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**Survey of Columbia River Basin  
Streams for Columbia Pebblesnail  
*Fluminicola columbiana* and  
Shortface Lanx *Fisherola nuttalli***

D. A. Neitzel  
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May 1993

Prepared for the U.S. Department of Energy  
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory  
Operated for the U.S. Department of Energy  
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SURVEY OF COLUMBIA RIVER BASIN STREAMS FOR  
COLUMBIA PEBBLESNAIL *Fluminicola columbiana*  
AND SHORTFACE LANSX *Fisherola nuttalli*

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Pacific Northwest Laboratory  
Richland, Washington 99352

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(a) Deixis Consultants  
Seattle, Washington

## SUMMARY

At present, there are only two remaining sizable populations of Columbia pebblesnail *Fluminicola columbiana*; those in the Methow and Okanogan rivers, Washington. Smaller populations survive in the Hanford Reach of the Columbia River, Washington; the lower Salmon River and middle Snake River, Idaho; and possibly in Hells Canyon of the Snake River, Idaho, Washington, and Oregon; and the Grande Ronde River, Oregon and Washington. Neither large population is at present protected, and there has been a substantial documented reduction in the species' historical range.

Large populations of the shortface lanx *Fisherola nuttalli* persist in four streams: the Deschutes River, Oregon; the Hanford Reach of the Columbia River, Washington; Hells Canyon of the Snake River, Idaho and Oregon; and the Okanogan River, Washington. Smaller populations, or ones of uncertain size, are known from the lower Salmon and middle Snake rivers, Idaho; the Grande Ronde, Washington and Oregon; Imnaha and John Day rivers, Oregon; Bonneville Dam area of the Columbia River, Washington and Oregon<sup>(a)</sup>; and the Methow River, Washington. While substantial range reduction has occurred in this species, and the large populations are not well protected, the problem is not as severe as in the case of the Columbia pebblesnail.

Both species appear to have been widespread historically in the mainstem Columbia River and the Columbia River Basin prior to the installation of the current dam system. Both are now apparently reduced within the Columbia River:

- Columbia pebblesnail to a population in the Hanford Reach plus six other sites that are separated by large areas of unsuitable habitat from those in the river's major tributaries
- shortface lanx to two populations (in the Hanford Reach and near Bonneville Dam) plus nine other sites that are separated by large areas of unsuitable habitat from those in the river's major tributaries.

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(a) Shortface lanx were collected during 1990 by William Muir, National Marine Fisheries Service, Cook, Washington.

## ACKNOWLEDGMENTS

E. William Lusty, Alan J. Scott, Ted M. Poston, George Watters, and Gregg A. Martenson at the Pacific Northwest Laboratory, Richland, Washington; Kirk Wright, Fayetteville, Arkansas; and Edward Johannes, Deixis Consultants, Seattle, Washington, provided field support for field collections. Mr. Lusty prepared the field collection materials and transportation equipment. Edward Johannes helped with the taxonomic identifications and report preparation. We also thank Bill Muir, National Marine Fisheries Service, Star, Washington, for information on benthic invertebrates in the Bonneville Dam area.

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## INTRODUCTION

Two aquatic animals that occur in the Columbia River at Hanford, the Columbia pebblesnail *Fluminicola columbiana* and the shortface lanx *Fisherola nuttalli*, are federally listed candidate species. As candidate species, the pebblesnail and lanx are not protected by law; however, the U.S. Fish and Wildlife Service (USFWS) monitors anthropogenic activities that may affect candidate species.

Between 1970 and 1988, Hanford was the only collection site for the Columbia pebblesnail and one of two collection sites for the shortface lanx. Activities that affect the known habitat of candidate species can result in listing them as protected species, providing the USFWS with an administrative tool that allows habitat protection. Thus, all U. S. Department of Energy Richland Field Office (RL) activities at Hanford that potentially affect the Columbia River are managed with an assessment of the pebblesnail and lanx in mind.

Assessment of the beneficial uses of the Columbia River at Hanford is enhanced by knowing the distribution of the pebblesnail and the lanx. Therefore, RL requested that the Pacific Northwest Laboratory (PNL) conduct a survey of streams in the Columbia River Basin to determine the distribution of Columbia pebblesnail and shortface lanx populations.

This report is a revision of PNL-8229, which was distributed in 1992. The revision is being distributed to clear up some editorial and graphic errors that we identified in the 1992 version. The changes do not affect the conclusions. This report describes the literature, field, map, and museum surveys that were conducted during 1988 through 1991, the survey results, and the taxonomy and ecology of the Columbia pebblesnail and shortface lanx, and discusses the possible listing recommendations that will be made for these species. Additionally, we present a list of the survey sites with geographic and legal descriptions (Appendix A) and a list of the survey sites with the results of our survey and our observations about the condition of each site (Appendix B).

## SURVEYS

We studied the distribution of the Columbia pebblesnail and shortface lanx by first examining U.S. Geological Survey 7.5' and 15' and 7.5' U.S. Forest Service topographic maps of the Columbia River Basin. We reviewed the technical literature that described surveys of the Columbia River Basin for snails. Based on the map and literature information, we constructed a list of "all" the sites within the Columbia River Basin where we should look for lanx and pebblesnail (Neitzel and Frest 1989).

Some of the streams had never been surveyed for freshwater molluscs, and few had been adequately surveyed for these two species according to standards used in other portions of the United States for determining whether a mollusc should be protected. For the streams for which records are available, in most instances, only single sites have been recently or historically sampled. A major exception is Taylor's (1982a, b) work on a 24.5-mile stretch of the Snake River, Idaho. Reevaluation of old records was long overdue, as many were suspect and others were so vague as to be of extremely limited value (e.g., compare Taylor 1982a, b with Burch and Tottenham 1980; Burch 1982, 1989).

The very large number of possible sites was daunting, but not unreasonable. As it is, the average spacing is approximately 5 miles, far greater than would be considered adequate intervals in river surveys for molluscs in other regions. The lack of detailed systematic work on some western species is particularly acute for these taxa. Similarly, the usual museum surveys have not furnished much additional unpublished data. Museum records for eastern U.S. streams, which are often much more extensive than the published records, are important for assessing the status of a species being considered for protection. However, the total number of specimens of both taxa in museum collections is quite small.

The collection methods included techniques that have been successful in past efforts to collect molluscs in the Columbia River Basin. Wire-basket benthos samplers (Jacobi 1971; Mason et al. 1967) were placed in streams in which we expected to find molluscs, and the samplers were left to incubate for about 3 months. Before retrieving the baskets, we placed them into cloth bags. The bagged baskets were returned to the surface and tagged to identify sample location and date. Benthic organisms were removed from the rocks and baskets and washed into 600- $\mu$ m-mesh sieving buckets. The washed samples were preserved in 70% isopropyl alcohol. Additional surveys were accomplished by wading into the stream, removing rocks from the stream, and collecting snails from the rocks. These snails were placed in jars and preserved with alcohol.

Sample collections were mostly scheduled for late summer and early fall. This schedule coincided with the more successful collections at Hanford (Beak 1980; Clarke 1976; Page et al. 1979, 1982; Supply System 1985, 1986, 1987; Wolf 1976). Deixis collections were made in all months except January and February.

Preserved pebblesnail and lanx samples were shipped to the Thomas Burke Memorial Washington State Museum at the University of Washington or to the Deixis Consultants collection, both in Seattle, Washington. Individual specimens were identified to species, if possible, and prepared for storage and placed in the archives at the Burke Museum. Samples will be maintained in perpetuity at the museum. Samples are assigned unique identification numbers in the Burke Museum system, providing an easy retrieval system for all samples.

## SURVEY RESULTS

There are two streams with sizable populations of Columbia pebblesnails and four streams with sizable populations of shortface lanx. Healthy populations of Columbia pebblesnails are in the Methow and Okanogan rivers in Washington. Smaller populations of Columbia pebblesnails were found in the Hanford Reach of the Columbia River, Washington, in the lower Salmon River, Idaho, the middle Snake River, Idaho, and Hells Canyon of the Snake River, Oregon and Idaho. We found some shells of Columbia pebblesnails in the Grande Ronde River, Washington and Oregon, during our surveys.

Healthy populations of shortface lanx persist in the Deschutes River, Oregon; Okanogan River, Washington; the Hanford Reach of the Columbia River, Washington; and Hells Canyon of the Snake River, Oregon and Idaho. Smaller populations of the shortface lanx were found in the Methow River, Washington; Salmon and middle Snake rivers, Idaho; Grande Ronde River, Washington and Oregon; and John Day and Imnaha rivers, Oregon. A small population also persists in the lower Columbia River near Bonneville Dam, Oregon.<sup>(a)</sup>

## LITERATURE REVIEW

Pre-1988 collections of the Columbia pebblesnail are from lower Snake, Columbia, Spokane, Little Spokane, and Payette rivers (Table 1; Figure 1). Columbia River sites extend from Portland, Oregon, upstream to the mouth of the Wenatchee River. Specific collection sites include Portland and The Dalles, Oregon; and Wallula, the Hanford Reach, and the mouth of the Wenatchee River, Washington. The lower Snake River site was near its junction with the Columbia River. The Spokane and Little Spokane river sites were near Spokane, Washington. The Payette River site was upstream of Black Canyon in Idaho. All of these sites, except the Hanford Reach, were originally surveyed before dam construction in the Pacific Northwest and are now within impoundments. Thus, 10 of the 11 sites (Table 1) may have been eliminated as viable habitat for pebblesnails.

Macroinvertebrate collections during the 1970s and 1980s documented the existence of pebblesnails throughout the Hanford Reach. Taxonomic work indicates there are two to three species of *Fluminicola*, including *F. columbiana*, at Hanford.

Pre-1988 collections of the shortface lanx are reported from Columbia and Spokane rivers, Washington; Snake and Salmon rivers, Washington and Idaho; Deschutes River, Oregon; and Kootenai River, British Columbia (Table 2; Figure 2). Sites in the Columbia River extend from Portland, Oregon, to Trail, British Columbia. All these sites, except the Hanford Reach, were first surveyed before dam construction on the Columbia River. These sites are now within impoundments that have eliminated most viable habitat for lanx. Most of the pre-1988 collection sites have been impounded or affected by irrigation withdrawals and pollutants. Shortface lanx were collected at Hanford and at Trail during the 1970s and 1980s.

Subsequent to the completion of our field surveys in 1991, additional distribution and biological information became available. Bill Muir of the National Marine Fisheries Service in Portland, Oregon, submitted to Deixis Consultants shortface lanx specimens collected in 1990. The collection site was from the Columbia River, Multnomah County, Oregon, near Bonneville Dam, River Mile (RM) 142.8. Frest and Johannes (1991) reported a live population of shortface lanx from Kanaka Rapids, middle Snake River, Twin Falls County,

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(a) Shortface lanx were collected during 1990 by William Muir, National Marine Fisheries Services, Cook, Washington.

Idaho, RM 591.7. Frest and Johannes (1992a) collected live shortface lanx from Hells Canyon, Snake River, Washington (RM 145.0 to RM 145.5). New biological information is discussed in Frest and Johannes (1992b).

