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Introduction

Identifying Oregon streams that contain fish is an important part in carrying out the new Water Protection Rules. These rules aim to protect areas of beneficial uses, such as fish. First, however, the beneficial uses present in each forest stream must be correctly identified.

At present, a large number of fish-bearing streams are not identified on stream classification maps. To correct this problem, the Oregon Department of Forestry (ODF) and the Oregon Department of Fish and Wildlife (ODFW) must complete comprehensive surveys to identify fish use on all non-federal forest streams in Oregon. This effort will require at least 3 to 5 years and a significant financial investment.

Because many streams are not accurately classified, the new rules also temporarily protect streams that are *likely* to contain fish. Under the rules, for example, if Stream A flows into a body of water known to contain fish, it is assumed that fish also are using Stream A, up to the point that a natural barrier blocks their way farther upstream (see OAR 629-57-2100: 11(b)B). Once the survey efforts are complete, this interim rule will not be needed.

Coordinated efforts by public agencies, landowners, and others to complete fish-presence surveys will assure that important fisheries resources are protected in the most cost-effective way. Landowners or any interested party may collect stream-classification information so that the overall survey can be completed as quickly as possible.

Many private forest landowners, in cooperation with Oregon Department of Fish and Wildlife, are now completing inventories of stream habitat conditions on their lands. In the future, these cooperative efforts may also include fish-presence surveys. This publication tells how to complete fish-presence surveys on forested streams. The guidelines cover:

- How to plan either "operation-specific" or "maximum upstream fish distribution" surveys
- The proper way to conduct surveys
- The proper time of year to conduct surveys
- Minimum efforts required in completing the surveys
- The legal requirements for completing the surveys
- How to provide information to Oregon Department of Forestry to update the stream classification maps
- The stream reclassification process

Planning the survey

There are two major types of survey: operation-specific surveys, and surveys to find the maximum upstream distribution of fish. Each type requires different planning and is conducted using different approaches.

Operation-specific surveys

Operation-specific surveys are those to classify a stream only in the particular area of an operation. This kind of survey may not include efforts to determine the maximum upstream extent of fish use. An operation-specific survey takes minimal planning and coordination. However, it may be very inefficient in the long run because future activities in other areas of the stream may require additional surveys.

An operation-specific survey is very simple to complete. It starts at the downstream end of the operation area and moves upstream either to the end of the operation area or to the end of fish distribution, whichever comes first. If the purpose of the survey is to prove no fish use, the surveyor must be sure to make at least the minimum effort required to find fish (see the section on "Survey Effort" on page 10).

Maximum upstream distribution surveys

This kind of survey is done on an entire stream reach or on multiple stream reaches rather than on a restricted portion of a stream. Often, all streams within a basin or reach are completely surveyed. In some cases, the surveys encompass entire ownerships or watersheds. The specific locations of planned operations are usually not the main factor in setting up this kind of survey but can help decide which areas to survey first.

Surveys to find the maximum upstream extent of fish use may be the most efficient and cost-effective. Surveyors often cover a group of streams in one area at a time; therefore, travel time is minimized because, often, a group of streams can be easily reached by one common forest road. When travel time is less, the time spent actually completing surveys is greater. This kind of survey may require slightly more planning and coordination to assure efficiency and to minimize duplication of effort by adjacent landowners or by other public agencies, but overall this approach is more cost-effective than the operation-specific surveys.

Surveying for the maximum upstream distribution of fish may take more planning than an operation-specific survey, but it is still relatively simple. First, look at ODF Stream Classification Maps for the survey area to see the current extent of fish-use streams. Also note which streams are not classified at all.

Next, decide where to start the survey. It may help your planning if you know the relationship between watershed basin area and fish use for your area. Contact the local ODFW office to find out whether these relationships have been established for streams in your area. The information predicts where fish

use is "likely to end" and so will help you decide where to start your surveys. At this point, you also may want to consider operations that are planned for certain areas and decide to survey those areas first.

After choosing a starting area, look at current road maps to find potential starting points for the survey (see Figure 1). Look for access points (such as road crossings) near the upper reaches of the stream. When possible, a survey should start near the highest accessible point in the watershed. If road access to the stream is limited, you may want to start the survey near the point at which the stream's classification size changes from "medium" to "small"; often this point is near the end of fish use (see Figure 2, page 4).

At the starting point, first sample upstream. If you find fish, continue the survey upstream until fish use ends. Be sure to continue sampling *above* the point at which fish use ends (see "Survey Effort," page 10). If you make all the required efforts but do not find fish, then survey downstream from the original starting point until you find fish. When surveying downstream, it is important to walk on the streambank until you are ready to sample so that the water stays clear.

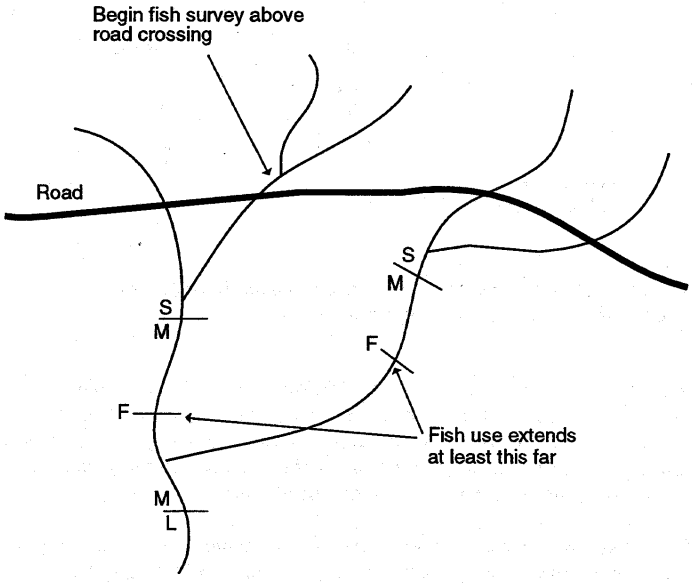


Figure 1. Selecting survey starting points in an area with a road crossing.

Additional survey work may be required if the maximum distribution of fish seems to be affected by a road culvert. If the stream above the culvert has no fish, sample the pool immediately below the culvert. If you find fish in this pool or downstream near the culvert, the culvert is a possible barrier to fish passage. Describe the culvert and the stream on the survey form (page 19). If you do not find fish in the pool below the culvert, continue the survey downstream until you do see fish.

