying the date and site in a visible location for your picture. As these photos may be of use in future stream analysis, we ask that you save them with your copy of the survey data sheet.

### Now it is time to begin the STREAMWALK Site Survey Data Sheet!

Below are directions on how to fill out the Streamwalk Survey Data Sheet. Please read these thoroughly before you begin your Walk. If, while conducting your Streamwalk, you are not able to determine what the response to a question should be, or if the question itself is unclear, just leave that space blank - but don't stop your Walk. REMEMBER this is not a test, there are no right or wrong answers.

## Cover Sheet

You only need to complete one cover sheet for each data collection trip. Please attach this to the one or more site surveys that you complete. The information is requested for our study of who is involved in Streamwalks. You do not need Streamwalk training to participate!

## Stream Characterization

You must give the stream name, county and state of your site. Preferably as it appears on the topo map. Note: there are some streams that are unnamed, in these cases it is very important that you indicate the stream, lake or water body into which your stream flows and the name and number of the topo map. Without clear information on which stream you have walked, your data will be useless.

Your site should be given a number in the order that it is surveyed. If it serves your purposes, you may also use a description and/or name. For clarity sake, you may want to name the site for a nearby landmark such as a bridge or large tree.

In order to integrate your information with the EPA Geographic Information System to produce maps you MUST PROVIDE THE LONGITUDE AND LATITUDE of your site(s). Computing this may present a challenge. Please see pages 9-10 for methods.

### ✓ Stream Water Measurements

This information will give a description of the stream water at your site. Please indicate if your response is estimated or measured. Remember, it is best to estimate if taking measurements will disturb habitat, require that you wade in deep water or disturb stream banks. Do not attempt to cross in high flows. If it feels even mildly unsafe, do not try it at all. Remember, this is a screening tool, not the last word.

### ✓ Stream Gradient (Water Level Drop)

Estimate as best you can, the fall of the stream over a 100 foot length. A low gradient slope makes the stream slow moving and relatively flat while a steep stream typically contains rapids. One technique to measure this is have your Streamwalk partner take a yardstick downstream and hold it up from the shoulder. You, viewing from the other end, estimate the difference in level. You may not be able to see from one end of your 500 foot to the other. In this case, measure shorter segments and add them up. Remember to divide by 5 to determine the drop per 100 feet (a standard way of measuring drop). A general rule of thumb is the stream will represent the general lay of the surrounding land.

### ✓ Pools and Riffles

Pools are deeper than adjacent areas. They provide feeding, resting and spawning areas for fish. Riffles and runs are flows and currents are swift in comparison to surrounding areas.

### ✓ Stream Channel Cross-Section Shape

Please check the box which matches the shape of the stream channel. If you are unable to see the shape of the bottom, please estimate. You can base your estimate on the flow of water. The slower the water in the middle of the stream, the flatter the bottom.

### ✓ Stream Bottom (Substrate)

Indicate the most common type of material on the stream bottom.

| | |
|---|---|
| **Silt/Clay/Mud** | This substrate has a sticky, cohesive feeling. The particles are fine. The spaces between the particles hold a lot of water, making the sediments behave like ooze. |
| **Sand (up to .1 inch)** | Sand is made up of tiny particles of rock. It feels wonderful underfoot. |
| **Gravel (.1 - 2 inches)** | A gravel stream bottom is made up of stones ranging from tiny quarter inch pebbles to rocks of about 2 inches. |
| **Cobbles (2 - 10 inches)** | The majority of rocks on this type of stream bottom are between 2 and 10 inches. The average size is about that of a grapefruit. |
| **Boulders (greater than 10 inches)** | Most of the rocks on the bottom will be large, greater than 10 inches. |
| **Bedrock** | This kind of stream bottom is solid rock. |

### ✓ Adjacent Land Uses

Adjacent land use has a great impact on the quality and state of the stream and riparian areas. Enter a "1" if the land use is present and a "2" if it is clearly impacting the stream. If you cannot determine the type of housing, industry or development, please make your best estimate.

### ✓ Width of Streamside Corridor

The streamside corridor (riparian area) is a term that describes the natural vegetated area on either side of the stream. It, along with the stream, forms the habitat of the river. It includes vegetation that shades the water, holds the soil in place, adds nutrients to the stream in the form of leaves and during flooding, and provides habitat for streamside wildlife. Estimate as best you can width of the corridor at your site. Indicate with an "x" on the bar graph the width. NOTE: Left and right are based on looking down stream.