TABLE 1. Pre-1988 Collection Sites for the Columbia Pebblesnail *Fluminicola columbiana*

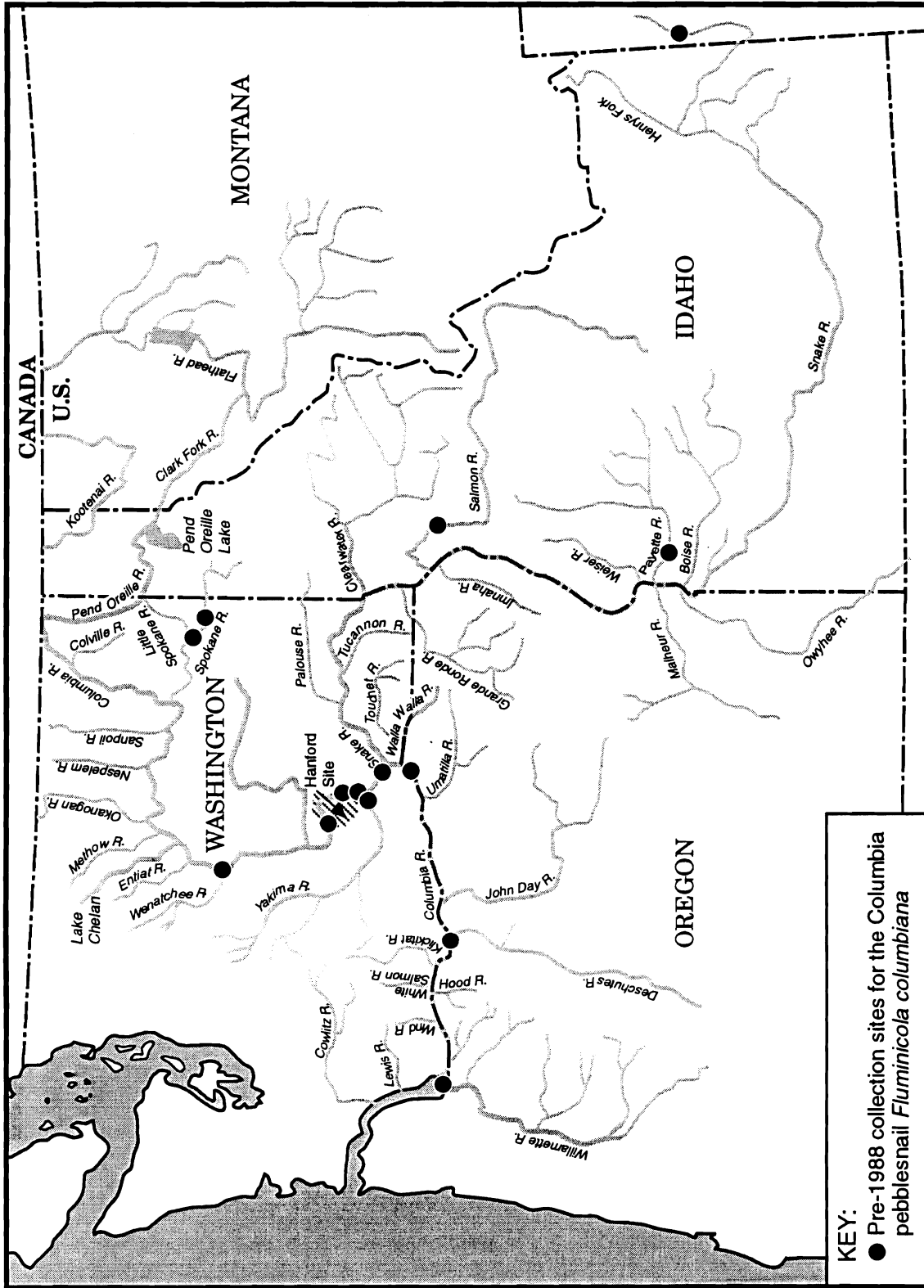
| State      | River          | Site Description <sup>(a)</sup>                                    | Comments   | Reference  |
|------------|----------------|--|--|--|
| Washington | Spokane        | Spokane Falls,<br>Spokane County                                   | By H. Hemphill<br>and others   | Museum collections   |
| Washington | Little Spokane | near confluence with<br>Spokane River                              | By H. Hemphill   | Museum collections   |
| Washington | Columbia       | mouth of Wenatchee River,<br>Chelan County                         | By P.B. Randolph,<br>no date   | Taylor 1982a   |
| Washington | Columbia       | Hanford Reach,<br>Benton County                                    | By A.H. Clarke<br>during 1970s   | Clarke 1976  |
| Washington | Columbia       | Hanford Reach, RM <sup>(b)</sup> 380 <sup>a</sup><br>Benton County | 1973-1974, sampling<br>with rock-filled baskets                              | Wolf 1976  |
| Washington | Columbia       | Hanford Reach, RM 361;<br>Benton County                            | 1981-1982, grab and sampling<br>with rock-filled baskets                     | Page et al.<br>1982  |
| Washington | Columbia       | Hanford Reach,<br>RM 352;<br>Benton County                         | 1974-1986, sampling<br>with rock-filled<br>baskets                           | Page et al. 1979;<br>Beak Consultants<br>Incorporated 1980;<br>Supply System<br>1985, 1986, 1987 |
| Washington | Snake          | lower Snake River  | By H. Hemphill<br>about 1889   | Taylor 1982a and<br>museum collections   |
| Washington | Columbia       | Near Wallula,<br>Walla Walla County                                | By H. Hemphill<br>about 1889   | Taylor 1982a   |
| Oregon     | Columbia       | The Dalles, Wasco<br>County  | Old record, sampled during<br>1988 by T. Frest, population<br>may be extinct | Taylor 1982a   |

TABLE 1. (contd)

| State         | River    | Site Description (a)                        | Comments   | Reference          |
|---------------|----------|---|--|--------------------|
| Oregon        | Columbia | near Portland, Multnomah County             | Old record; sampled during 1988 by T. Frest, population may be extinct | Taylor 1982a       |
| Idaho         | Salmon   | near Lucile, Idaho Co.                      | Old collection   | Museum collections |
| Idaho         | Payette  | upstream of Black Canyon Reservoir          | By D.W. Taylor in 1950s population reported extinct by Taylor          | Taylor 1966, 1982a |
| Idaho/Wyoming | Snake    | upper Snake, eastern Idaho, western Wyoming | No recent records, could be extinct                                    | Beetle 1989        |

(a) Sites listed from most upstream to most downstream for a given river.

(b) RM = river mile.



S9206045.2

FIGURE 1. Pre-1988 Collection Sites (large dots) for the Columbia Pebblesnail *Fluminicola columbiana*

TABLE 2. Pre-1988 Collection Sites for the Shortface Lanx *Fisherola nuttalli*

| State/<br>Province | River          | Site Description <sup>(a)</sup>                           | Comments  | Reference  |
|--------------------|----------------|---|---|--|
| Washington         | Columbia       | Hanford Reach,<br>Benton County                           | 1969-1970   | Coutant and<br>Becker 1970   |
| Washington         | Columbia       | Hanford Reach,<br>RM <sup>(b)</sup> 380;<br>Benton County | 1973-1974, sampling<br>with rock-filled<br>baskets                        | Wolf 1976  |
| Washington         | Columbia       | Hanford Reach, RM 361;<br>Benton County                   | 1981-1982   | Page et al.<br>1982  |
| Washington         | Columbia       | Near Ringold, Benton<br>County                            | 1970s   | Clarke 1976;<br>Taylor 1985  |
| Washington         | Columbia       | Hanford Reach,<br>RM 352;<br>Benton County                | 1974-1986   | Page et al. 1979;<br>Beak Consultants<br>Incorporated 1980;<br>Supply System<br>1985, 1986, 1987 |
| Washington         | Columbia       | Near Wallula, Benton<br>County                            | No date   | Taylor 1982b,<br>1985  |
| Washington         | Little Spokane | Near Little Falls,<br>Stevens County                      | No date   | Museum collections   |
| Washington         | Spokane        | Near Spokane, Spokane<br>County                           | No date   | Museum collections   |
| Oregon             | Columbia       | Mouth of the Deschutes<br>River, Wasco County             | Old record; sampled by Frest<br>during 1988; population may<br>be extinct | Taylor 1982b,<br>1985  |
| Oregon             | Columbia       | Near The Dalles, Wasco<br>County                          | Old record; sampled by Frest<br>during 1988; population may<br>be extinct | Taylor 1982b,<br>1985  |



TABLE 2. (contd)

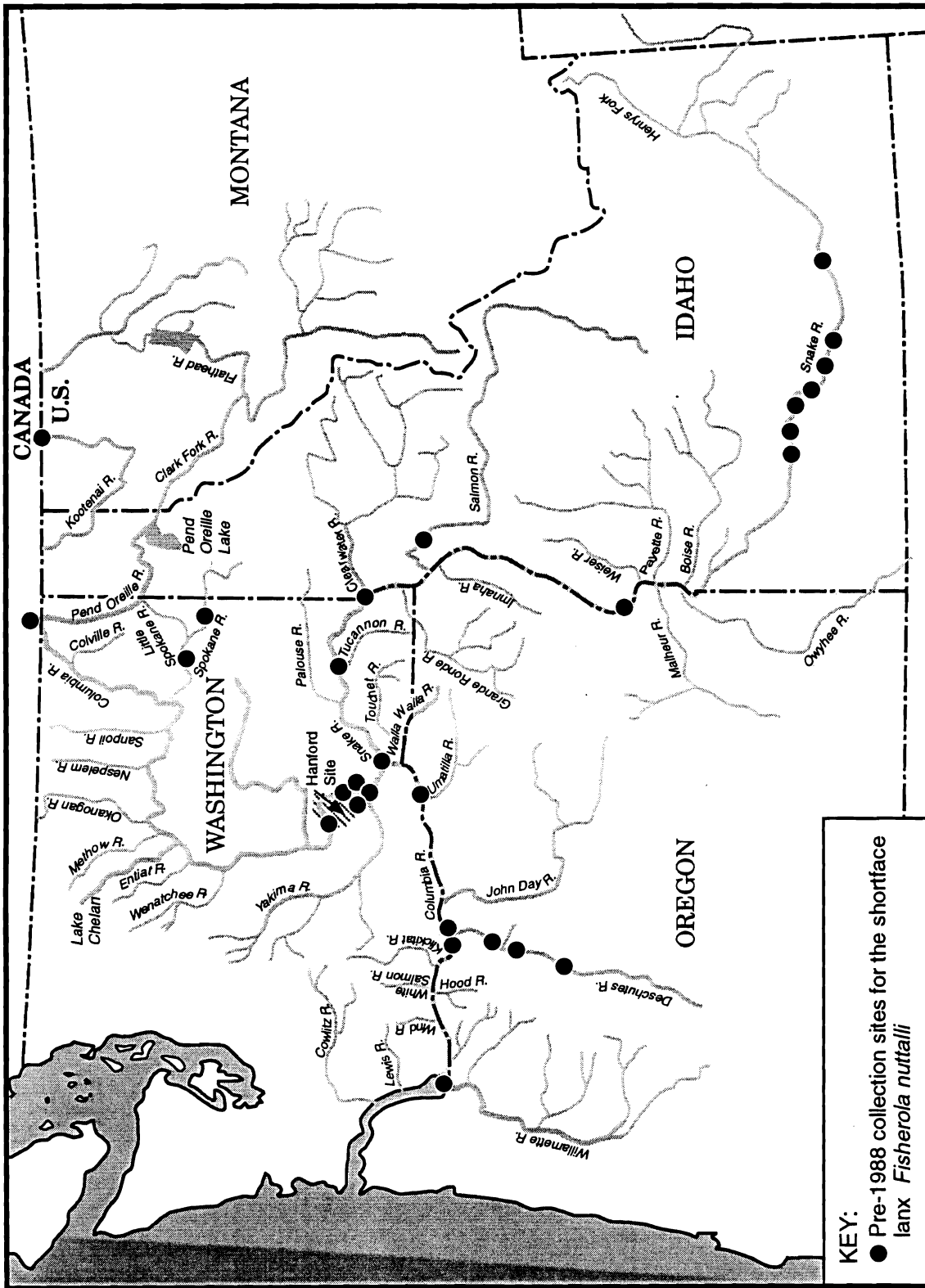
| State/<br>Province | River     | Site Description <sup>(a)</sup>                                    | Comments  | Reference   |
|--------------------|-----------|--|---|---|
| Oregon             | Columbia  | Near Portland, Multnomah<br>County                                 | Old record; sampled by Frest<br>during 1988; population may<br>be extinct | Taylor 1982b,<br>1985                                   |
| Oregon             | Deschutes | Near Sherars Bridge,<br>Wasco County                               | No date   | Taylor 1985,  |
| Oregon             | Deschutes | Near Maupin, Wasco<br>County                                       | No date   | Taylor 1985   |
| Oregon             | Deschutes | Near Grandview, Wasco<br>County                                    | No date   | Taylor 1985   |
| Idaho              | Snake     | Near Rupert, Minidoka<br>County                                    | By F. Kenagy<br>during 1913   | Henderson and<br>Daniels 1917;<br>Taylor 1982b,<br>1985 |
| Idaho              | Snake     | Lower Salmon Falls to<br>Clover Creek, Elmore/<br>Gooding Counties | No date   | Taylor 1982b,<br>1985                                   |
| Idaho              | Snake     | Bancroft Springs,<br>Gooding County                                | 1980-1982   | Taylor 1982b,<br>1985                                   |
| Idaho              | Snake     | Near mouth of Clover<br>Creek, Gooding County                      | 1980-1982   | Taylor 1982b,<br>1985                                   |
| Idaho              | Snake     | Indian Cove Bridge   | Shell only  | Taylor 1985,  |
| Idaho              | Snake     | Near Lewiston, Nez Perce<br>County                                 | No date   | Taylor 1982b,<br>1985                                   |
| Idaho              | Salmon    | Idaho County   | No date   | Taylor 1982b  |
| Idaho              | Snake     | Bliss  | 1980-1982   | Taylor 1982c, 1985                                      |

TABLE 2. (contd)

| State/<br>Province  | River    | Site Description (a) | Comments         | Reference          |
|---------------------|----------|----------------------|------------------|--------------------|
| Idaho               | Snake    | Bliss Bridge         | 1980-1982        | Taylor 1982c, 1985 |
| British<br>Columbia | Kootenai | Kootenai             | No date          | Taylor 1975        |
| British Columbia    | Columbia | near Trail           | By Leonard Kalas | Clarke 1981        |

(a) Sites listed from most upstream to most downstream for a given river.

(b) RM = river mile.