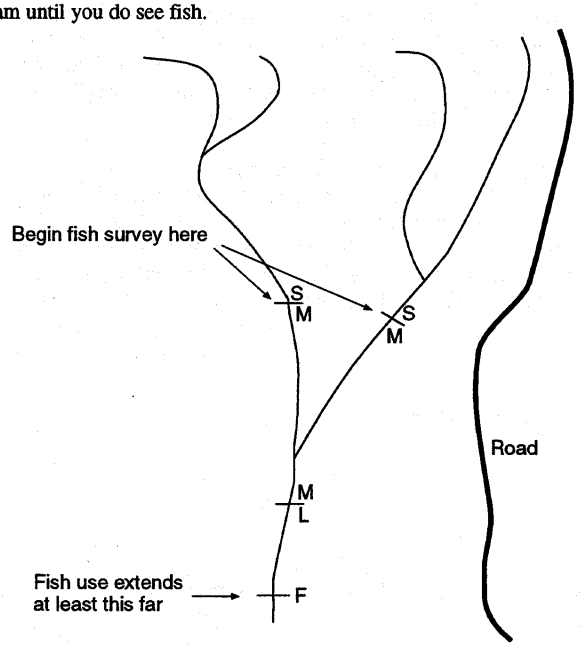


Figure 2. Selecting survey starting points, based on the stream-size classification, in an area without a road crossing.

Surveys to find the maximum upstream distribution of fish may require sampling across several land ownerships. Be certain to get permission from other landowners *before* beginning the survey. Contacts with other landowners are also important to prevent a duplication of effort, because many landowners and agencies may be conducting fish-presence surveys.

When figuring how many surveyors and how much time you'll need to complete surveys in your area, you may want to consider the Department of Forestry's experience. We found that sampling a township (36 square miles) required approximately 24 person-days in the Coast region, but an area the same size in the Blue Mountains required only 4 person-days.

Survey methods

The accuracy and reliability of survey results depend greatly on the methods used to conduct the survey. Methods range from simply looking in the stream (visual observation) to more intensive and effective sampling with a backpack electroshocker. The method you choose depends on the availability of sampling equipment, the size of the stream, the flow and clarity of the water, and other factors.

It is important to select a sampling method that is best for the type of survey and for the waters being sampled. If the sample method is not appropriate, the results of the survey will not be very useful. For example, just looking at a stream may tell you there are fish in it at that point, but it is not an acceptable way to find the maximum upstream extent of fish use. Surveys to show that fish are *not* present require more sampling and specialized equipment in order to provide reliable results. Whenever the survey uses methods other than an electroshocker, it's important to thoroughly explain on the survey report form the reasons for using the other methods.

Visual observation

This is the simplest method; it involves only walking the stream to look for fish. It is best to wear polarized sunglasses to reduce glare from the water and to survey only when water conditions allow good visibility. It's also best to walk upstream so that you can "sneak up" on fish in pools. Fish often are near the upstream ends of pools waiting for food to drift toward them. Small fish, such as fry, often are in shallow water along the margin of the stream. Be very alert because fish usually will dart into cover when they detect any movement, **especially in small headwater streams.** It helps to toss bread crumbs, insects, small twigs, or berries into the stream to entice the fish to leave cover.

The visual method is best suited to small streams where pools aren't deep enough to prevent your seeing the fish. This method is also the least damaging to the fish because actual collection is not required. However, the value of survey results can be reduced by many factors such as cloudy water, surface glare on the water, overcast days (reduced light), fish behavior, and even the surveyor's poor eyesight. For these reasons, this method is not effective for determining the maximum upstream limit of fish distribution, although it can be used to prove fish are in a certain reach of the stream.

Snorkeling is a special method of visual observation that can work well in some situations. Snorkeling allows you to see underwater through a diving mask and breathing snorkel. This method can be used in larger waters where electroshockers are less successful, and it has been used to locate fry where other methods failed. Night snorkel surveys are particularly useful for observing bull trout fry.

Hook and line

The hook-and-line method uses a rod and reel and relies on the feeding behavior of the fish. In small streams, drop a baited hook into the deepest pools, where larger fish often are. Bait can include worms, single eggs, cheese, dry flies, or stream insects such as caddis larvae. Sample pools that have a lot of cover because those tend to support greater numbers of fish. As with the visual observation method, approach the pool cautiously to avoid alerting the fish. To minimize the risk of injuring or killing the fish, always use barbless hooks.

The hook-and-line method can be used when conditions are not good for visual sampling; for example, when water is not clear, flow is high, or the day is overcast. This method may be the most effective for sampling some larger or deeper waters where visual and electroshocker methods can be ineffective. These waters include deep beaver ponds and large, steep streams where downstream barriers (such as falls and very steep sections) keep fish out of the small tributaries.

This method has limitations, though, depending on fish behavior and the life stage of the fish that are present. Fish may be reluctant to bite on cold days, or when the water is murky with sediment, or if the fish detect the surveyor's presence. Also, hook-and-line sampling is not effective if only fry are in the stream. This method also depends on the angling skills of the surveyor.

As with the visual observation method, hook-and-line sampling may not be the best way to determine the maximum upstream distribution of fish in small streams, but often it can be used to find fish in larger waters.

Backpack electroshocker

The most effective way to determine the upstream extent of fish is with a backpack electroshocker. Electroshocker sampling requires additional training and experience, though, to be effective and safe. A backpack electroshocker introduces an electric field into the stream that temporarily immobilizes fish. Stunned fish can be observed as they float in the water, or they can be captured in a small hand net for closer observation if necessary. As with other methods, it is best to work in an upstream direction, wear polarized glasses, and to approach the sampling site carefully to avoid alerting the fish. One person nets fish while another person operates the electroshocker. The netter should walk behind or beside the shocker to avoid alerting the fish.

The electroshocker can be very effective for sampling in small streams even where brush or instream cover prevents most other sampling methods. In fact, an electroshocker is often most effective in areas with instream cover because fish usually concentrate in these locations. This method works in streams of various sizes but is less effective in larger streams and in deep pools, especially large beaver ponds.

Use electroshockers carefully to minimize killing fish. When properly adjusted and used, the electroshocker should stun the fish without killing them. The fish may escape if the current is set too low, but usually the surveyor will still see

the fish and so be able to document fish presence. To sample effectively and minimize fish kill, set the electroshocker on the lowest practical voltage output and low-frequency currents (low pulse rates). Before sampling, use a voltameter to test the electroshocker in a stream. If the voltameter is not available, it is a good idea to test the electroshocker in a stream that you know has fish before working in streams whose fish use you do not know. The test will tell you whether the equipment is working and the effects of using different settings.

The surveyors' safety must be considered carefully before using this method. Electroshockers can injure or kill humans if not properly used. Surveyors should not use this method without proper training, including CPR training. Surveyors should work in crews of at least two. All surveyors should wear rubber waders and rubber gloves during stream shocking and never use dipnets with metallic handles; the nets should have wood or fiberglass handles. All members of an electroshocking crew should understand the proper operation procedures and potential dangers of this equipment.

The effectiveness of electroshocker sampling depends on water conditions and on the skills of the electroshocker operator and the netter. The electroshocker method may not be so useful in high flows or in turbulent or murky water because the surveyors may not see immobilized fish. Another drawback to this method is that the electroshockers may not be widely available and can be expensive. However, with proper training and experience and under suitable survey conditions, this method is the best for accurately determining the maximum upstream extent of fish use.