### ✓ Streamside Vegetation

A description of the presence and type of streamside vegetation provides much information about the stream due to its important role in molding the stream environment. Vegetation acts as a filter for sediment and pollution coming in from the near land. It provides habitat for the many creatures that are dependent on and influence the stream. Branches, logs and leaves enter the stream from this region. Vegetation also provides shade, which keeps the water cool. On the data sheet mark all the categories that apply.

| | |
|---|---|
| Conifer | A cone bearing, evergreen tree or shrub (e.g. a pine tree) |
| Deciduous | A tree which sheds its foliage at the end of the growing season. |
| Shrubs | Either conifers or deciduous bushes less than 20 feet high. |
| Grasses | Any of numerous plants with narrow leaves,jointed stems and spikes or clusters of inconspicuous flowers. |

### ✓ Overhead Canopy (Stream Cover)

This is the amount of vegetation that overhangs the stream. It focuses on several important values of streamside vegetation: offering protection and refuge areas for fish and other organisms, shading the stream and keeping the water cool, and providing "launching" areas for insects that might fall into the river. Estimate as best you can, about how much of the river is overhung by vegetation, whether it be grasses, shrubs or trees. Please check the category that is appropriate for the current condition of your site. For example, if in the winter there are no leaves on the trees at in your segment you might check 0 - 25%. However, in the summer when the trees have leaves, you might check 50 - 75%.

### ✓ Artificial Bank Protection

This category includes such streamside modification as riprap (a retaining wall built of rocks or concrete) and bulkheads. It may also include placed wrecked auto bodies, refrigerators, and washing machines. People in the past have thought that such modifications helped stabilize stream banks. Unfortunately, not only do they drastically degrade habitat for streamside and in stream dwellers, they can cause bank erosion in flood conditions. Mark the category(ies) which best describe the condition of the stream bank within your 500 foot segment.

| | |
|---|---|
| Presence of logs or woody debris in stream | Logs and woody debris (not twigs and leaves) can slow or divert water to provide important fish habitat such as pools and hiding places. So please mark the general amount of logs and woody debris in the stream. |
| Organic debris in stream | The presence of other organic matter in the stream can be both good and bad. If there are dumped grass clippings, it is not good for stream health. On the other hand naturally falling leaves and twigs can be beneficial. |
| Fish in stream | Can you see any fish? Mark it down! If you know what kind of fish it is, note that in the space next to the question. |

## Stream Conditions

This section is designed to get information about potential problem conditions at your Streamwalk site. Enter a "1" if the condition is present and "2" if it is severe.

### ✓ Stream Banks

| | |
|---|---|
| Natural plant cover degraded | Indicate if streamside vegetation is trampled, missing, or replaced by landscaping or cultivation. |
| Banks collapsed/eroded | Note if banks or parts of banks have been washed away or worn down. |
| Banks artificially modified | Indicate if banks have been artificially modified by construction or placement of rocks, wood or cement supports or lining. |

### ✓ Stream Channel

| | |
|---|---|
| Mud/Silt/Sand on Bottom Entering Stream | Excessive mud or silt entering the stream and clouding the water can interfere with fishes' ability to sight potential prey. It can also clog fish gills and smother fish eggs in spawning areas on the stream bottom. Mud/silt/sand can be an indication of poor construction practices in the watershed; where runoff coming off the site is not adequately contained. It can also be a perfectly normal occurrence, especially if, for example, a muddy bottom is found along a very slow-moving segment or a wetland. Use your best judgement. |
| Artificial Stream Modifications | Please note if the stream water has been dammed, dredged, filled, or channelized through culverts or if other large scale activities such as log removal are apparent. |
| Algae/Scum Floating/Covering Rocks | Evidence of algae (very tiny plants that can color the water green or can resemble seaweed) or scum in the water can point to a problem such as an upstream source adding too much nutrient (fertilizer) to the water. |
| Foam or Oil | This is a bit of a tricky category because this type of thing can be naturally occurring or a problem. For example, an iridescent sheen on the water might be from rotting leaves or it might from some upstream pollutant. If you are not sure, mark it on the checklist. Try your best. |
| Garbage or Junk in Stream | This is your chance to point out very straightforward problems: litter, tires, old water heaters, car bodies, and garbage dumps. |

✓ **Other**

| | |
|---|---|
| Organic Debris or Garbage | The purpose is to determine if the stream is being used as a dump site for materials which would not be present naturally. Debris can be anything from a pop can to vegetation brought from somewhere other than the stream corridor. |
| Livestock in or with Unrestricted Access to Stream | Are livestock present or is there an obvious path that livestock use to get to the water from adjacent fields? Is there streamside degradation that is caused by access? |
| Actively Discharging Pipes | Are there pipes with visible openings dumping fluids or water into the stream? Please note, even though you may not be able to tell where they come from or what they are discharging. |
| Other Pipes | Are there pipes which are entering the stream. Please mark even if you cannot find an opening or see matter being discharged. |

## Data Management

EPA has developed a computerized database system (DBase III+) for keeping track of Streamwalk data. At present, the system simply provides a means to "capture and preserve" the information. It will produce lists of stream segments identified and surveyed, survey dates and results including conditions noted as severe and a few other such listings. With input from state agencies, organizations, and individuals, and more data comes into the IWRRI office, more informative outputs will be developed. EPA hopes to produce maps which can indicate problem areas and which use colors to indicate severity and/or to differentiate causes (Geographic Information System).