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FIGURE 2. Pre-1988 Collection Sites (large dots) for the Shortfin Shiner *Fishesia nuttalli*

## SITE SURVEYS

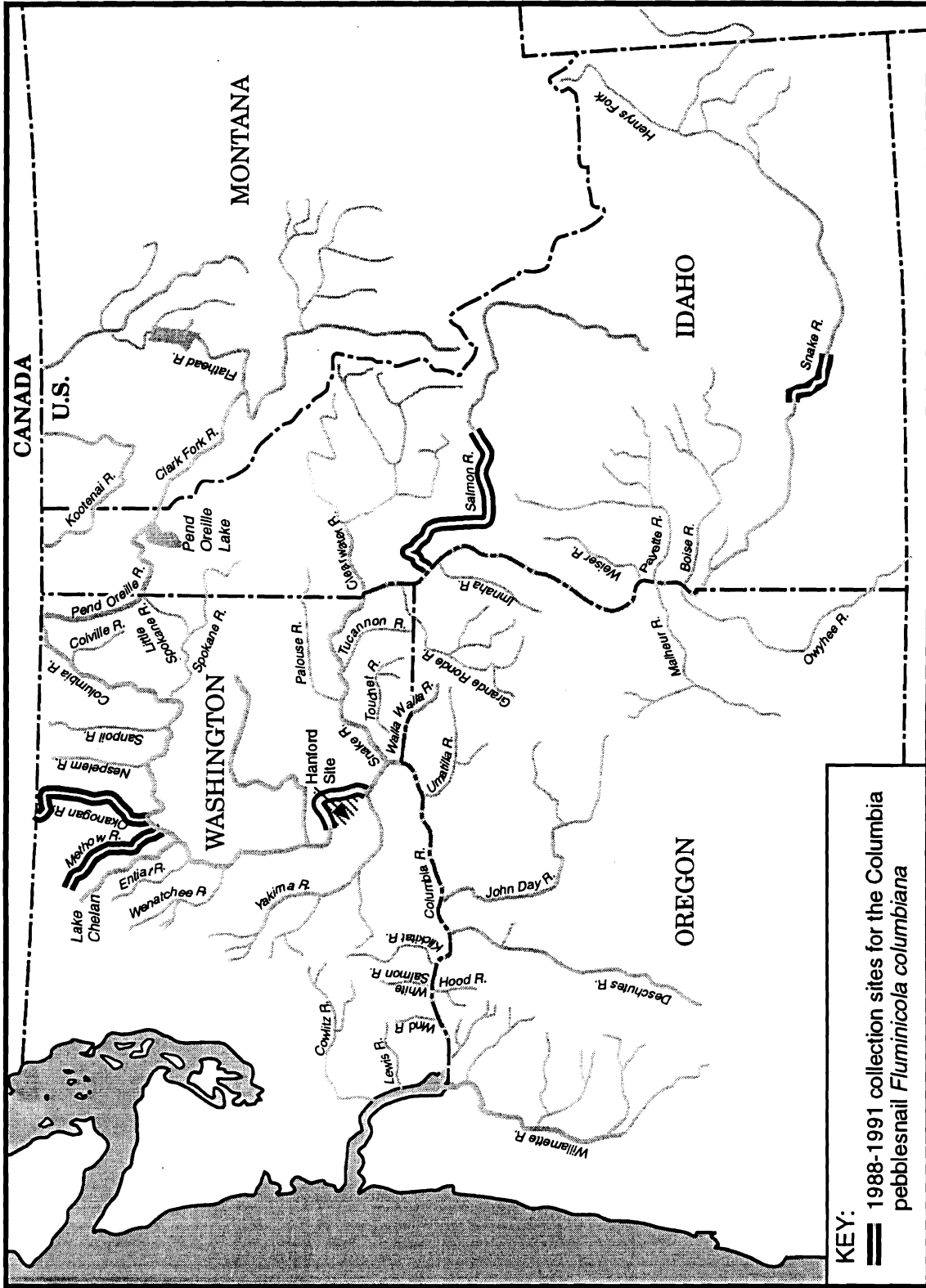
We visited more than 500 sites at more than 30 streams in the Columbia River Basin. At 280 of these sites we collected molluscs. Columbia pebblesnails were collected from five streams (Figure 3). Shortface lanx were collected from nine streams (Figure 4). The sites that we studied are listed in Appendixes A and B. Appendix A notes where collections were made and at which sites Columbia pebblesnails and shortface lanx were found. Associated mollusc species are also tabulated. We also provide comments about the condition of the habitat at most of these sites. Appendix B provides the locality information for each of the sites.

## MUSEUM SURVEYS

During 1991 we made visits to most of the major U.S. museums reputed to have large holdings of western North American freshwater molluscs. These institutions are listed below and abbreviated as noted elsewhere in this report:

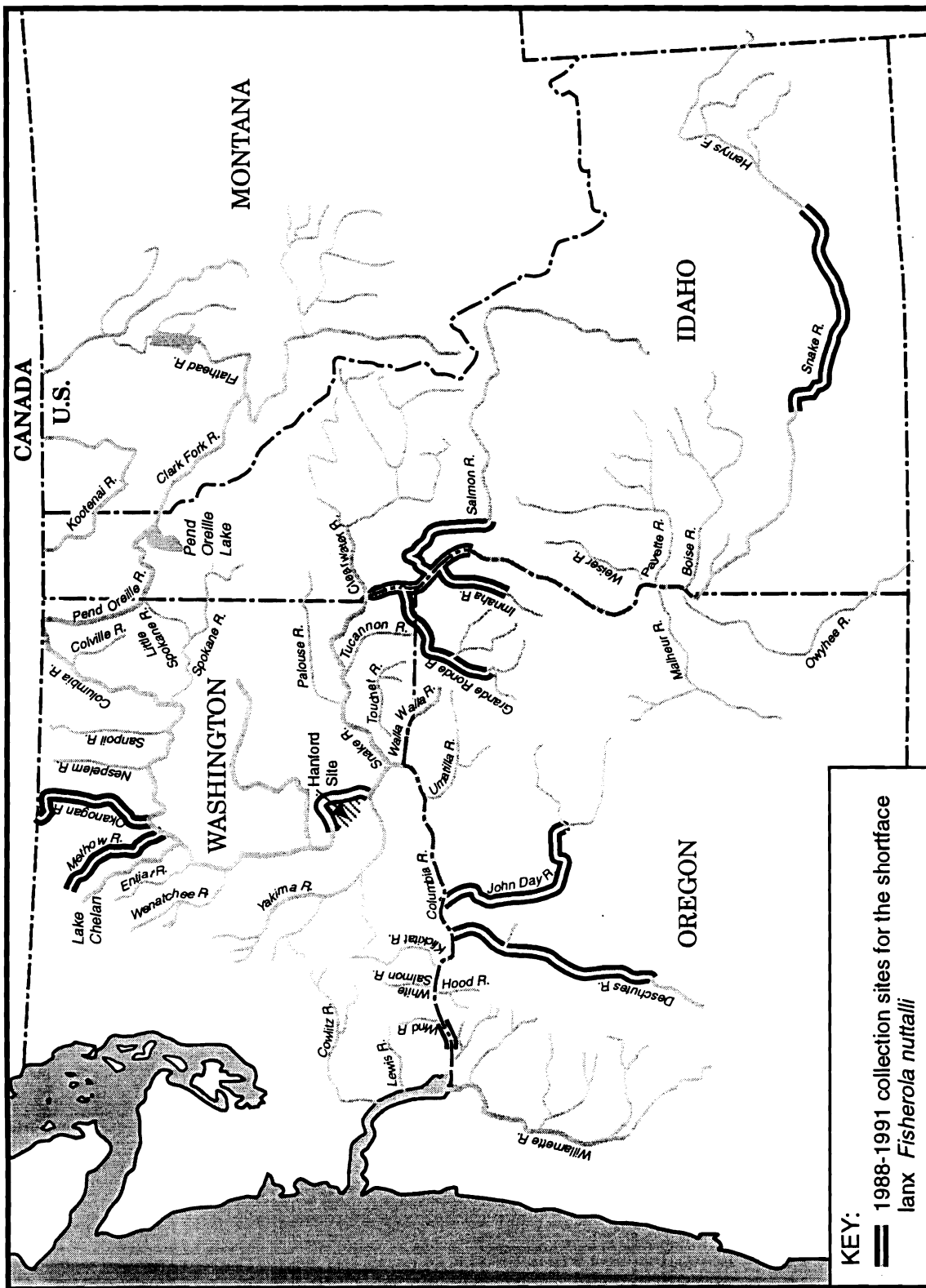
|      |  |
|------|--|
| ANSP | Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, Dept. of Malacology |
| CAS  | California Academy of Sciences, San Francisco, California, Dept. of Invertebrate Zoology     |
| DMNH | Delaware Museum of Natural History, Wilmington, Delaware, Dept. of Malacology                |
| NMNH | U. S. National Museum, Washington D.C., Dept. of Invertebrate Zoology, Div. of Malacology    |
| UCMZ | University of Colorado Museum, Boulder, Colorado, Dept. of Zoology                           |
| UMMZ | University of Michigan Museum of Zoology, Ann Arbor, Michigan, Division of Molluscs          |
| UWBM | University of Washington Burke Museum, Seattle, Washington                                   |

Considering that both species have been collected for more than a century, the total number of specimens in major museum collections is surprisingly small. Most museum collections of "Columbia pebblesnail" were made in the period prior to 1900. Very few specimens of the Columbia pebblesnail and shortface lanx appear to have been collected after the 1950s. Evaluation of museum collections was complicated by frequent misidentifications. This was particularly true for Columbia pebblesnail. At least half of the museum lots studied proved to be entirely vagrant pebblesnails (Tables 3 and 4).



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FIGURE 3. 1988-1991 Collection Sites (shaded areas) for the Columbia Pebblesnail *Fluminicola columbiana*



S9206045.5

FIGURE 4. 1988-1991 Collection Sites (shaded areas) for the Shortface Lanx *Fisherola nuttalli*

TABLE 3. Museum Collection Records for Shortface Lanx *Fisherola nuttalli*

| Source | Catalog Number   | Number of Specimens | Locality                       | Comments  |
|--------|--|---------------------|--------------------------------|---|
| ANSP   | 124247   | 8                   | Snake R., WA                   | ?Paratypes of <i>lancides</i>   |
|        | 124246   | 4                   | Snake R., WA                   | Original ID as <i>lancides</i>  |
|        | 158750   | 14                  | Columbia R., The Dalles, OR    |   |
|        | 124320   | 1                   | Spokane R., WA                 | Holotype of <i>A. crassus=nuttalli</i>  |
|        | 350079   | 1                   | Spokane R., WA                 | Paratype of <i>A. crassus=nuttalli</i><br>Formerly 124320                                 |
| CAS    | 60826  | 2                   | Snake R., WA                   | ?Paratypes of <i>lancides</i>   |
|        | 38302  | 2                   | Snake R., WA                   | Original ID as <i>lancides</i>  |
|        | 38293  | 5                   | "creek in Spokane, WA"         | Error for Little Spokane R.<br>Original ID as<br><i>kootenaiensis=nuttalli</i>            |
| NMNH   | 169958   | 3                   | Wahlamet [Willamette] R., OR   | Collected by Nuttall; paratypes?  |
|        | 595245   | many                | Columbia R., Hanford, WA       |   |
|        | 653142   | many                | McNary Dam, Columbia R., WA    |   |
|        | 795565   | 5                   | McNary Dam, Columbia R., WA    |   |
|        | 526359   | many                | Spokane Falls, Spokane R., WA  |   |
|        | 795561   | many                | McNary Dam, Columbia R., WA    |   |
|        | 526965   | 13                  | Spokane Falls, Spokane R., WA  |   |
|        | 30567  | 1                   | "Snake R., OR"                 | Original ID as <i>lancides</i> ; very<br>early collection, hence could be<br>OR, WA or ID |
|        | 47643  | 7                   | "Snake R., WA Territory"       | Original ID as <i>lancides</i>  |
|        | 526588   | 1                   | Snake R., WA                   |   |
|        | 608478   | 15                  | Snake R., WA                   | Original ID as <i>lancides</i>  |
|        | 795570   | many                | Snake R., WA                   |   |
|        | 783933   | 5                   | Snake R., WA                   |   |
| UCMZ   | 801305   | many                | Hanford Reach, Columbia R., WA |   |
|        | 17752  | many                | Maupin, Deschutes R., OR       |   |
|        | 3925   | 1                   | Rupert, ID, Snake R.           |   |
|        | 21666  | 3                   | Kentucky Ferry, Snake R., WA   | Said to be paratypes<br>of <i>lancides</i>  |
| UMMZ   | 102566   | 4                   | Spokane Falls, Spokane R., WA  |   |
|        | 102041   | 2                   | Snake R., WA, near Wallula Gap | From Hemphill note  |
|        | 102569   | 3                   | Kennewick, Columbia R., WA     |   |
|        | 143960   | 3                   | Snake R., WA                   | Original ID as <i>lancides</i>  |
|        | 102040   | 3                   | Columbia R., The Dalles, OR    |   |
|        | 102570   | 1                   | CA?                            | No original locality; specimens<br>are <i>Lanx patelloides</i>                            |
| ANSP   | Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, Dept. of Malacology |                     |                                |   |
| CAS    | California Academy of Sciences, San Francisco, California, Dept. of Invertebrate Zoology     |                     |                                |   |
| NMNH   | U. S. National Museum, Washington D.C., Dept. of Invertebrate Zoology, Div. of Malacology    |                     |                                |   |
| UCMZ   | University of Colorado Museum, Boulder, Colorado, Dept. of Zoology                           |                     |                                |   |
| UMMZ   | University of Michigan Museum of Zoology, Ann Arbor, Michigan, Div. of Molluscs              |                     |                                |   |