Other methods

There may be situations where reliable results can be had by using methods not discussed here. For example, headwater beaver ponds may be effectively sampled by fishing for at least 48 hours with minnow traps baited with salmon eggs or commercial trout bait. Or, seine nets may be effective in beaver ponds or larger waters. If you are thinking about using these or other sampling methods, discuss it first with the departments of Fish and Wildlife and of Forestry. They will decide whether the proposed methods are appropriate and, if so, set the required minimum level of sample effort for the alternate method.

Survey methods: a summary

A backpack electroshocker is the best way to get reliable information about the upstream extent of fish use or to prove a stream is Type N (no fish use). Survey data that document the presence of fish through other methods, such as visual observation or hook-and-line, will always be used to classify streams as Type F as far up as the point of observation, even though the exact upstream extent of fish use may not be known. In some cases, methods other than an electroshocker may give reliable information about the maximum upstream distribution of fish. Examples include deep beaver ponds and large, steep

streams in which barriers keep fish out of small upstream tributaries. In those cases, reliable results may be better obtained with hook-and-line sampling or with other methods. Whenever the survey is conducted by methods other than an electroshocker, the reasons for choosing the other method must be thoroughly explained on the survey form.

Timing the surveys

Survey accuracy depends a lot on the time of year the survey is done and on stream conditions at that time. Since the purpose of the survey is to accurately document the presence or absence of fish, it is critical to do the survey when fish are expected to be using the upper reaches of a stream. This generally is near spawning times or soon after fry emerge, when stream flows are relatively high. A survey done during a low-flow period may not indicate the actual maximum upstream extent of fish use or accurately prove no fish use the stream.

Fish may use the upper reaches of a stream for a limited time only, so fish-use surveys must be timed carefully. Surveys done at other than recommended times may not give a complete description of fish use. For example, if fish are found at other than the recommended survey times, the surveyed part of the stream can be classified as fish-bearing, but the maximum upstream extent of fish use may not be known. If fish are not found, that will not necessarily prove that the stream reach does *not* support fish use. Only if the survey is made at a time when fish are most likely to be there can the absence of fish be a reliable sign that no fish use that portion of the stream.

Other factors can affect the reliability of the survey even if it is made at the proper time. Abnormal flows due to drought or extreme runoff could affect the distribution of fish or the sampling efficiency of the surveyor. So, it is best not only to do the sampling within the recommended time period but also when conditions are appropriate.

In some cases, survey timing may not have much effect on the reliability of survey results. This could occur when factors other than seasonal flow patterns control the upstream extent of fish distribution. For example, streams that get most of their water from springs may not have seasonal flow variations, including summer flows low enough to control the upstream distribution of fish. Or, conditions other than low flow could be controlling distribution. For example, large, steep streams that have natural barriers such as falls and steep, impassable sections. In such cases, surveys taken outside the recommended time periods may yield reliable data. However, it is important to describe these conditions thoroughly on the survey forms to justify not following the recommended timing.

See Table 1 for the recommended sampling periods for different regions of the state for normal water-flow years. Periods differ due to variations in stream flow patterns, fish species, and life-history traits of the species in the different areas. Contact the local ODFW office before sampling to find out the best time to survey the stream you are planning to sample.

Table 1. **General** *recommended time periods to sample streams, by geographic region, during normal water-flow years.* **Please contact your local ODFW office before sampling in order to get specific timing recommendations for the stream you will be sampling.**

Region Georegion	Type of Stream	Recommended Survey Period
Western Oregon Coast South Coast West Cascades Interior Siskiyou	All	March 1 through May 31
Eastern Oregon East Cascades	All except spring-fed	April 1 through June 30
Blue Mountains	Spring-fed streams*	Entire year

*Spring-fed streams are streams that get most of their water from groundwater sources and that have very minor seasonal variations in flow.

Survey timing: a summary

Stream surveys must be done within certain time periods (Table 1) if the purpose is to prove the stream does not contain fish or to document the maximum upstream extent of fish use. Timing recommendations are based on normal water-flow years and may vary in some years. Contact the local ODFW office before sampling to get specific timing recommendations for the streams to be surveyed. Information gathered at other times of the year may be used to document fish presence but may not be reliable enough to establish upstream fish-use limits or to classify the stream as Type N (no fish use). Whenever the recommended survey timing is not used, it is important to explain the reasons on the survey form so that the data can be evaluated for reliability.

Survey effort

The level of effort used to complete the survey also can affect the reliability of the survey results. If the level of effort or the amount of stream sampled is too little, it may be wrong to conclude that fish are not present. The following guidelines describe the minimum level of survey effort required to assure that the data are reliable.

If the purpose of the survey is to show that no fish use the stream, the survey will be considered reliable only if it includes at least 50 yards of stream length ***and*** a minimum of six pools, each at least 1 foot deep, immediately upstream of the point at which the non-fish-bearing section begins. (In some cases, the survey will have to cover much more than 50 yards of stream in order to also include the required six pools.) In addition, the survey must include sampling any beaver dam ponds in the upstream non-fish section.

Surveyors are encouraged to exceed the minimum level of effort in order to be even more sure that fish are absent from a stream reach and that the maximum upstream extent of fish use has been found.

Survey effort: a summary

A survey intended to show the absence of fish must sample at least 50 yards of stream distance ***and*** a minimum of six pools, each at least 1 foot deep, immediately upstream of the point at which fish use is believed to end. In addition, any beaver ponds upstream must be sampled as part of the survey. The requirements for the methods used and the timing of the survey also must be met in order to document the absence of fish.

Legal requirements

In Oregon, the Department of Fish and Wildlife regulates the collection of fish for personal or scientific use. Generally, collection methods prohibited by the general angling regulations, such as electroshockers, traps, or nets, and collections at times of the year when angling is closed will require a Scientific Collection Permit from the Oregon Department of Fish and Wildlife.

Scientific Collection Permits can be issued to agencies, companies, or individuals. Request an application from the Fish Division of the Oregon Department of Fish and Wildlife, P.O. Box 59, Portland, OR 97207; telephone (503) 229-5410, extension 323. Submit the application at least 1 month before you plan to do the survey in order to be sure the permit can be issued in time. The application requests information about the collection method to be used, when and where collection will be made, and a summary of the proposed project. By law, surveyers must keep records of their collection activities and submit them to the Oregon Department of Fish and Wildlife.

Surveys using the visual observation method (including snorkeling) do not require any licenses or permits because fish are not physically collected.

Sampling with the hook-and-line method during open fishing seasons requires only a valid angling license. However, Oregon resident landowners and their immediate families do not need angling licenses to fish on land they **own and live on.** In either case, the general angling regulations for the stream must be followed during hook-and-line sampling unless a Scientific Collection Permit is obtained.

Additional restrictions on survey efforts may apply if the stream contains species that the state or federal government lists as sensitive, threatened, or endangered species. Please contact your local ODFW office to find out whether any of these species are likely to be in streams you plan to sample.

Reporting survey results

Give survey data to the local ODF district office so that district Stream Classification Maps can be updated. On page 19 is a blank survey report form. It asks for information about the location of the stream; the methods, timing, and effort of the survey; the physical character of the stream; observations of fish and wildlife; and the presence of natural or human-created barriers to fish passage. **Complete one form for *each* stream reach where fish were observed or fish use was found to end.** See Figure 3 (page 12) for descriptions of some fish species common to small, forested streams; these may help to identify fish seen during surveys. Detailed instructions for completing the survey form are on pages 14 through 18.