The Idaho Water Resources Research Institute (IWRRI) will serve as the central receiving area for the data collected in the state of Idaho. The data will be inputed into the Streamwalk computerized database system, located at the IWRRI, and subsequently forwarded to the EPA, Region 10 to input into their Geographic Information System.

The data collected through Streamwalk is available to agencies, citizen groups, or individuals, upon request.

### Please send your completed Survey Sheets to:

Idaho Streamwalk
Idaho Water Resources Research Institute
106 Morrill Hall, University of Idaho
Moscow, Idaho 83843

Streamwalk
EPA, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

For more information on Idaho Streamwalk please contact:

Idaho Water Resources Research Institute
University of Idaho
Moscow, Idaho
(208) 885-6429

Susan Handley
EPA, Region 10
Seattle, Washington
(206) 553-1287

# INSTRUCTIONS FOR DEFINING LONGITUDE AND LATITUDE OF STREAMWALK SITE

NOTE: Latitude and longitude are defined in degrees, minutes and seconds. There are 60 seconds in a minute and 60 minutes in a degree. The symbols are as follows: ° = degree, ′ = minute and " = seconds.

## Method 1: Mathematical Determination

1. Look at the right hand corner (upper or lower) under the map name (last digits of number) to find the width scale of the map:
   If 7.5 width enter 450
   If 15 width enter 900 _____
2. What is the width of your map east to west (exclude borders) (Longitude factor) _____mm
3. Divide #1 by #2 (to nearest whole) _____sec/mm
4. What is the length of your map north to south _____mm
5. Divide 450 by #4 (Latitude factor) _____sec/mm
6. Enter the Longitude for the edge closest to your site (east-west, noted at bottom of map) __°__′__"
7. Measure in millimeters from site to that edge _____mm
8. Multiply #7 by #3 (to the nearest whole) _____
9. Convert #8 to minutes and seconds by dividing by 60, do not use a calculator so any remainder will be in seconds __′__"
10. (a) If closest edge is east, add #6 to #9
    (b) If closest edge is west, subtract #9 from #6

*THE ANSWER FOR #10 IS THE LONGITUDE OF THE SITE* _____

11. Enter the Latitude for the edge closest to your site (north - south) __°__′__"
12. Measure (in millimeters) from the site to the edge _____mm
13. Multiply #12 by #5 (to the nearest whole) _____
14. Convert #13 to seconds __′__"
15. (a) If closest edge is south, add #14 to #11
    (b) If closest edge is north, subtract #14 from #11

*THE ANSWER FOR #15 IS THE LATITUDE OF THE SITE* _____

### Method 2: Grid

EPA has limited transparent grids available to assist you in determining latitude and longitude. To receive a grid, please contact Susan Handley, (206) 553-1287. You will need to have the following information to receive the correct grid:

Name and number of the topo map to be used
Latitude nearest the site

The grid is a clear plastic sheet which you can place on the map. There is a six step process to define the latitude and longitude.

### Method 3: Local Resource

EPA is currently training people who will be available to assist you with the determination of latitude and longitude. If Methods #1 or #2 will not work for you, please contact EPA for assistance.

# GLOSSARY

**Algae:** A chlorophyll containing plant ranging from one to many cells in size, that lives in fresh or salt water.

**Anadromous:** Fish that return from salt water to fresh water to spawn (e.g., salmon, steelhead).

**Aquatic Insect:** Insect species whose larval and/or juvenile forms live in the water.

**Aquifer:** Any underground geological formation containing water.

**Bedrock:** Unbroken solid rock, overlain in most places by soil or rock fragments.

**Benthic:** Bottom-dwelling. The plant and animal life whose habitat is the bottom of a sea, lake, or river.

**Channelized:** The straightening and deepening of streams. Channelization reduces the ability of the stream to assimilate waste and disturbs fish breeding areas.