TABLE 4. Museum Collection Records for Columbia Pebblesnail *Fluminicola columbiana*

| Source | Catalog Number   | Number of Specimens | Locality                                  | Comments  |                        |
|--------|--|---------------------|---|---|------------------------|
| ANSP   | 62926  | 6                   | Columbia R. [Wallula]                     | near mouth of Snake R.                                  |                        |
|        | 122136   | 12                  | "Snake R., WA Territory"                  | 6 <i>columbiana</i> , rest are <i>virens</i>            |                        |
|        | 122133   | 15                  | "Snake R., WA Territory"                  | 14 are <i>columbiana</i> , 1 <i>virens</i> ?            |                        |
| CAS    | no number  | 2                   | The Dalles, OR                            |   |                        |
|        | no number  | 1                   | Salmon R., near Lucile, ID                |   |                        |
|        | no number  | 26                  | Columbia R., Wallula, WA                  |   |                        |
|        | no number  | many                | Snake R., WA                              |   |                        |
|        | 25165  | 4                   | "WA"                                      |   |                        |
|        | 48556  | many                | Snake R., Flat Creek south of Jackson, WY | all are <i>hindsii</i>                                  |                        |
|        | 32520  | 5                   | Box Elder Co., Malad R., UT               | all <i>hindsii</i>                                      |                        |
|        | 32516  | 19                  | Blaine Co, ID                             | all are <i>hindsii</i>                                  |                        |
| DMNH   | 79862  | 9                   | Snake R., WA                              | 8 are <i>columbiana</i> ; 1 is <i>virens</i>            |                        |
|        | 14058  | 4                   | Buhl, ID, Snake R.                        | all are <i>hindsii</i>                                  |                        |
|        | 79863  | 4                   | Portland, OR                              | all are <i>nuttalliana</i>                              |                        |
| NMNH   | no number  | 2                   | Willamette R., OR                         | "With paratypes of <i>nuttalliana</i> JPEM. Ex 120467." |                        |
|        | 27901  | 5                   | Columbia R.                               |   |                        |
|        | 30588  | 6                   | Near mouth of Snake R., WA                |   |                        |
|        | 130627   | 3                   | Mouth of Wenatchee R., WA                 |   |                        |
|        | 380804   | 7                   | Little Spokane R., WA                     |   |                        |
|        | 128665   | 12                  | Spokane R., Spokane, WA                   | 2 <i>columbiana</i> ; rest are <i>hindsii</i>           |                        |
|        | 511051   | many                | Spokane R., Spokane, WA                   | 10-15 <i>columbiana</i> ; rest are <i>hindsii</i>       |                        |
|        | 511023   | 9                   | Spokane Falls, Spokane R., WA             | 4 <i>columbiana</i> ; rest are <i>hindsii</i>           |                        |
|        | 47875  | 26                  | no locality                               |   |                        |
|        | 653138   | 6                   | Richland, Columbia R., WA                 | All are <i>virens</i>                                   |                        |
|        | 653139   | 1                   | Richland, Columbia R., WA                 | <i>virens</i>   |                        |
|        | 595249   | 1                   | Richland, Columbia R., WA                 | <i>virens</i>   |                        |
|        | 595251a  | 1                   | Hanford, Columbia R., WA                  | <i>virens</i>   |                        |
|        | UCMZ   | 24632               | many                                      | Dartford, WA  | all are <i>hindsii</i> |
|        | UMMZ   | 118359              | 3   | Wenatchee R, Wenatchee, WA                              | at mouth               |
| 118003 |  | 3                   | "Nevada"                                  | Wrong locality; outside possible range                  |                        |
|        | 117994   | 7                   | Wallula, Columbia R., WA                  |   |                        |
| UWBM   | 17131  | 1                   | Columbia R. at Wenatchee mouth            |   |                        |
| ANSP   | Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, Dept. of Malacology |                     |   |   |                        |
| CAS    | California Academy of Sciences, San Francisco, California, Dept. of Invertebrate Zoology     |                     |   |   |                        |
| DMNH   | Delaware Museum of Natural History, Wilmington, Delaware, Department of Malacology           |                     |   |   |                        |
| NMNH   | U. S. National Museum, Washington D.C., Dept. of Invertebrate Zoology, Div. of Malacology    |                     |   |   |                        |
| UCMZ   | University of Colorado Museum, Boulder, Colorado, Dept. of Zoology                           |                     |   |   |                        |
| UMMZ   | University of Michigan Museum of Zoology, Ann Arbor, Michigan, Div. of Molluscs              |                     |   |   |                        |
| UWBM   | University of Washington Burke Museum, Seattle, Washington                                   |                     |   |   |                        |



## ECOLOGY

The Columbia pebblesnail and the shortface lanx are freshwater molluscs. Both are obligate perolithon grazers. Their diet consists largely of diatoms and smaller epilithic and epiphytic algae. They are semelparous; longevity seldom exceeds 1 year. The pebblesnail has a turbinated shell and is about 0.4 in. high. Four to five whorls are typical of the species. Fossil records, taken from the Deixis Consultants collection in Seattle, Washington, indicate that pebblesnails were widely distributed throughout the Columbia River Basin since the Pliocene, about 3.5 million years before present.

The Columbia pebblesnail has been described as characteristic of large rivers and rapids habitats (Taylor 1982b, 1985). Our findings necessitate modification of this characterization. Certainly, the Columbia pebblesnail does not occupy the wide range of habitats utilized by the closely related vagrant pebblesnail *F. hindsii*, which is equally at home in springs and streams of all sizes with permanent flow and sufficient oxygenation (i.e., cool water, swift flow, and gravel-boulder stable substrate). While absent from springs, the Columbia pebblesnail can thrive in small streams such as the Methow River. Within its present range it commonly occurs with the shortface lanx. As with the shortface lanx, it is common at rapids edges or immediately downstream from whitewater areas, and becomes much less common or absent in major rapids.

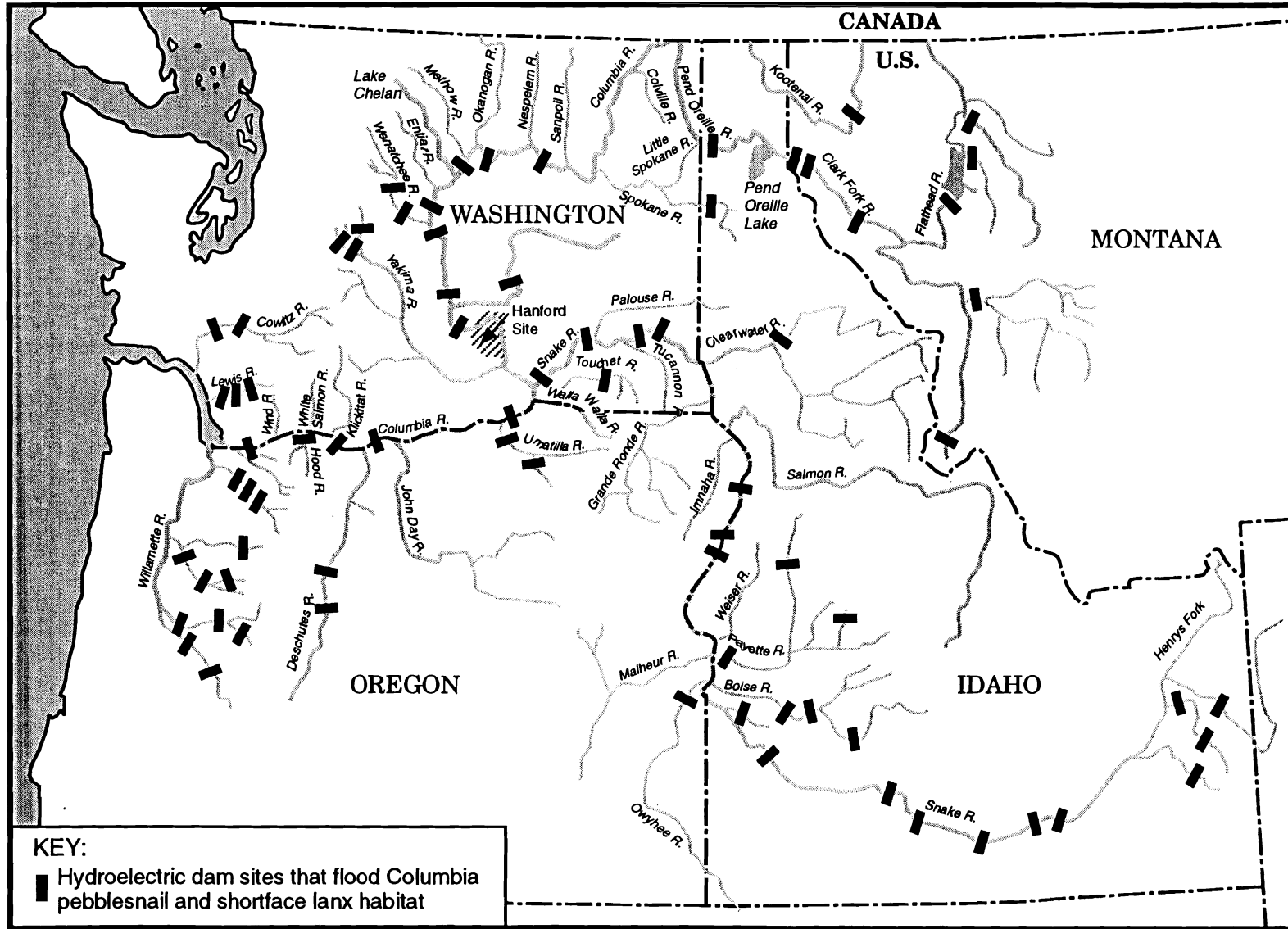
The shortface lanx has an eccentric, conical shell as large as about 0.5 in. long, 0.4 in. wide, and 0.2 in. high. Its anterior apex distinguishes it from other North American freshwater lancids. The fossil record for the shortface lanx is similar to that of the Columbia pebblesnail. The shortface lanx inhabits rapids and rapids edges, and is generally restricted to relatively large streams (Clarke 1976; Taylor 1982a, 1985). Our sampling tends to confirm the limitations in stream size. Reports of shortface lanx from even very large spring complexes, for example, Box Canyon, Idaho (Taylor 1985), are erroneous. The Box Canyon lanx is an undescribed species of *Lanx*. The smallest stream currently known to be inhabited by the shortface lanx is the Methow River, Washington. If literature reports are correct and museum specimens are correctly cited, the species once lived also in the Little Spokane River, but how far upstream from its mouth is unclear.

The species is most abundant in highly oxygenated environments on gravel to boulder stable substrates. It has not been found live on silt or mud substrates or in areas with slow flow, warm water, or massive seasonal discharges that destabilize the substrate. The species avoids the most violent whitewater areas, and in fact is rare or absent from most rapids. It is frequently, however, in rapids' edges or immediately downstream from sizable rapids in areas with suitable substrate. The species also tends to avoid areas with bare rock walls, such as the central river channel in the lower Salmon River or the middle Snake River or stretches with denuded subaqueous basalt shelves in the same streams.

These environmental requirements contrast with those of *Lanx* spp.,<sup>(a)</sup> which we have observed occupying central channel and rock wall-rock shelf habitats in California. Similarly, at least one species of *Lanx*, the kneecap lanx *L. patelloides*, has been collected from large springs in California. The recently identified *Lanx* species from Idaho appears to be restricted to large spring discharges. In California, two species of *Lanx* have been collected by Deixis Consultants biologists from large creeks (highcap lanx *L. alta* and kneecap lanx), even though the preferred habitat is larger rivers and their major tributaries (Taylor 1981). One *Lanx*, scale lanx *L. klamathensis*, can tolerate and is restricted to lakes and slow, spring-fed, larger tributary streams (Taylor 1981). Thus, available evidence indicates that the shortface lanx is sensitive and restricted in its occurrence. The family

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(a) *Lanx* and *Fisherola* are genus names in the family Lancidae. The common name lanx is used in both genera.



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**FIGURE 5.** Columbia River Basin in the United States Showing Potential Streams or Drainages That May Have Extant Populations of the Columbia Pebblesnail *Fluminicola columbiana* and the Shortface Lanx *Fisherola nuttalli*. (-) indicates hydroelectric dam sites that have flooded mollusc habitat.