Attach to the Fish Presence Survey Form a copy of the ODF Stream Classification Map for the surveyed area or, if that is not available, a copy of the 7.5 minute USGS topographic map for the area. Note the following information on the map. (Examples of completed survey report forms and maps are on pages 21 through 30.)

- The area of the stream that was actually surveyed (including the areas without fish) as part of the survey effort. Highlight in yellow the *entire* stream reach surveyed (see examples on pages 25, 28, and 30).
- The upper limit of fish use. Note this on the map by drawing a line across the stream and writing the letter F at that point.
- The name of the surveyor.
- The date the stream was surveyed.

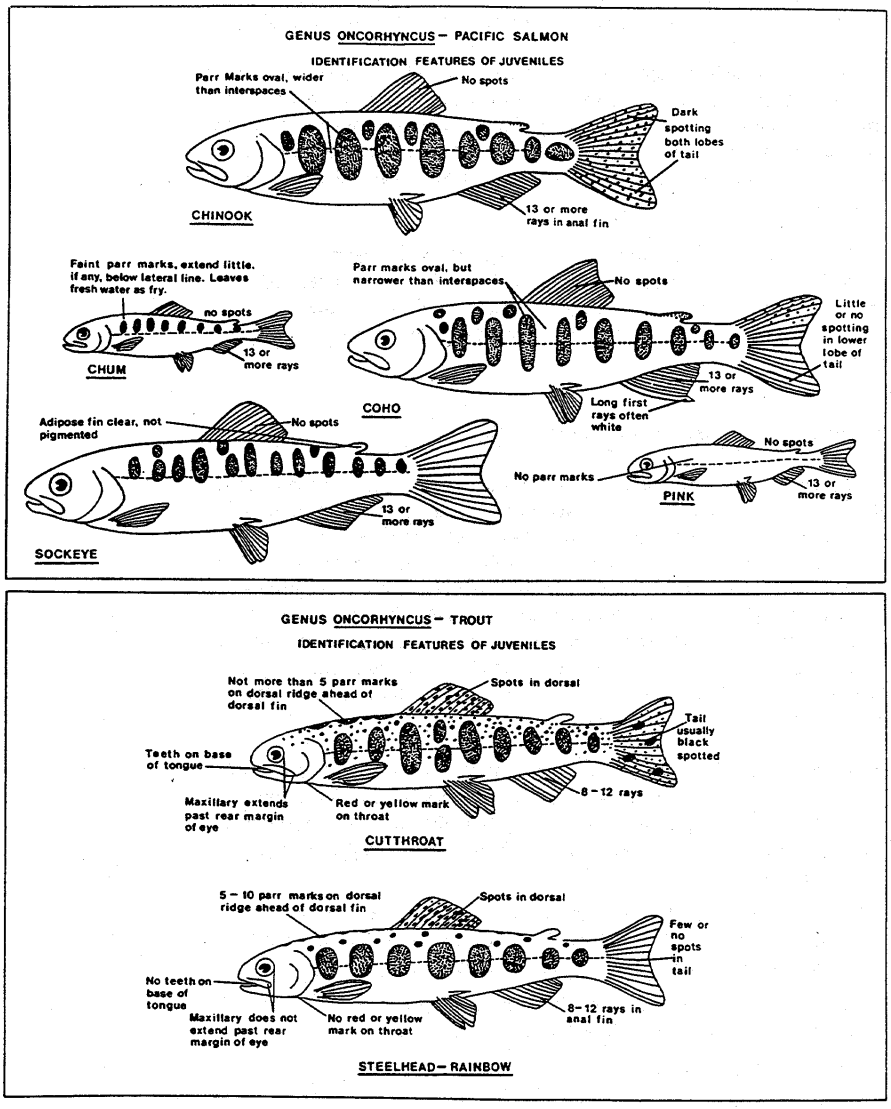


Figure 3. Identification characteristics of some juvenile salmon and trout species that may be observed in forested streams.

- The locations of possible barriers to upstream fish passage (natural and human-created). Note the location of the barrier(s) by marking an X across the stream line, and note the type of barrier with the code WF for waterfall, C for impassable culvert, and RC for other road-crossing barriers (such as a lack of a culvert). Be sure to describe the barrier on the survey data form.

Data verification

After the Oregon Department of Forestry receives the stream survey report form and map, the Department will review the following factors to judge whether the information is reliable according to the law.

- Survey date. The survey must have been done within the specified time of year if the results are to prove that the stream has no fish (that is, is a Type N stream) or to document the maximum upstream distribution of fish.
- Sampling methods. Was the survey conducted with methods that are reasonably expected to accurately define the maximum upstream extent of fish or to document that fish are not present?
- Flow conditions. Were flows during the survey within normal ranges for annual flows for this area, or did abnormal conditions such as drought or excessive runoff possibly affect the results of the survey?
- Stream reach surveyed. Was enough of the stream surveyed to reliably indicate the absence of fish? Were the minimum number of pools included, as well as any upstream beaver ponds?

Stream reclassification

This section briefly states the process used to reclassify a stream on the ODF Stream Classification Maps. The initial steps will be completed by the agency, landowner, or interested party doing the fish-presence surveys. The final steps are completed by the Oregon Department of Forestry according to legal requirements of the Water Protection Rules. Briefly, this is the process.

1. The person planning the survey should get a current ODF Stream Classification Map and review it to find stream areas that are not classified.

2. Surveys to identify the maximum upstream distribution of fish should be planned by focusing on the unclassified streams and on the probable locations of future timber harvests. Surveys could be limited to planned harvest operation sites, but that kind of survey may be less efficient.

3. Permission to enter private forest lands should be obtained from all landowners before the surveys are conducted.

4. Fish-presence surveys should then be made according to the guidelines given in this publication.

5. The required survey information, recorded on the Fish Presence Survey Form and maps, should be given to the local ODF district office.

6. The ODF office will give copies of the completed survey forms and maps to the local office of the Oregon Department of Fish and Wildlife.

7. The Department of Forestry will review the information, usually in consultation with the Oregon Department of Fish and Wildlife, to determine whether the survey results are reliable.

8. Based on its assessment of data reliability, the Department of Forestry will make appropriate changes to the ODF Stream Classification Maps.

9. All affected landowners will be notified of the proposed stream classification changes, according to the notification rules (OAR 629-57-2110(2)).

Instructions for completing the survey report form

The following information should be reported on the Fish Presence Survey Form. These instructions are in the order that the information appears on the form. **Complete one form for *each* stream reach or branch where fish were observed or fish use was found to end.** This may require assigning codes to unnamed tributaries (for example, "trib. a," "trib. b") so that survey data can be cross-referenced to the survey maps. Please refer to examples on pages 21 through 29.

Surveyor Name(s): The name of the person or persons responsible for conducting the survey and reporting the results.