**Conifers:** A cone-bearing Evergreen tree or shrub (a pine tree for example).

**Cover:** Overhanging or instream structures (such as tree roots, undercut streambanks, or boulders) that offer protection from predators, shelter from strong currents, and/or shading.

**Current:** The velocity (speed) of the flow (of water).

**Deciduous:** A tree which sheds its foliage at the end of the growing season.

**Ecosystem:** The interacting system of a biological community (plants, animals) and it's non-living environment.

**Effluent:** The wastewater from a municipal or industrial source that is discharged into the water.

**Erosion:** The wearing away of the land surface by wind or water.

**EPA:** Environmental Protection Agency.

**Filling:** The process of depositing dirt and mud in marshy areas (wetlands) or in the water to create more land. Filling disturbs natural ecological cycles.

**Gradient:** The slope or steepness of the stream.

**Groundwater:** The supply of freshwater under the earth's surface in an aquifer or soil.

**Habitat:** The specific environment in which an organism lives and depends on for food and shelter.

**Headwaters:** Small creeks at the uppermost end of a stream system, often found in the mountains, that contribute to larger creeks and rivers.

**Mass Wasting:** Downward movement of dry soil and rock caused by gravity (often called slides or avalanches).

**Monitor:** To measure a characteristic, such as streambank condition, dissolved oxygen, or fish population, over a period of time using uniform methods to evaluate change.

**Non-point Source Pollution:** "Diffuse" pollution, generated from large areas with no particular point of pollutant origin, but rather from many individual places. Urban and agricultural areas generate nonpoint source pollutants.

**Nutrient:** Any substance, such as fertilizer, phosphorous, and nitrogen compounds, which enhances the growth of plants and animals.

**Point Source Pollution:** A discharge of water pollution to a stream or other body of water, via an identifiable pipe, vent or culvert.

**Pool:** An area of relatively deep slow water in a stream that offers shelter to fish.

**Quality Control (QC):** The system of checks that are used to generate excellence, or quality, in a program (a monitoring program for example. QC asks if we are doing things right).

**Quality Assurance (QA):** Quality Assurance is the larger system to see that QC is maintained. QA asks if we are doing the right things (in our case are we monitoring the right things to detect changes in water quality).

**Reach:** A stream section with fairly homogeneous characteristics.

**Redd:** Shallow depression in the streambed gravel in which a female salmonid deposits her eggs.

**Riffle:** A shallow, gravely area of streambed with swift current. Used for spawning by salmonids and other fishes.

**Riprap:** A sustaining wall built of rocks.

**Riparian Area:** An area, adjacent to and along a watercourse, which is often vegetated and constitutes a buffer zone between the nearby lands and the watercourse.

**Run:** A stretch of fast smooth current, deeper than a riffle.

**Runoff:** The portion of rainfall, melted snow, or irrigation water that flows across ground surface and eventually return to streams. Runoff can pick up pollutants from the air or the land and carry them to streams, lakes, and oceans.

**Salmonid:** Fish that are members of the family Salmonidae; includes salmon, trout, char, and whitefish.

**Sediment:** Fine soil or mineral particles that settle to the bottom of the water or are suspended in the water.

**Stormwater Runoff:** Water that washes off the land after a rainstorm. In developed watersheds it flows off roofs and pavement into storm drains which may feed directly into the stream; often carries concentrated pollutants.

**Substrate:** The material that makes up the bottom layer of the stream, such as gravel, sand, or bedrock.

**Stream Corridor:** A perennial or intermittent stream, its lower and upper banks.

**Stream Mouth:** The point of the stream where it empties into a lake, ocean, or another stream.

**Suspended Sediments:** Fine material or soil particles that remain suspended by the current until deposited in areas of weaker current. They create turbidity and, when deposited, can smother fish eggs or alevins. Can be measured in a laboratory as "Total Suspected Solids" (TSS).

**Topographic:** The configuration of a surface area including its relief, or relative elevations, and the position of its natural and man-made features.

**USGS:** U.S. Geological Survey.

**Wetlands:** Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development. They also can be identified by unique plants which have adapted to oxygen-deficient (anaerobic) soils. Wetlands influence stream flows and water quality.

**Zoning:** To designate, by ordinances, areas of land reserved and regulated for specific uses, such as residential, industrial, or open space.

# Streamwalk Cover Sheet

Date: _____

Investigator(s): _____

_____

_____

Are you a stream resource professional? [ ] Yes [ ] No

Have you completed a training class? [ ] Yes [ ] No

Affiliation: _____ Phone: _____

Address: _____

_____

_____

Stream Name: _____

County: _____ State: _____

Map Used: _____

INSTRUCTIONS: Complete one COVER SHEET for each "Streamwalk." During the walk, complete one SITE SURVEY DATA SHEET (both sides, please) at each site. STREAMWALK uses the term "sites" to designate unique (ie: non-overlapping) sections of the stream about 500 feet long. Your entries for each site should reflect, to the best your ability, the whole site.