## TAXONOMY

The taxonomy and nomenclature for both the Columbia pebblesnail and shortface lanx are not straightforward. Both in the literature and museum collections these taxa are frequently confused with closely related species. Some taxonomists have recognized subspecies within *Fisherola* (e.g., Burch 1989). Additionally, there is more than one common name for many freshwater invertebrates. Recently, the American Fisheries Society and American Malacological Union published a list of common and scientific names of molluscs (American Fisheries Society 1988).<sup>(a)</sup> This usage is followed here.

The Columbia pebblesnail has been frequently confused with other large *Fluminicola* spp. This is in part because the genus is badly in need of revision. Another factor is the close relationship of the Columbia pebblesnail to the vagrant pebblesnail *F. hindsii*. The Columbia pebblesnail/vagrant pebblesnail relationship is complicated by their co-occurrence in some eastern Columbia River Basin streams. The vagrant pebblesnail is notoriously variable, but the flat-sided whorls of the Columbia pebblesnail and its consistent reddish tint help define its distinctiveness. Occasional specimens of the vagrant pebblesnail, particularly if they have sustained mantle damage early in ontogeny, can be difficult to distinguish from the Columbia pebblesnail. The ashy pebblesnail *F. fuscus* was described as a distinct species; however, we regard *F. fuscus* as a synonym of *F. columbiana* (Taylor 1982b).

Burch (1989) recognizes three subspecies of the shortface lanx: 1) *F. nuttalli nuttalli* (Haldeman 1841), cited from the Snake River drainage Washington, Oregon, and Idaho; the Columbia River drainage; and the Deschutes River, Oregon; 2) *F. nuttalli kootenaiensis* (Baird 1863), cited from the Spokane River, Washington, and Kootenai River, British Columbia; and 3) *F. nuttalli lancides* (Hannibel 1912), cited from the Snake River basin [type locality cited as the Spokane River by Henderson (1936)]. All species of *Fisherola* collected during our study can be confirmed from shell morphology to be a single species, and preliminary dissections also indicate that the presumed subspecies may be invalid. As noted by Taylor (1982b), shell morphology in *Fisherola* is somewhat variable, as we also found it to be in the related kneecap lanx. Examination of the types of *F. nuttalli lancides* indicates that the subspecies was founded upon small (young) specimens of *F. nuttalli*. Larger specimens from the same drainages are identical in morphology with *F. nuttalli* elsewhere, and juveniles from all sites are more consistent in morphology than adults. The types of *F. nuttalli lancides*, collected by H. Hemphill, are from the Snake River, Washington. Spokane River specimens have the same morphology as those from elsewhere in the species range, regardless of size or age. *F. nuttalli kootenaiensis* was discriminated on the basis of apex position, but large populations from many sites have specimens with equally strongly displaced apices, and this feature appears somewhat variable within all populations we collected. We did not see the types of *F. nuttalli kootenaiensis*, or any specimens that are arguably topotypes. We did not collect additional live specimens from the Kootenai River, as the population in this stream appears to be extinct. However, as noted above, Spokane River specimens do not appear to differ in morphology from those found elsewhere in the species' range; hence we believe the subspecies *kootenaiensis* is also invalid. The population including the type locality of *F. nuttalli*=*F. crassus* is unfortunately also extinct, and there are relatively few topotypes or other Willamette River, Oregon, specimens available for study. Nevertheless, the existing *A. crassus* types and other Willamette specimens are sufficient to well characterize the species.

Examination of other taxa in the Lancidae at six museums as well as the collections of Deixis Consultants serves to reinforce the distinctness of the two genera now recognized in the family. *Lanx*, a taxonomically close

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(a) Previous work reported for this project (Neitzel and Frest 1989) refers to *Fluminicola columbiana* as the giant Columbia River spire snail and *Fisherola nuttalli* as the great Columbia River limpet.

relative of *Fisherola*, has been characterized as having a central or subcentral apex, and the mantle attachment scar is complete. *Fisherola* has a strongly anteriorly displaced apex and an incomplete attachment scar (Morrison 1955; Taylor 1982a). In most species of *Lanx*, the apex is clearly subcentral or displaced slightly posteriorly. The kneecap lanx *L. patelloides* differs in that most specimens distinctly displace the apex, but all do so posteriorly, not anteriorly like *Fisherola*. More precisely, the apex of the juvenile shell in the kneecap lanx can be definitely displaced, but the juvenile shell itself is placed subcentrally. Moreover, all of the several thousand *Lanx* specimens examined do have the complete scar, while all of the 10,000 plus *Fisherola* specimens have an incomplete scar.

## LISTING POSSIBILITY

There are two streams with sizable populations of Columbia pebblesnails and four streams with sizable populations of shortface lanx. Healthy populations of Columbia pebblesnails are in the Methow and Okanogan rivers in Washington. Smaller populations of Columbia pebblesnails were found in the Hanford Reach of the Columbia River, Washington, in the lower Salmon River, Idaho, the middle Snake River, Idaho, and Hells Canyon of the Snake River, Oregon and Idaho. We found some shells of Columbia pebblesnails in the Grande Ronde River, Washington and Oregon, during our surveys. As neither large population is at present protected, and there has been a substantial documented reduction in the species historical range, this species will probably be listed federally as Endangered.

Healthy populations of shortface lanx persist in the Deschutes River, Oregon; Okanogan River, Washington; the Hanford Reach of the Columbia River, Washington; and Hells Canyon of the Snake River, Oregon and Idaho. Smaller populations of the shortface lanx were found in the Methow River, Washington; Salmon and middle Snake rivers, Idaho; Grande Ronde River, Washington and Oregon; and John Day and Imnaha rivers, Oregon. A small population also persists in the lower Columbia River near Bonneville Dam, Oregon.<sup>(a)</sup> While substantial range reduction has occurred in this species, and the large populations are not well protected, the problem is not as severe as in the case of the Columbia pebblesnail. On present evidence, the shortface lanx will probably be listed federally as Threatened.

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(a) Shortface lanx were collected during 1990 by William Muir, National Marine Fisheries Services, Cook, Washington.

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APPENDIX A

LOCATION OF THE  
COLUMBIA PEBBLESNAIL *Fluminicola columbiana*  
AND SHORTFACE LANK *Fisherola nuttalli* SURVEY SITES

## APPENDIX A

### LOCATION OF THE COLUMBIA PEBBLESNAIL *Fluminicola columbiana* AND SHORTFACE LANX *Fisherola nuttalli* SURVEY SITES

More than 500 locations on more than 30 streams were considered as collection sites during our 1988 through 1991 surveys. Appendix A lists the river name, site number, quadrangle, county, state, legal description, section number, township, range, and northwest map corner. The site numbers correspond with and can be used when referring to the collection information in Appendix B. Appendix B is a list of the sites from Appendix A with the collection information for each site. The collection information includes the collection method, a "yes/no" indication as to the occurrence of the Columbia pebblesnail and shortface lanx, a list of the other molluscs collected at the site, and our comments about the condition of the environment at the site.

TABLE A.1. Location of the Columbia Pebblesnail *Fluminicola columbiana* and Shortface Lanx *Fisherola nuttalli*, 1988 Through 1991 Survey Sites

| <u>River</u> | <u>Site</u> | <u>Quadrangle</u> | <u>County</u> | <u>State</u> | <u>Legal Description</u> | <u>Section</u> | <u>Township, Range</u> | <u>Northwest Map Corner</u> |
|--------------|-------------|-------------------|---------------|--------------|--------------------------|----------------|------------------------|-----------------------------|
| Wenatchee    | 01          | Leavenworth       | Chelan        | WA           | SW, SE, NW, SW           | 10             | T24N, R17E             | 47°37'30N, 120°45'00E       |
| Wenatchee    | 02          | Leavenworth       | Chelan        | WA           | SE, NW, SE, NW           | 12             | T24N, R17E             | 47°37'30N, 120°45'00E       |
| Wenatchee    | 03          | Peshastin         | Chelan        | WA           | NE, SW, SE, SW           | 08             | T24N, R18E             | 47°37'30N, 120°37'30E       |
| Wenatchee    | 04          | Peshastin         | Chelan        | WA           | SE, SE, SW, SE           | 16             | T24N, R18E             | 47°37'30N, 120°37'30E       |
| Wenatchee    | 05          | Peshastin         | Chelan        | WA           | NW, SW, SW, NE           | 27             | T24N, R18E             | 47°37'30N, 120°37'30E       |
| Wenatchee    | 06          | Peshastin         | Chelan        | WA           | SE, NE, SW, NE           | 36             | T24N, R18E             | 47°37'30N, 120°37'30E       |
| Wenatchee    | 07          | Cashmere          | Chelan        | WA           | NE, NW, SE, SW           | 32             | T24N, R19E             | 47°37'30N, 120°30'00E       |
| Wenatchee    | 08          | Cashmere          | Chelan        | WA           | NW, NW, NE, SW           | 11             | T24N, R19E             | 47°37'30N, 120°30'00E       |
| Wenatchee    | 09          | Monitor           | Chelan        | WA           | NW, SE, NE, SE           | 14             | T23N, R19E             | 47°30'00N, 120°30'00E       |
| Wenatchee    | 10          | Wenatchee         | Chelan        | WA           | SE, SW, SE, NE           | 19             | T23N, R20E             | 47°30'00N, 120°22'30E       |
| Wenatchee    | 11          | Wenatchee         | Chelan        | WA           | NE, NE, NE, SW           | 28             | T23N, R20E             | 47°30'00N, 120°22'30E       |
| Entiat       | 01          | Ardenvoir         | Chelan        | WA           | SE, NW, NE, SW           | 03             | T25N, R20E             | 47°45'00N, 120°22'30E       |
| Entiat       | 02          | Ardenvoir         | Chelan        | WA           | SE, SW, NW, NW           | 13             | T25N, R20E             | 47°45'00N, 120°22'30E       |
| Entiat       | 03          | Entiat            | Chelan        | WA           | NE, NE, NE, SE           | 18             | T25N, R21E             | 47°45'00N, 120°15'00E       |
| Okanogan     | 01          | Keystone          | Okanogan      | WA           | NE, NE, NE, SW           | 06             | T35N, R27E             | 48°37'30N, 119°30'00E       |
| Okanogan     | 02          | Keystone          | Okanogan      | WA           | SW, SW, SW, SE           | 07             | T35N, R27E             | 48°37'30N, 119°30'00E       |
| Okanogan     | 03          | Keystone          | Okanogan      | WA           | SE, NE, NW, NW           | 17             | T35N, R27E             | 48°37'30N, 119°30'00E       |
| Okanogan     | 04          | Riverside         | Okanogan      | WA           | SE, SE, SE, NW           | 25             | T35N, R26E             | 48°37'30N, 119°37'30E       |
| Okanogan     | 05          | The Pothole       | Okanogan      | WA           | NW, SE, NW, SE           | 31             | T35N, R27E             | 48°30'00N, 119°30'00E       |
| Okanogan     | 06          | The Pothole       | Okanogan      | WA           | SW, SE, SW, NW           | 08             | T34N, R27E             | 48°30'00N, 119°30'00E       |
| Okanogan     | 07          | The Pothole       | Okanogan      | WA           | NE, NE, SW, NW           | 17             | T34N, R27E             | 48°30'00N, 119°30'00E       |
| Okanogan     | 08          | The Pothole       | Okanogan      | WA           | SE, NE, SW, NE           | 31             | T34N, R27E             | 48°30'00N, 119°30'00E       |
| Okanogan     | 09          | Omak              | Okanogan      | WA           | SW, SE, NW, NE           | 03             | T33N, R26E             | 48°30'00N, 119°37'30E       |
| Okanogan     | 10          | Okanogan          | Okanogan      | WA           | SE, SW, SE, SE           | 30             | T33N, R26E             | 48°22'30N, 119°37'30E       |
| Okanogan     | 11          | Malot             | Okanogan      | WA           | SE, SE, NE, SE           | 03             | T32N, R25E             | 48°22'30N, 119°45'00E       |
| Okanogan     | 12          | Malot             | Okanogan      | WA           | SE, NW, NW, NW           | 16             | T32N, R25E             | 48°22'30N, 119°45'00E       |
| Okanogan     | 13          | Malot             | Okanogan      | WA           | NW, NE, NW, NW           | 17             | T32N, R25E             | 48°22'30N, 119°45'00E       |
| Okanogan     | 14          | Malot             | Okanogan      | WA           | SW, NW, NE, SE           | 19             | T32N, R25E             | 48°22'30N, 119°45'00E       |
| Okanogan     | 15          | Monse             | Okanogan      | WA           | SW, NE, SW, SE           | 05             | T31N, R25E             | 48°15'00N, 119°45'00E       |
| Okanogan     | 16          | Monse             | Okanogan      | WA           | NE, SE, NE, NW           | 22             | T31N, R25E             | 48°15'00N, 119°45'00E       |
| Okanogan     | 17          | Monse             | Okanogan      | WA           | SE, SE, NW, SE           | 34             | T31N, R25E             | 48°15'00N, 119°45'00E       |
| Okanogan     | 18          | Bridgeport        | Okanogan      | WA           | NW, NE, SW, NW           | 09             | T30N, R25E             | 48°07'30N, 119°45'00E       |
| Methow       | 01          | Twisp East        | Okanogan      | WA           | SW, NW, SE, NW           | 20             | T33N, R22E             | 48°22'30N, 120°07'30E       |
| Methow       | 02          | Twisp East        | Okanogan      | WA           | NE, SW, SW, NW           | 22             | T33N, R22E             | 48°22'30N, 120°07'30E       |
| Methow       | 03          | Twisp East        | Okanogan      | WA           | NE, NW, SW, SE           | 34             | T33N, R22E             | 48°22'30N, 120°07'30E       |
| Methow       | 04          | Twisp East        | Okanogan      | WA           | SW, SW, NW, NE           | 16             | T32N, R22E             | 48°22'30N, 120°07'30E       |
| Methow       | 05          | Twisp East        | Okanogan      | WA           | NW, NW, NE, NW           | 20             | T32N, R22E             | 48°22'30N, 120°07'30E       |
| Methow       | 06          | Methow            | Okanogan      | WA           | NE, SW, SE, NW           | 08             | T31N, R22E             | 48°15'00N, 120°07'30E       |