Agency/Company: The name of the agency or company that employs the surveyor (if applicable).

Landowner: The name of the landowner of the reach surveyed.

Mailing Address and Phone: The address and phone number for the person responsible for the survey.

Stream: The name of the stream as reported on the USGS or ODF Stream Classification Map for the area. If the stream is unnamed, report the stream as "unnamed" and list the tributary that it flows into ("Tributary to...").

Tributary to: The name of the main stream (as reported on the USGS or ODF map) that the surveyed stream flows into. This is especially important if the surveyed stream is unnamed.

Quad Map: The name of the USGS 7.5 minute topographic map that includes the reach of the stream surveyed. If the surveyed reach covers more than one quad map, report first the name of the map that shows the identified end-point of fish use and then give the other maps' names.

Location: A legal description (township, range, and section to at least the quarter section) of the location where fish use ends.

Date Surveyed: The month, day, and year the fish survey was conducted.

Survey Method: Check the box for the survey method used. If more than one method was used, check all that apply and note the most often used method in the comments section or in the form's margin.

Survey Amount Above End of Fish Use: The length of stream reach that was surveyed immediately *upstream* of the identified end of fish use. Estimate (in feet) the length surveyed, *and* give the number of pools sampled for fish in that section. A survey to prove the absence of fish must sample at least 50 yards of stream and at least six pools immediately upstream of the end of fish use. In addition, any upstream beaver ponds must also be sampled.

Flow Level: The flow conditions at the time of the survey. Use the following categories of flow.

Low: Ranges from a series of isolated pools to flowing across less than 75 percent of the average bankfull width.

Moderate: Surface water is flowing across 75 to 90 percent of the average bankfull width.

High: Surface water flowing across more than 90 percent of the average bankfull width. ***It is not recommended that fish presence surveys be conducted at high flows.***

Weather: The weather during most of the fish survey (rainy, overcast, partly cloudy, sunny, snowy, etc.).

Water Clarity: The water visibility during the survey. Use the following categories of water visibility.

Clear: Visibility is good in pools, deep pools, and riffles.

Moderate: Visibility is good only in riffles and shallow pools.

Turbid: Visibility is poor in both riffles and pools. ***It is not recommended that fish presence surveys be conducted when water is turbid.***

Water Temperature (optional): The temperature of the stream (in degrees Farenheit) at the time of the survey.

Fish observations

Report the species and approximate size ranges of fish observed in the surveyed reach. Use Figure 3 (page 12) as a guide to identifying some game fish species commonly found in small, forested streams. Use the following codes and instructions to complete this section.

Species: Use the following names or codes to report fish observed during the survey. If you observe a species not listed here, such as Pacific lamprey, use its common name.

Name	Species Code
Coho salmon	Co
Cutthroat trout	Ct
Rainbow trout/steelhead	Rb/St
Bull trout	BuT
Brook trout	BT
Unknown salmonid	UnS

Sizes: Report the size range of fish, in inches, by species. For example, the size range of coho observed could be reported as "1-4 inches." If you see several sizes of one species (for example, some cutthroat trout in the "1- to 2-inch" range and others in the "6- to 8-inch" range), list them separately.

Aquatic wildlife

The types of aquatic wildlife that may be observed include tailed frogs (including juvenile "tadpoles"), Pacific giant salamanders, and Olympic salamanders.

Species: Give the common name of the species, if known. If you don't know the species name, at least report observations by a general name such as "salamanders."

Number: The number of aquatic wildlife in each species or group observed.

Physical stream data

Report the physical characteristics of the stream in the vicinity of the end-point of fish use. Report information separately for (1) the section immediately at and downstream of the end of fish use, and (2) the area upstream of the maximum extent of fish use. Following are specific instructions for collecting this information.

Bankfull Channel Width: By eye, estimate the average width (in feet) of the bankfull channel for the 100-foot sections above *and* below the end-point of fish use. The bankfull channel is the area that is scoured by water during average high flows. The edge of the bankfull channel can be identified by looking for changes in vegetation, in soils and litter characteristics, or in the shape of the bank. The bank often will abruptly change slope at the bankfull boundary. Vegetation at the boundary often changes from annual vegetation (such as grasses) to more permanent vegetation such as trees and shrubs. Estimate the width across the channel between the edges of the bankfull level.

Current Wetted Width: Visually estimate the average width (in feet) of the channel that contains flow (is wetted) at the time of the survey. Report the estimated averages for the 100-foot sections above and below the end of fish use.

Channel Gradient: Measure the average stream gradient with a clinometer for the 100-foot sections above and below the end of fish use. Tie a piece of flagging *at eye level* on a branch or shrub, walk up or down the stream bank, and then use the clinometer to sight on the flagging while you are standing on the channel bottom. Read and report the *percent* gradient.

ODF Stream Class Size: The stream size ("small," "medium," or "large") from the ODF Stream Classification Maps for the reaches immediately above and downstream of the end of fish use.

Natural barriers

This information is very important for understanding relationships between the presence of fish and the physical characteristics of the stream. Understanding these relationships can help determine where fish-presence surveys should be concentrated and help predict where fish are likely to occur if survey information is not yet available. Generally, natural barriers are permanent structures such as falls or vertical drops more than 8 to 10 feet high for salmon or steelhead or 4 feet high for trout. Log jams, drops over logs, beaver dams, or other organic structures generally are only temporary barriers to fish passage, but report them as well.

If fish use ends at a natural barrier, such as a waterfall, bedrock chute or cascades, describe the conditions at the site. Include a description of: (1) the type of barrier, (2) the approximate height (in feet), (3) the percentage of slope, (4) the length (in feet) of the bedrock chute or cascades, and (5) any

other conditions that may be limiting fish passage. If the potential barrier is a bedrock chute, note whether the bedrock contains pools or rough features (such as rocks, boulders, or other breaks in the flow), or whether the water flows in an even, shallow pattern over the bedrock. Please note on the survey map the locations of any natural barriers encountered. **If you encounter a natural barrier, also be sure to sample above this point because fish often are found above natural barriers.**

Road-crossing barriers

This information also is very important for understanding relationships between the presence of fish and the physical characteristics of the stream. Road-crossing barriers can alter the relationships.

If fish use ends at a road-crossing barrier, such as a culvert, describe the conditions at the site. Describe the type of barrier and its measurements at the time of the survey such as (1) the diameter of the culvert, in inches, (2) the depth (in inches) of water in the culvert, (3) the height (in feet) of the jump (drop) below the culvert or structure, (4) the depth (in inches or feet) of the plunge pool below the culvert outfall, (5) the gradient or slope of the culvert, given as a percentage as read off a clinometer, (6) the length (in feet) of the culvert, and (7) any other factors that could affect fish passage. Please note on the survey map the locations of any road-crossing barriers, even if they are not at the end-point of fish use. **As with natural barriers, be sure also to sample above the site because fish often are found above road-crossing barriers.**

Other comments

Any other comments or notations that you think may be pertinent to the fish survey. It helps to describe any notable habitat characteristics, for example "lots of instream wood," "very few pools in the reach," "heavy silt load in the stream." Use the reverse side of the form if necessary.