## Comments

## SITE SURVEY DATA SHEET

Stream name _____

County _____ State _____

Investigator(s) _____

_____

_____

Site (name, description or number) _____

Latitude ____°____'____"N

Longitude ____°____'____"W

### Stream Characteristics

Measured [ ] Estimated [ ]

Depth - _____ feet (at site)

Width - _____ feet (at site)

Water level drop: _____ feet/100ft

Pools and riffles present [ ]

All Pool [ ] All Riffle [ ]

Stream Cross-Section Shape (at site)

[ ] [ ] [ ]

### Complete One Sheet Per Site

Stream Bottom (check those most common)

[ ] Silt/Clay/Mud

[ ] Sand (up to .1")

[ ] Gravel (.1 - 2")

[ ] Cobbles (2 - 10")

[ ] Boulders (over 10")

[ ] Bedrock (solid)

Width of Streamside Corridor in Feet (at site)

| | 0 | 20 | 40 | 60 | 80 | 100 | 100+ |
|---|---|---|---|---|---|---|---|
| Left | □ | □ | □ | □ | □ | □ | □ |
| Right | □ | □ | □ | □ | □ | □ | □ |

Streamside Vegetation

| | None/Sparse | Occasional | Common |
|---|---|---|---|
| Conifers | [ ] | [ ] | [ ] |
| Deciduous | [ ] | [ ] | [ ] |
| Shrubs (<20') | [ ] | [ ] | [ ] |
| Grasses | [ ] | [ ] | [ ] |

Vegetation Appears Natural [ ] or Cultivated [ ]

Extent of Overhead Canopy

[ ] 0-25% [ ] 25-50% [ ] 50-75% [ ] 75-100%

Extent of Artificial Bank Protection

[ ] 0-25% [ ] 25-50% [ ] 50-75% [ ] 75-100%

Presence of Logs or Large Woody Debris in Stream

[ ] None [ ] Occasional [ ] Common

Presence of Other Organic Debris in Stream

[ ] None [ ] Occasional [ ] Common

Any fish present?

[ ] Yes [ ] No

**Adjacent Land Uses (Check "1" if present, "2" if clearly impacting stream)**

| 1 | 2 | |
|---|---|---|
| | | *Residential* |
| [ ] | [ ] | Single family housing |
| [ ] | [ ] | Multi-family housing |
| [ ] | [ ] | Commercial development |
| [ ] | [ ] | Light industry |
| [ ] | [ ] | Heavy industry |
| | | *Roads, etc.* |
| [ ] | [ ] | Paved roads or bridges |
| [ ] | [ ] | Unpaved roads |
| | | *Construction underway on* |
| [ ] | [ ] | Single family housing |
| [ ] | [ ] | Multi-family housing |
| [ ] | [ ] | Commercial development |
| [ ] | [ ] | Light industry |
| [ ] | [ ] | Heavy industry |
| [ ] | [ ] | Road/bridge construction |
| | | *Agricultural* |
| [ ] | [ ] | Grazing land |
| [ ] | [ ] | Feedlots or animal holding areas |
| [ ] | [ ] | Cropland |
| | | *Other* |
| [ ] | [ ] | Mining or gravel pits |
| [ ] | [ ] | Recreation |
| [ ] | [ ] | No human activities apparent |

## Stream Conditions

**(Check "1" if present, "2" if impact seems severe)**

| 1 | 2 | |
|---|---|---|
| | | *Stream Banks* |
| [ ] | [ ] | Natural streamside cover degraded |
| [ ] | [ ] | Banks collapsed/eroded |
| [ ] | [ ] | Banks artificially modified |
| [ ] | [ ] | Garbage/junk adjacent to stream |
| | | *Stream channel* |
| [ ] | [ ] | Mud/silt/sand in or entering stream |
| [ ] | [ ] | Artificial stream modifications (dams, channels, culverts, ect.) |
| [ ] | [ ] | Algae or scum floating or coating rocks |
| [ ] | [ ] | Foam or oil |
| [ ] | [ ] | Garbage/junk in stream |
| | | *Other* |
| [ ] | [ ] | Organic debris (garbage, grass clippings, ect.) |
| [ ] | [ ] | Livestock in or with unrestricted access to stream |
| [ ] | [ ] | Actively Discharging Pipe(s) |
| [ ] | [ ] | Other Pipe(s) Entering |

## Other Comments

_____

_____

_____