TABLE A.1. (contd)

| River    | Site | Quadrangle   | County             | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|----------|------|--------------|--------------------|-------|-------------------|---------|-----------------|-----------------------|
| Methow   | 07   | Methow       | Okanogan           | WA    | NW, SW, SW, SW    | 22      | T31N, R22E      | 48°15'00N, 120°07'30E |
| Methow   | 08   | Methow       | Okanogan           | WA    | SE, SW, SW, SW    | 26      | T31N, R22E      | 48°15'00N, 120°07'30E |
| Methow   | 09   | Methow       | Okanogan           | WA    | SE, NW, SE, SE    | 36      | T31N, R22E      | 48°15'00N, 120°07'30E |
| Methow   | 10   | Cooper Mtn.  | Okanogan           | WA    | NW, SW, SE, NE    | 13      | T30N, R22E      | 48°07'30N, 120°07'30E |
| Methow   | 11   | Cooper Mtn.  | Okanogan           | WA    | NW, NW, NW, SW    | 24      | T30N, R23E      | 48°07'30N, 120°07'30E |
| Methow   | 12   | Brewster     | Okanogan           | WA    | NE, NW, NW        | 28      | T30N, R24E      | 48°15'00N, 120°00'00E |
| Methow   | 13   | Brewster     | Okanogan           | WA    | SE, NE, SE        | 28      | T30N, R24E      | 48°15'00N, 120°00'00E |
| Methow   | 14   | Brewster     | Okanogan           | WA    | NW, NE, SW        | 34      | T30N, R24E      | 48°15'00N, 120°00'00E |
| Nespelem | 01   | Bald Knob    | Okanogan           | WA    | SE, NW, SE        | 17      | T32N, R31E      | 48°30'00N, 119°00'00E |
| Nespelem | 02   | Nespelem     | Okanogan           | WA    | SW, NW, SE        | 25      | T32N, R30E      | 48°15'00N, 119°00'00E |
| Nespelem | 03   | Nespelem     | Okanogan           | WA    | NW, NE, NW        | 18      | T31N, R31E      | 48°15'00N, 119°00'00E |
| Nespelem | 04   | Alameda Flat | Okanogan           | WA    | SE, NE, NW        | 02      | T30N, R30E      | 48°15'00N, 119°15'00E |
| Nespelem | 05   | Alameda Flat | Okanogan           | WA    | NW, NW, SE        | 03      | T30N, R30E      | 48°15'00N, 119°15'00E |
| Sanpoil  | 01   | 17 Mile Mtn. | Ferry              | WA    | SW, NW, SW        | 01      | T34N, R32E      | 48°30'00N, 118°45'00E |
| Sanpoil  | 02   | 17 Mile Mtn. | Ferry              | WA    | NE, SE, SE        | 26      | T34N, R32E      | 48°30'00N, 118°45'00E |
| Sanpoil  | 03   | 17 Mile Mtn. | Ferry              | WA    | NE, SW, SE        | 26      | T33N, R32E      | 48°30'00N, 118°45'00E |
| Sanpoil  | 04   | 17 Mile Mtn. | Ferry              | WA    | SE, SW, SE        | 18      | T32N, R33E      | 48°30'00N, 118°45'00E |
| Sanpoil  | 05   | Keller       | Ferry              | WA    | SW, NE, SE        | 31      | T32N, R33E      | 48°15'00N, 118°45'00E |
| Sanpoil  | 06   | Keller       | Ferry              | WA    | SW, NW, NW        | 32      | T31N, R33E      | 48°15'00N, 118°45'00E |
| Sanpoil  | 07   | Keller       | Ferry              | WA    | NE, NW, NE        | 18      | T30N, R33E      | 48°15'00N, 118°45'00E |
| Sanpoil  | 08   | Keller       | Ferry              | WA    | NW, SE, NW        | 28      | T30N, R33E      | 48°15'00N, 118°45'00E |
| Colville | 01   | Colville     | Stevens            | WA    | SW, SE, NW, SW    | 08      | T35N, R39E      | 48°37'30N, 118°00'00E |
| Colville | 02   | Colville     | Stevens            | WA    | SE, NW, NE, SW    | 26      | T36N, R38E      | 48°37'30N, 118°00'00E |
| Colville | 03   | Kettle Falls | Stevens            | WA    | NW, SE, NW, NW    | 29      | T36N, R38E      | 48°37'30N, 118°07'30E |
| Cowlitz  | 01   | Winlock      | Lewis              | WA    | SW, SW, NE, NE    | 26      | T11N, R2W       | 46°30'00N, 123°00'00E |
| Cowlitz  | 02   | Winlock      | Lewis              | WA    | NW, SW, NE, SE    | 28      | T11N, R2W       | 46°30'00N, 123°00'00E |
| Cowlitz  | 03   | Winlock      | Cowlitz            | WA    | SE, NW, SE, NE    | 04      | T10N, R2W       | 46°30'00N, 123°00'00E |
| Cowlitz  | 04   | Castle Rock  | Cowlitz            | WA    | SW, NE, SW, NE    | 09      | T10N, R2W       | 46°22'30N, 123°00'00E |
| Cowlitz  | 05   | Castle Rock  | Cowlitz            | WA    | SW, NW, NW, SW    | 22      | T10N, R2W       | 46°22'30N, 123°00'00E |
| Lewis    | 01   | Ariel        | Cowlitz<br>(Clark) | WA    | NE, NE, SE, SE    | 33      | T6N, R2E        | 46°00'00N, 122°37'30E |
| Lewis    | 02   | Ariel        | Cowlitz<br>(Clark) | WA    | NE, NW, SW, NW    | 12      | T5N, R1E        | 46°00'00N, 122°37'30E |
| Lewis    | 03   | Ariel        | Cowlitz<br>(Clark) | WA    | NE, NW, SW, NW    | 05      | T5N, R2E        | 46°00'00N, 122°37'30E |
| Lewis    | 04   | Woodland     | Cowlitz<br>(Clark) | WA    | SW, SE, SE, SE    | 04      | T5N, R1E        | 46°00'00N, 122°45'00E |
| Lewis    | 05   | Woodland     | Cowlitz<br>(Clark) | WA    | SE, SW, NW, SE    | 09      | T5N, R1E        | 46°00'00N, 122°45'00E |

TABLE A.1. (contd)

| River        | Site | Quadrangle      | County          | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|-----------------|-----------------|-------|-------------------|---------|-----------------|-----------------------|
| Lewis        | 06   | Woodland        | Cowlitz (Clark) | WA    | NE, NW, NE, SE    | 18      | T5N, R1E        | 46°00'00N, 122°45'00E |
| Lewis        | 07   | Ridgefield      | Cowlitz (Clark) | WA    | SE, SE, NW, SE    | 32      | T5N, R1E        | 45°52'30N, 122°45'00E |
| Lewis        | 08   | Ridgefield      | Cowlitz (Clark) | WA    | NW, NE, NW, SE    | 11      | T4N, R1E        | 45°52'30N, 122°45'00E |
| Lewis        | 09   | St. Helens      | Cowlitz (Clark) | WA    | SW, NE, SE, NE    | 02      | T4N, R1E        | 45°52'30N, 122°52'30E |
| Wind         | 01   | Stabler         | Skamania        | WA    | River Mile 17.9   | NA      | T4N, R7E        | 45°52'30N, 122°00'00E |
| Wind         | 02   | Stabler         | Skamania        | WA    | SW, SW, SW, SW    | 10      | T4N, R7E        | 45°52'30N, 122°00'00E |
| Wind         | 03   | Stabler         | Skamania        | WA    | NW, NE, NW, NE    | 26      | T4N, R7E        | 45°52'30N, 122°00'00E |
| Wind         | 04   | Big Huckleberry | Skamania        | WA    | NE, SE, NE, SE    | 18      | T3N, R8E        | 45°52'30N, 121°52'30E |
| Wind         | 05   | Carson          | Skamania        | WA    | SW, SW, NW, NE    | 21      | T3N, R8E        | 45°45'00N, 121°52'30E |
| Wind         | 06   | Carson          | Skamania        | WA    | SE, NE, SE, SE    | 21      | T3N, R8E        | 45°45'00N, 121°52'30E |
| White Salmon | 01   | NW Lake         | Skamania        | WA    | NE, SE, SW, SE    | 35      | T5N, R10E       | 45°52'30N, 121°37'30E |
| White Salmon | 02   | Husum           | Skamania        | WA    | SE, SE, NW, SW    | 19      | T4N, R11E       | 45°52'30N, 121°30'00E |
| White Salmon | 03   | NW Lake         | Skamania        | WA    | NE, SE, NE, NW    | 10      | T3N, R10E       | 45°52'30N, 121°37'30E |
| White Salmon | 04   | Hood River      | Skamania        | WA    | NE, SW, SE, NW    | 14      | T3N, R10E       | 45°52'30N, 121°37'30E |
| Klickitat    | 01   | Dead Canyon     | Klickitat       | WA    | NW, NE, NE, SE    | 23      | T6N, R13E       | 46°00'00N, 121°15'00E |
| Klickitat    | 02   | Grayback Mtn.   | Klickitat       | WA    | NW, SE, SE, NE    | 12      | T5N, R14E       | 46°00'00N, 121°07'30E |
| Klickitat    | 03   | Grayback Mtn.   | Klickitat       | WA    | SW, NW, SW, NW    | 08      | T5N, R14E       | 46°00'00N, 121°07'30E |
| Klickitat    | 04   | Grayback Mtn.   | Klickitat       | WA    | SE, SE, SE, NE    | 25      | T5N, R13E       | 46°00'00N, 121°07'30E |
| Klickitat    | 05   | Dead Canyon     | Klickitat       | WA    | NE, NE, NW, SW    | 12      | T5N, R13E       | 46°00'00N, 121°15'00E |
| Klickitat    | 06   | Wahkiacus       | Klickitat       | WA    | NE, SW, NW, SE    | 05      | T4N, R14E       | 45°52'30N, 121°07'30E |
| Klickitat    | 07   | Wahkiacus       | Klickitat       | WA    | SW, SE, SW, NE    | 04      | T4N, R14E       | 45°52'30N, 121°07'30E |
| Klickitat    | 08   | Wahkiacus       | Klickitat       | WA    | NE, SW, NE, NW    | 19      | T4N, R14E       | 45°52'30N, 121°07'30E |
| Klickitat    | 09   | Klickitat       | Klickitat       | WA    | NW, SW, SE, NW    | 23      | T4N, R13E       | 45°52'30N, 121°15'00E |
| Klickitat    | 10   | Klickitat       | Klickitat       | WA    | NE, SW, NW, NW    | 27      | T4N, R13E       | 45°52'30N, 121°15'00E |
| Klickitat    | 11   | Klickitat       | Klickitat       | WA    | SE, NE, NE, NW    | 05      | T3N, R13E       | 45°52'30N, 121°15'00E |
| Klickitat    | 12   | Klickitat       | Klickitat       | WA    | NE, SW, NE, SW    | 10      | T3N, R13E       | 45°52'30N, 121°15'00E |
| Klickitat    | 13   | The Dalles N.   | Klickitat       | WA    | NE, SE, SE, SW    | 18      | T3N, R13E       | 45°45'00N, 121°15'00E |
| Klickitat    | 14   | Lyle            | Klickitat       | WA    | SE, NE, NE, SE    | 28      | T3N, R12E       | 45°45'00N, 121°22'30E |
| Klickitat    | 15   | Lyle            | Klickitat       | WA    | NW, SW, SW, NW    | 35      | T3N, R12E       | 45°45'00N, 121°22'30E |
| Palouse      | 01   | Honn Lakes      | Whitman         | WA    | SE, NE, SE, SE    | 21      | T17N, R39E      | 47°00'00N, 118°00'00E |
| Palouse      | 02   | Honn Lakes      | Whitman         | WA    | NE, NE, SW, NE    | 32      | T17N, R39E      | 47°00'00N, 118°00'00E |
| Palouse      | 03   | Honn Lakes      | Whitman         | WA    | SE, SW, NE, NE    | 05      | T16N, R39E      | 47°00'00N, 118°00'00E |
| Palouse      | 04   | LaCrosse        | Whitman         | WA    | NE, NW, NW, SE    | 22      | T16N, R39E      | 46°52'30N, 118°00'00E |
| Palouse      | 05   | LaCrosse        | Whitman         | WA    | NW, SW, SW, SW    | 28      | T16N, R39E      | 46°52'30N, 118°00'00E |