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5 MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): _____

Agency: _____ Land Owner: _____

Mailing Address: _____

Phone: _____ Date Surveyed: _____

Stream: _____ Tributary to: _____

Quad Map: _____ Location: T_____ R_____ Sec._____

Survey Method (✔): ☐ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) _____ Number of Pools _____

Flow Level (✔): ☐ Low ☐ Moderate ☐ High

Weather: _____ Water Temperature: _____

Water Clarity (✔): ☐ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS **AQUATIC WILDLIFE**

Species	Sizes	Species	Quantity

PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)		
Current Wetted Width (feet)		
Channel Gradient (percent)		
ODF Stream Class Size		

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.

If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.

Other comments (use reverse side if necessary):

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5
MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout, Fish Consulting, Inc.
Agency: N/A Land Owner: Klamath Timber
Mailing Address: P.O. Box 18, Klamath Falls, OR 97000
Phone: 888-5555 Date Surveyed: April 28, 1995

Stream: Unnamed, "Trib A" Tributary to: W.F. Johson Creek
Quad Map: Old Baldy Location: T 38S R 5E Sec. 30, SW/SW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 180' Number of Pools 19

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Sunny Water Temperature: 59° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS

Species	Sizes
Trout fry	0-2" (34)
Rainbow	2-6" (2)

AQUATIC WILDLIFE

Species	Quantity
Unknown Salamander	1

PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	5.5	5
Current Wetted Width (feet)	3	3
Channel Gradient (percent)	16	32
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
NA

If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
NA

Other comments (use reverse side if necessary): Fish use ends 30 feet above the third Johnson mainline crossing on this stream. The stream gradient is very steep above the end of fish use - greater than 18%.

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5 MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout Fish, Consulting, Inc.
Agency: N/A Land Owner: Klamath Timber
Mailing Address: P.O. Box 18, Klamath Falls, OR 97000
Phone: 888-5555 Date Surveyed: April 28, 1995

Stream: Unnamed, "Trib. B" Tributary to: WF Johnson Cr.
Quad Map: Old Baldy Location: T 38S R 5E Sec. 30, SE/SW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 250 Number of Pools 20

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Sunny Water Temperature: 60° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS

Species	Sizes
Trout fry	0-2" (75-100)
Rainbow	2-6" (23)
Cutthroat	2-6" (18)

AQUATIC WILDLIFE

Species	Quantity
Pacific Giant Salam.	2*

PHYSICAL STREAM DATA * One above, one below 25' waterfall

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	7.0	5.0
Current Wetted Width (feet)	5.0	4.5
Channel Gradient (percent)	13	30
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
Fish use ends at 25' vertical waterfall. A 6' water falls also exists (noted on map as WF-6') but fish were found upstream.
If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
N/A
Other comments (use reverse side if necessary): Only rainbow trout were found above the 6 foot waterfall. Sampled approximately 250 feet above the 25 foot falls, but no fish were observed. The stream above the falls probably dries up in some years.

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5
MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout, Fish Consulting, Inc.
Agency: N/A Land Owner: Klamath Timber
Mailing Address: P.O. Box 18, Klamath Falls, OR 97000
Phone: 888-5555 Date Surveyed: April 28, 1995

Stream: Unnamed, "Trib C" Tributary to: W.F. Johnson Creek
Quad Map: Old Baldy Location: T 38S R 5E Sec.

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 225 Number of Pools 24

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Sunny Water Temperature: 61° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS **AQUATIC WILDLIFE**

Species	Sizes	Species	Quantity
Trout Fry	0-2" (39)	None	
Rainbow trout	0-4" (2)		

PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	6.0	6.0
Current Wetted Width (feet)	5.0	5.0
Channel Gradient (percent)	16	24
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
N/A
If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
N/A
Other comments (use reverse side if necessary): Fish use ends where a small tributary enters from the northeast. surveyed downstream from the Madrone spur crossing. No fish found above crossing.

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5 MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout, Fish Consulting, Inc.
Agency: N/A Land Owner: Klamath Timber
Mailing Address: P.O. Box 18, Klamath Falls, OR 97000
Phone: 888-5555 Date Surveyed: April 28, 1995

Stream: West Fork Johnson Creek Tributary to: Johnson Creek
Quad Map: Old Baldy Location: T 38S R 5E Sec. 29, SE/SW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 300 Number of Pools 28

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Sunny Water Temperature: 60° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS

Species	Sizes
Trout fry	0-2" (>100)
Rainbow Trout	2-6" (14)
Cutthroat Trout	2-8"

AQUATIC WILDLIFE

Species	Quantity
Pac Giant Salamander	3*

*In no fish stream

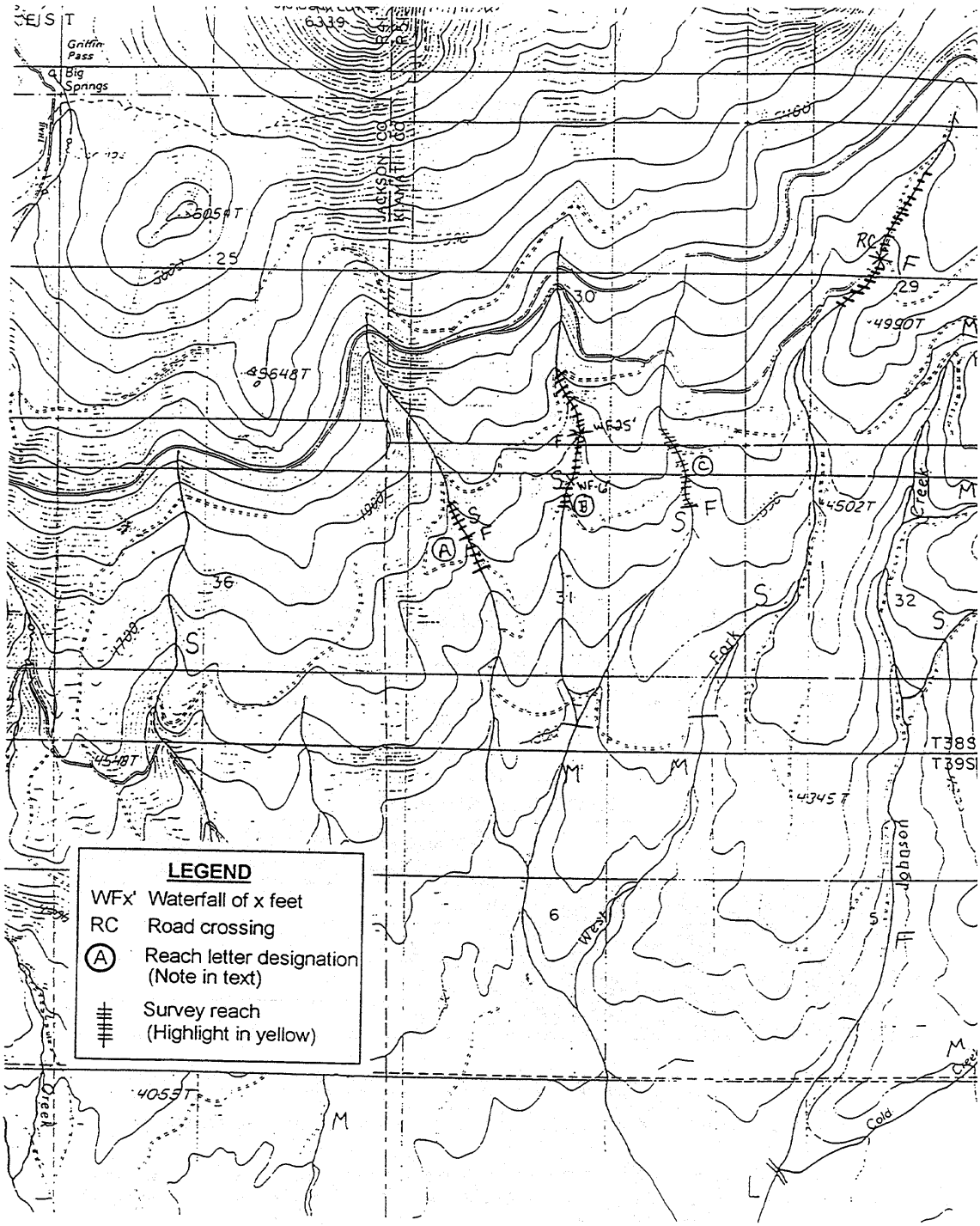
PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	5	5
Current Wetted Width (feet)	3.5	3
Channel Gradient (percent)	14	9
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
N/A