TABLE A.1. (contd)

| River        | Site | Quadrangle            | County             | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|-----------------------|--------------------|-------|-------------------|---------|-----------------|-----------------------|
| Palouse      | 06   | LaCrosse              | Adams<br>(Whit.)   | WA    | SW, NE, NW, NW    | 36      | T16N, R38E      | 46°52'30N, 118°00'00E |
| Palouse      | 07   | LaCrosse              | Whitman            | WA    | SW, SW, NE, SW    | 36      | T16N, R38E      | 46°52'30N, 118°00'00E |
| Palouse      | 08   | Rattlesnake<br>Canyon | Adams<br>(Whit.)   | WA    | NE, NW, SW, NW    | 11      | T15N, R38E      | 46°52'30N, 118°07'30E |
| Palouse      | 09   | Rattlesnake<br>Canyon | Adams<br>(Whit.)   | WA    | NE, SE, SE, NE    | 21      | T15N, R38E      | 46°52'30N, 118°07'30E |
| Palouse      | 10   | Rattlesnake<br>Canyon | Adams<br>(Whit.)   | WA    | NW, SE, NE, NW    | 19      | T15N, R38E      | 46°52'30N, 118°07'30E |
| Palouse      | 11   | Hooper                | Adams<br>(Whit.)   | WA    | SW, NW, NW, SW    | 26      | T15N, R37E      | 46°52'30N, 118°15'00E |
| Palouse      | 12   | Palouse Falls         | Adams<br>(Whit.)   | WA    | NW, SW, SE, NW    | 34      | T15N, R37E      | 46°45'00N, 118°15'00E |
| Palouse      | 13   | Palouse Falls         | Whitman<br>(Frkin) | WA    | NW, NE, NE, NE    | 02      | T14N, R37E      | 46°45'00N, 118°15'00E |
| Palouse      | 14   | Palouse Falls         | Whitman<br>(Frkin) | WA    | SE, SW, SE, SW    | 30      | T14N, R37E      | 46°45'00N, 118°15'00E |
| Palouse      | 15   | Palouse Falls         | Whitman<br>(Frkin) | WA    | SW, NW, NE, NW    | 06      | T13N, R37E      | 46°45'00N, 118°15'00E |
| Palouse      | 16   | Coyote Butte          | Adams              | WA    | SW, NE, NE, SE    | 08      | T16N, R37E      | 47°00'00N, 118°15'00E |
| Palouse      | 17   | Palouse Falls         | Adams<br>(Whit.)   | WA    | SE, SE, NE, SW    | 32      | T15N, R37E      | 46°45'00N, 118°15'00E |
| Grande Ronde | 01   | Limekiln Rpd          | Asotin             | WA    | SE, NE, SE, SW    | 13      | T7N, R46E       | 46°07'30N, 117°00'00E |
| Grande Ronde | 02   | Limekiln Rpd          | Asotin             | WA    | NE, SW, SW, SW    | 24      | T7N, R46E       | 46°07'30N, 117°00'00E |
| Grande Ronde | 03   | Black Butte           | Asotin             | WA    | NW, NW, NW, SE    | 26      | T7N, R46E       | 46°07'30N, 117°07'30E |
| Grande Ronde | 04   | Black Butte           | Asotin             | WA    | NE, SE, NW, NW    | 34      | T7N, R46E       | 46°07'30N, 117°07'30E |
| Grande Ronde | 05   | Black Butte           | Asotin             | WA    | NW, SE, SE, SE    | 30      | T7N, R46E       | 46°07'30N, 117°07'30E |
| Grande Ronde | 06   | Black Butte           | Asotin             | WA    | NE, NW, SW, SE    | 36      | T7N, R45E       | 46°07'30N, 117°07'30E |
| Grande Ronde | 07   | Fields Spring         | Asotin             | WA    | SW, NE, SW, SW    | 35      | T7N, R45E       | 46°07'30N, 117°15'00E |
| Grande Ronde | 08   | Fields Spring         | Asotin             | WA    | NE, NW, SW, NE    | 03      | T6N, R45E       | 46°07'30N, 117°15'00E |
| Grande Ronde | 09   | Fields Spring         | Asotin             | WA    | SE, NW, SE, NE    | 36      | T7N, R44E       | 46°07'30N, 117°15'00E |
| Grande Ronde | 10   | Mtn. View             | Asotin             | WA    | NW, NW, SW, NW    | 36      | T7N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 11   | Mtn. View             | Asotin             | WA    | SW, SW, NW, SW    | 35      | T7N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 12   | Mtn. View             | Asotin             | WA    | SE, SW, NW, SW    | 34      | T7N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 13   | Mtn. View             | Asotin             | WA    | SW, NW, NW, NW    | 04      | T6N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 14   | Mtn. View             | Asotin             | WA    | NW, NE, SW, SW    | 06      | T6N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 15   | Mtn. View             | Asotin             | WA    | SE, SE, NW, SW    | 07      | T6N, R44E       | 46°07'30N, 117°22'30E |
| Grande Ronde | 16   | Troy                  | Wallowa            | OR    | NE, NW, NW, SW    | 24      | T6N, R43E       | 46°00'00N, 117°30'00E |
| Grande Ronde | 17   | Troy                  | Wallowa            | OR    | NE, NW, NW, NW    | 35      | T6N, R43E       | 46°00'00N, 117°30'00E |

TABLE A.1. (contd)

| <u>River</u> | <u>Site</u> | <u>Quadrangle</u> | <u>County</u> | <u>State</u> | <u>Legal Description</u> | <u>Section</u> | <u>Township, Range</u> | <u>Northwest Map Corner</u> |
|--------------|-------------|-------------------|---------------|--------------|--------------------------|----------------|------------------------|-----------------------------|
| Grande Ronde | 18          | Troy              | Wallowa       | OR           | NW, NE, NW, SE           | 34             | T6N, R43E              | 46°00'00N, 117°30'00E       |
| Grande Ronde | 19          | Troy              | Wallowa       | OR           | SE, NW, SW, NW           | 09             | T5N, R43E              | 46°00'00N, 117°30'00E       |
| Grande Ronde | 20          | Troy              | Wallowa       | OR           | NE, SE, NW, NW           | 16             | T5N, R43E              | 46°00'00N, 117°30'00E       |
| Grande Ronde | 21          | Troy              | Wallowa       | OR           | NE, NW, SW, SW           | 17             | T5N, R43E              | 46°00'00N, 117°30'00E       |
| Walla Walla  | 01          | Rulo              | Walla Walla   | WA           | NW, NE, NE, NE           | 32             | T9N, R34E              | 46°15'00N, 118°37'30E       |
| Walla Walla  | 02          | Weiland           | Walla Walla   | WA           | NW, NW, SW, SW           | 01             | T8N, R33E              | 46°15'00N, 118°45'00E       |
| Walla Walla  | 03          | Weiland           | Walla Walla   | WA           | SE, SE, SE, SE           | 11             | T8N, R33E              | 46°15'00N, 118°45'00E       |
| Walla Walla  | 04          | Weiland           | Walla Walla   | WA           | NW, NW, NW, SE           | 23             | T8N, R33E              | 46°15'00N, 118°45'00E       |
| Walla Walla  | 05          | Weiland           | Walla Walla   | WA           | SE, NE, NE, SE           | 34             | T8N, R33E              | 46°15'00N, 118°45'00E       |
| Walla Walla  | 06          | Weiland           | Walla Walla   | WA           | NE, NE, NE, NE           | 10             | T7N, R33E              | 46°07'30N, 118°45'00E       |
| Walla Walla  | 07          | Touchet           | Walla Walla   | WA           | NW, NW, NW, SE           | 27             | T7N, R33E              | 46°07'30N, 118°45'00E       |
| Walla Walla  | 08          | Touchet           | Walla Walla   | WA           | SW, SE, SE, NW           | 03             | T6N, R33E              | 46°07'30N, 118°45'00E       |
| Walla Walla  | 09          | Touchet           | Walla Walla   | WA           | NW, NW, NW, SE           | 06             | T6N, R33E              | 46°07'30N, 118°45'00E       |
| Walla Walla  | 10          | Zangar Junction   | Walla Walla   | WA           | NE, SW, SE, SE           | 35             | T7N, R32E              | 46°07'30N, 118°52'30E       |
| Walla Walla  | 11          | Zangar Junction   | Walla Walla   | WA           | NE, NE, NE, SE           | 22             | T7N, R32E              | 46°07'30N, 118°52'30E       |
| Walla Walla  | 12          | Zangar Junction   | Walla Walla   | WA           | SW, SW, NE, SW           | 21             | T7N, R32E              | 46°07'30N, 118°52'30E       |
| Walla Walla  | 13          | Zangar Junction   | Walla Walla   | WA           | SE, SW, SE, NW           | 20             | T7N, R32E              | 46°07'30N, 118°52'30E       |
| Tucannon     | 01          | Starbuck East     | Columbia      | WA           | SE, NE, SW, SW           | 23             | T12N, R38E             | 46°37'30N, 118°07'30E       |
| Tucannon     | 02          | Starbuck East     | Columbia      | WA           | NE, NW, SW, NE           | 19             | T12N, R38E             | 46°37'30N, 118°07'30E       |
| Tucannon     | 03          | Starbuck East     | Columbia      | WA           | SW, NE, SE, SW           | 13             | T12N, R37E             | 46°37'30N, 118°15'00E       |
| Tucannon     | 04          | Starbuck East     | Columbia      | WA           | SE, NW, NE, NE           | 10             | T12N, R37E             | 46°37'30N, 118°15'00E       |
| Hood         | 01          | Dee               | Hood River    | OR           | NW, SW, NE, NE           | 01             | T1N, R9E               | 45°37'30N, 121°45'00E       |
| Hood         | 02          | Hood River        | Hood River    | OR           | SW, NE, SE, NW           | 20             | T2N, R10E              | 45°45'00N, 121°37'30E       |
| Hood         | 03          | Hood River        | Hood River    | OR           | NE, SW, NE, SE           | 15             | T2N, R10E              | 45°45'00N, 121°37'30E       |
| Hood         | 04          | Hood River        | Hood River    | OR           | SW, SE, NW, SE           | 01             | T2N, R10E              | 45°45'00N, 121°37'30E       |
| Deschutes    | 01          | Bend              | Deschutes     | OR           | NE, NE, SW, SW           | 13             | T18S, R11E             | 44°07'30N, 121°22'30E       |
| Deschutes    | 02          | Bend              | Deschutes     | OR           | NE, SW, NE, NW           | 18             | T17S, R12E             | 44°07'30N, 121°22'30E       |
| Deschutes    | 03          | Bend              | Deschutes     | OR           | NE, SW, NE, NW           | 20             | T17S, R12E             | 44°07'30N, 121°22'30E       |
| Deschutes    | 04          | Tumalo            | Deschutes     | OR           | SW, NW, SE, SE           | 31             | T16S, R12E             | 44°15'00N, 121°22'30E       |
| Deschutes    | 05          | FrkldHrnButte     | Deschutes     | OR           | SE, SW, SW, NE           | 31             | T15S, R12E             | 44°15'00N, 121°15'00E       |
| Deschutes    | 06          | Redmond           | Deschutes     | OR           | NW, NW, NW, SE           | 36             | T14S, R12E             | 44°22'30N, 121°15'00E       |
| Deschutes    | 07          | Cline Falls       | Deschutes     | OR           | NW, NE, SE, NE           | 16             | T14S, R12E             | 44°22'30N, 121°22'30E       |
| Deschutes    | 08          | Cline Falls       | Deschutes     | OR           | NE, NE, NE, SW           | 26             | T14S, R12E             | 44°22'30N, 121°22'30E       |
| Deschutes    | 09          | SteelhFalls       | Jefferson     | OR           | NW, SE, NW, NE           | 33             | T12S, R12E             | 44°30'00N, 121°22'30E       |
| Deschutes    | 10          | RndButtieDm       | Jefferson     | OR           | NE, SE, SE, NE           | 16             | T12S, R12E             | 44°37'30N, 121°22'30E       |
| Deschutes    | 11          | RndButtieDm       | Jefferson     | OR           | SW, SE, NW, NE           | 22             | T11S, R12E             | 44°37'30N, 121°22'30E       |
| Deschutes    | 12          | Madras West       | Jefferson     | OR           | SW, NE, SW, SW           | 18             | T10S, R13E             | 44°45'00N, 121°15'00E       |
| Deschutes    | 13          | Madras West       | Jefferson     | OR           | NW, NE, SE, SW           | 01             | T10S, R12E             | 44°45'00N, 121°15'00E       |
| Deschutes    | 14          | Eagle Butte       | Jefferson     | OR           | SW, SW, NW, SW           | 16             | T9S, R13E              | 44°52'30N, 121°15'00E       |