If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
The culvert is not passible - 36" corrogated with a 4' drop at the outlet. 6' deep plunge pool. Pipe slope is 6% and 20' long. The culvert is scheduled to be replaced this summer.

Other comments (use reverse side if necessary):
Lower stream gradient above the culvert. Stream habitat looks good, but the stream may dry up in some years.


Griffin Pass
Big Springs
6339
JACKSON CO
JOSEPHINE CO
5054T
4564ST
4990T
4502T
4548T
4345T
4055T
WF35'
WF-C
RC
Fork
Creek
Johnson
Cold
T38S
T39S
LEGEND
WFx' Waterfall of x feet
RC Road crossing
A Reach letter designation (Note in text)
Survey reach (Highlight in yellow)

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5
MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout, Fish Consulting, Inc.
Agency: N/A Land Owner: Lobster Cr. Lumber
Mailing Address: P.O. Box 2, Newport OR 97000
Phone: 840-0001 Date Surveyed: May 2, 1995

Stream: Unnamed, "Trib A" Tributary to: Lobster Creek
Quad Map: Buck Creek Ridge Location: T 7S R 2W Sec. 34 NE of SW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 300 Number of Pools 15

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Partly Sunny Water Temperature: 60° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS **AQUATIC WILDLIFE**

Species	Sizes	Species	Quantity
Cutthroat	0-2" (approx 125)	None	
Cutthroat	2-6" (18)		

PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	8	6.5
Current Wetted Width (feet)	6	4
Channel Gradient (percent)	14	20
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
The gradient is very steep above the end of fish use. The stream above this point is mainly cascades over boulders, but this is probably not a barrier.
If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
N/A
Other comments (use reverse side if necessary): No road crossing, began survey near the medium-small size change. Fish use ends where a very small tributary (not on map) enters from the east.

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5 MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Caddis, Bob Nymph
Agency: ODFW
Land Owner: Lobster Cr. Lumber
Mailing Address: P.O. Box 2, Newport, OR 97000
Phone: 840-0001
Date Surveyed: May 2, 1995

Stream: Unnamed "Trib B"
Tributary to: Lobster Creek
Quad Map: Buck Creek Ridge
Location: T 7S R 2W Sec. 34, NW of NW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 250 Number of Pools 10

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Partly Sunny
Water Temperature: 57° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS / **AQUATIC WILDLIFE**

Species	Sizes	Species	Quantity
None			

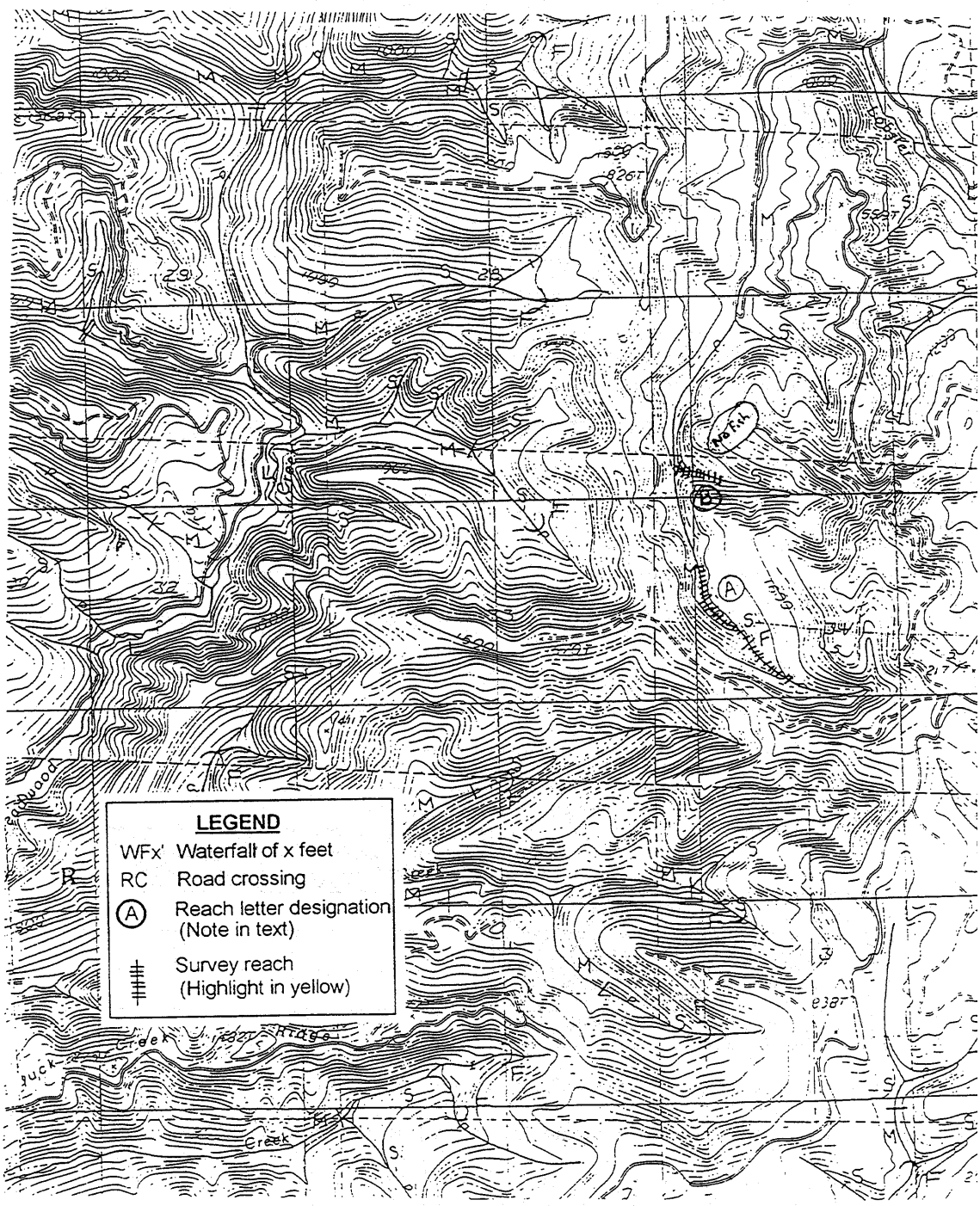
PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)		5
Current Wetted Width (feet)		3.5
Channel Gradient (percent)		24
ODF Stream Class Size		S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.

If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.

Other comments (use reverse side if necessary): The stream was very steep with very few pools. No fish were observed. Type N stream.


LEGEND
WFx' Waterfall of x feet
RC Road crossing
A Reach letter designation (Note in text)
Survey reach (Highlight in yellow)
Ridge
Creek

FISH PRESENCE SURVEY FORM

ATTACH A COPY OF THE 7.5
MINUTE ODF STREAM CLASS MAP

Surveyor Name(s): Joe Survey, Bob Trout,
Agency: N/A Land Owner: Big Fir Timber Co
Mailing Address: 238 Pine St, Glenbrook, OR 97000
Phone: 289-3333 Date Surveyed:

Stream: Unnamed Tributary to: Howell Creek
Quad Map: Glenbrook Location: T 14 S R 6 W Sec. 28, NE of SW

Survey Method (✔): ☑ Electroshocker ☐ Angling ☐ Visual

Survey Above End of Fish Use: Distance (feet) 8 Number of Pools 8

Flow Level (✔): ☐ Low ☑ Moderate ☐ High

Weather: Clear Water Temperature: 59° F

Water Clarity (✔): ☑ Clear ☐ Moderate ☐ Turbid

FISH OBSERVATIONS

Species	Sizes
Trout (fry)	0-2" (750)
Cutthroat trout	2-6" (12)
Cutthroat trout	16" (1)

AQUATIC WILDLIFE

Species	Quantity
Tailed Frog Tadpole	3

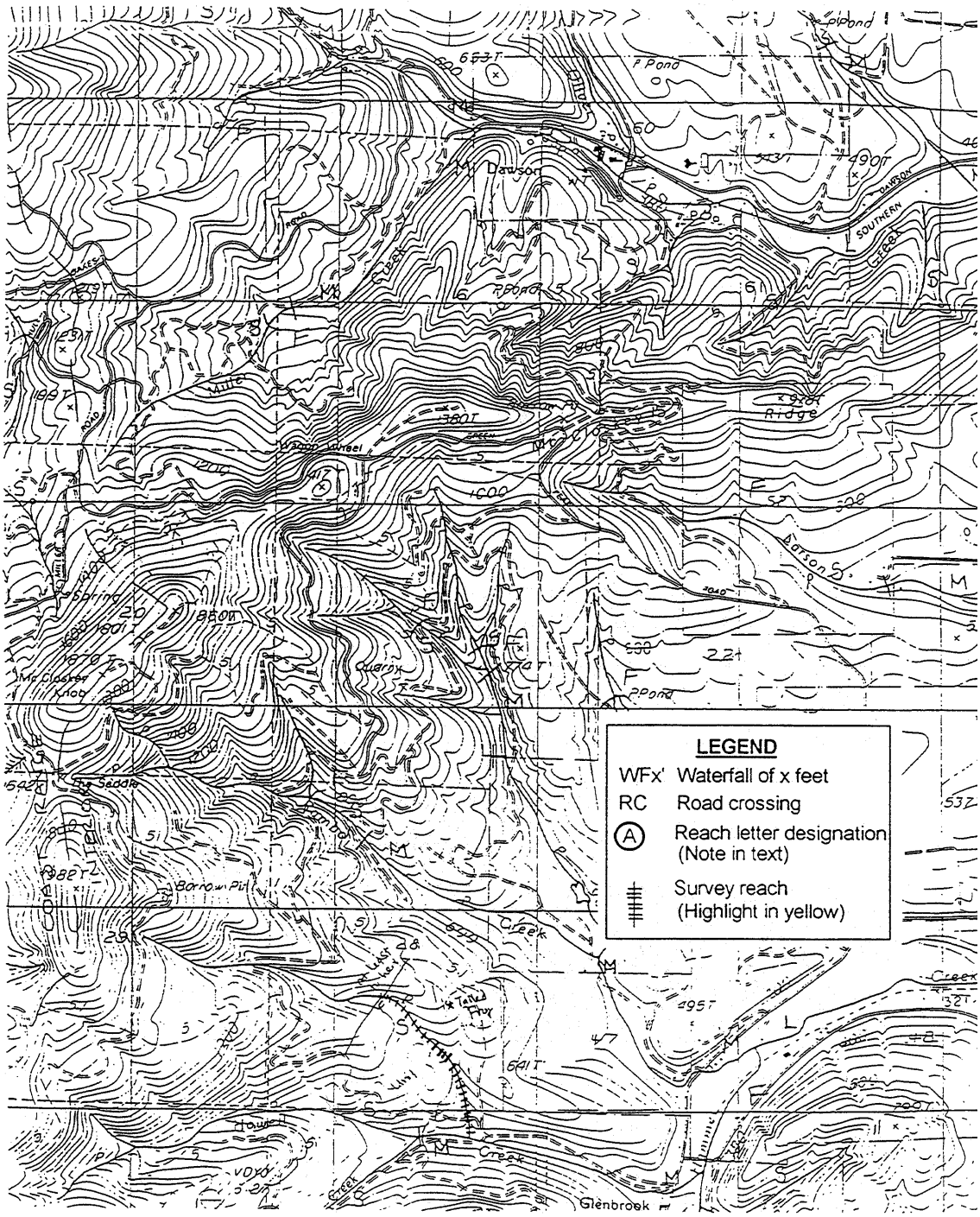
PHYSICAL STREAM DATA

	At or Downstream of Fish Use	Upstream of Fish Use
Bankfull Channel Width (feet)	6	4
Current Wetted Width (feet)	5	3
Channel Gradient (percent)	10	10
ODF Stream Class Size	S	S

If fish use ends at a natural barrier, describe the conditions that prevent upstream fish passage.
N/A

If fish use ends at a road crossing, describe conditions that may prevent upstream fish passage.
N/A

Other comments (use reverse side if necessary): Survey conducted only within the boundary of the Howell Creek #5 sale unit. Fish found to the upstream sale boundary; no survey above this point.


LEGEND
WFx' Waterfall of x feet
RC Road crossing
A Reach letter designation (Note in text)
Survey reach (Highlight in yellow)
Mt Dawson
Ridge
Creek
Glenbrook