TABLE A.1. (contd)

| River     | Site | Quadrangle     | County    | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|-----------|------|----------------|-----------|-------|-------------------|---------|-----------------|-----------------------|
| Deschutes | 15   | Gateway        | Wasco     | OR    | NW, NE, NW, NE    | 32      | T8S, R14E       | 44°52'30N, 121°07'30E |
| Deschutes | 16   | Gateway        | Jefferson | OR    | NE, SW, NE, SE    | 06      | T9S, R14E       | 44°52'30N, 121°07'30E |
| Deschutes | 17   | Gateway        | Wasco     | OR    | NE, NE, NE, SE    | 16      | T8S, R14E       | 44°52'30N, 121°07'30E |
| Deschutes | 18   | Kaskela        | Wasco     | OR    | SE, NE, NE, SW    | 09      | T8S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 19   | Kaskela        | Wasco     | OR    | SW, SE, NE, SW    | 32      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 20   | Kaskela        | Wasco     | OR    | NE, SE, NE, SW    | 29      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 21   | Kaskela        | Wasco     | OR    | NE, NE, NW, SE    | 20      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 22   | Kaskela        | Wasco     | OR    | NE, NW, NW, SE    | 17      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 23   | Kaskela        | Wasco     | OR    | SE, SE, NE, SW    | 17      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 24   | Kaskela        | Wasco     | OR    | SE, NW, NE, SW    | 09      | T7S, R14E       | 45°00'00N, 121°07'30E |
| Deschutes | 25   | Dant           | Wasco     | OR    |                   | NA      | T6S, R14E       | 45°07'30N, 121°07'30E |
| Deschutes | 26   | Dant           | Wasco     | OR    |                   | NA      | T6S, R14E       | 45°07'30N, 121°07'30E |
| Deschutes | 27   | Dant           | Wasco     | OR    |                   | NA      | T6S, R14E       | 45°07'30N, 121°07'30E |
| Deschutes | 28   | Dant           | Wasco     | OR    |                   | NA      | T6S, R13E       | 45°07'30N, 121°07'30E |
| Deschutes | 29   | Dant           | Wasco     | OR    |                   | NA      | T6S, R13E       | 45°07'30N, 121°07'30E |
| Deschutes | 30   | Maupin SW      | Wasco     | OR    | NW, SE, SW, NW    | 25      | T5S, R13E       | 45°07'30N, 121°15'00E |
| Deschutes | 31   | Maupin         | Wasco     | OR    | SE, SW, NW, NE    | 13      | T5S, R14E       | 45°15'00N, 121°07'30E |
| Deschutes | 32   | Maupin         | Wasco     | OR    | SW, SE, SW, NW    | 05      | T5S, R14E       | 45°15'00N, 121°07'30E |
| Deschutes | 33   | Maupin         | Wasco     | OR    | NE, SW, NW, SE    | 29      | T4S, R14E       | 45°15'00N, 121°07'30E |
| Deschutes | 34   | Maupin         | Wasco     | OR    | SE, NE, NW, SE    | 17      | T4S, R14E       | 45°15'00N, 121°07'30E |
| Deschutes | 35   | Maupin         | Wasco     | OR    | SW, NW, SW, SE    | 09      | T4S, R14E       | 45°15'00N, 121°07'30E |
| Deschutes | 36   | Sherars Bridge | Wasco     | OR    | SE, NW, SE, SE    | 34      | T3S, R14E       | 45°22'30N, 121°07'30E |
| Deschutes | 37   | Sherars Bridge | Wasco     | OR    | NW, SE, SW, NE    | 35      | T3S, R14E       | 45°22'30N, 121°07'30E |
| Deschutes | 38   | Sherars Bridge | Wasco     | OR    | NW, NE, NW, SE    | 26      | T3S, R14E       | 45°22'30N, 121°07'30E |
| Deschutes | 39   | Sherars Bridge | Wasco     | OR    | NE, NE, NW, NE    | 23      | T3S, R14E       | 45°22'30N, 121°07'30E |
| Deschutes | 40   | Sinamox        | Wasco     | OR    | NW, NE, NW, SW    | 18      | T3S, R15E       | 45°22'30N, 121°00'00E |
| Deschutes | 41   | Sinamox        | Wasco     | OR    | SE, NW, NE, SW    | 18      | T3S, R15E       | 45°22'30N, 121°00'00E |
| Deschutes | 42   | Sinamox        | Wasco     | OR    |                   | NA      | T3S, R15E       | 45°22'30N, 121°00'00E |
| Deschutes | 43   | Sinamox        | Wasco     | OR    |                   | NA      | T2S, R15E       | 45°22'30N, 121°00'00E |
| Deschutes | 44   | Summit Ridge   | Wasco     | OR    | SE, SW, SE, NE    | 23      | T2S, R15E       | 45°30'00N, 121°00'00E |
| Deschutes | 45   | Erskine        | Wasco     | OR    | NE, NE, NE, SW    | 30      | T1S, R16E       | 45°30'00N, 120°52'30E |
| Deschutes | 46   | Erskine        | Wasco     | OR    | SE, NW, SE, SW    | 20      | T1S, R16E       | 45°30'00N, 120°52'30E |
| Deschutes | 47   | Erskine        | Wasco     | OR    | NE, NW, SE, SE    | 8?      | T1S, R16E       | 45°30'00N, 120°52'30E |
| Deschutes | 48   | Locust Grove   | Wasco     | OR    | SW, SE, NE, SE    | 05      | T1S, R16E       | 45°37'30N, 120°52'30E |
| Deschutes | 49   | Locust Grove   | Wasco     | OR    | NW, NW, NE, SE    | 31      | T1N, R16E       | 45°37'30N, 120°52'30E |
| Deschutes | 50   | Emerson        | Wasco     | OR    | NW, SW, SW, NW    | 25      | T1N, R15E       | 45°37'30N, 121°00'00E |
| Deschutes | 51   | Emerson        | Wasco     | OR    | NE, NE, SE, NW    | 23      | T1N, R15E       | 45°37'30N, 121°00'00E |
| Deschutes | 52   | Emerson        | Wasco     | OR    | NW, NE, NW, NE    | 14      | T1N, R15E       | 45°37'30N, 121°00'00E |
| Deschutes | 53   | Emerson        | Wasco     | OR    | NW, SW, SE, SW    | 35      | T2N, R15E       | 45°37'30N, 121°00'00E |



TABLE A.1. (contd)

| River      | Site | Quadrangle    | County           | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|------------|------|---------------|------------------|-------|-------------------|---------|-----------------|-----------------------|
| Willamette | 01   | Riverside     | Linn             | OR    | NW, NW, SW, SW    | 18      | T12S, R4W       | 44°37'30N, 123°15'00E |
| Willamette | 02   | Corvallis     | Linn (Benton)    | OR    | River Mile 131.5  | NA      | T11S, R5W       | 44°37'30N, 123°22'30E |
| Willamette | 03   | Riverside     | Linn (Benton)    | OR    | NW, SW, NW, SE    | 49      | T11S, R5W       | 44°37'30N, 123°15'00E |
| Willamette | 04   | Riverside     | Linn (Benton)    | OR    |                   | NA      | T11S, R4W       | 44°37'30N, 123°15'00E |
| Willamette | 05   | Lewisburg     | Linn (Benton)    | OR    | SW, NW, SW, SE    | 03      | T11S, R4W       | 44°45'00N, 123°15'00E |
| Willamette | 06   | Albany 15'    | Linn (Benton)    | OR    | SE, SE, NE        | 25      | T10S, R3W       | 44°45'00N, 123°15'00E |
| Willamette | 07   | Lewisburg     | Linn (Benton)    | OR    | SW, SW, NE, NW    | 11      | T10S, R4W       | 44°45'00N, 123°15'00E |
| Willamette | 08   | Monmouth      | Polk (Marion)    | OR    | River Mile 105.0  | NA      | T9S, R4W        | 44°52'30N, 123°15'00E |
| Willamette | 09   | Monmouth      | Polk (Marion)    | OR    | River Mile 94.1   | NA      | T8S, R4W        | 44°52'30N, 123°15'00E |
| Willamette | 10   | Rickreall     | Polk (Marion)    | OR    | NE, SE, NE, SE    | 11      | T8S, R4W        | 45°00'00N, 123°15'00E |
| Willamette | 11   | Salem West    | Polk (Marion)    | OR    | SE, SE, NE, SE    | 29      | T7S, R3W        | 45°00'00N, 123°07'30E |
| Willamette | 12   | Mission Bum   | Polk (Marion)    | OR    | River Mile 77.2   | NA      | T6S, R3W        | 45°07'30N, 123°07'30E |
| Willamette | 13   | Mission Bum   | Polk (Marion)    | OR    | SE, SW, SW, SW    | 34      | T5S, R3W        | 45°07'30N, 123°07'30E |
| Willamette | 14   | Mission Bum   | Yamhill (Marion) | OR    | SE, SW, SW, NW    | 25      | T5S, R3W        | 45°07'30N, 123°07'30E |
| Willamette | 15   | Dayton        | Yamhill (Marion) | OR    | SE, NW, NW, NW    | 14      | T5S, R3W        | 45°15'00N, 123°07'30E |
| Willamette | 16   | Dayton        | Yamhill (Marion) | OR    | NE, SW, NW, NW    | 22      | T4S, R3W        | 45°15'00N, 123°07'30E |
| Willamette | 17   | Newberg       | Yamhill (Marion) | OR    | SW, NE, NW, NE    | 31      | T3S, R2W        | 45°22'30N, 123°00'00E |
| Willamette | 18   | Newberg       | Yamhill (Marion) | OR    | SE, SW, SE, NE    | 66      | T3S, R2W        | 45°22'30N, 123°00'00E |
| Willamette | 19   | Newberg       | Yamhill (Marion) | OR    | NE, NW, SW, NW    | 43      | T4S, R2W        | 45°22'30N, 123°00'00E |
| Willamette | 20   | Sherwood      | Clackamas        | OR    | River Mile 103.8  | NA      | T3S, R1W        | 45°22'30N, 122°52'30E |
| Willamette | 21   | Sherwood      | Clackamas        | OR    | River Mile 102.2  | NA      | T3S, R1W        | 45°22'30N, 122°52'30E |
| Willamette | 22   | Canby         | Clackamas        | OR    | SW, SE, SE, NE    | 20      | T3S, R1E        | 45°22'30N, 122°45'00E |
| Willamette | 23   | Canby         | Clackamas        | OR    | SE, SE, SW, SW    | 22      | T3S, R1E        | 45°22'30N, 122°45'00E |
| Willamette | 24   | Canby         | Clackamas        | OR    | Mile 27.6         | NA      | T3S, R1E        | 45°22'30N, 122°45'00E |
| Willamette | 25   | Sauvie Island | Multnomah        | OR    | NW, SE, NE, NE    | 20      | T2N, R1W        | 45°45'00N, 122°52'30E |
| Willamette | 26   | Sauvie Island | Multnomah        | OR    | SE, SE, NE, NE    | 58      | T2N, R1W        | 45°45'00N, 122°52'30E |
| Willamette | 27   | Sauvie Island | Multnomah        | OR    | Mile 15.1         | NA      | T2N, R1W        | 45°45'00N, 122°52'30E |
| Willamette | 28   | Sauvie Island | Multnomah        | OR    | SE, NE, NE, SE    | 25      | T3N, R2W        | 45°45'00N, 122°52'30E |
| John Day   | 01   | Harmony       | Sherman          | OR    | SW, SE, SE, NW    | 24      | T2S, R18E       | 45°30'00N, 120°37'30E |
| John Day   | 02   | Esau Canyon   | Sherman          | OR    | Mile 43.5         | 31      | T1S, R19E       | 45°30'00N, 120°30'00E |
| John Day   | 03   | Esau Canyon   | Sherman          | OR    | NE, SE, SW, SW    | 17      | T1S, R19E       | 45°30'00N, 120°30'00E |
| John Day   | 04   | Esau Canyon   | Sherman          | OR    | SE, SW, SW, NW    | 23      | T1S, R19E       | 45°30'00N, 120°30'00E |
| John Day   | 05   | Esau Canyon   | Sherman          | OR    | NE, NW, NE, SW    | 12      | T1S, R19E       | 45°30'00N, 120°30'00E |
| John Day   | 06   | Turner Butte  | Sherman          | OR    | SE, NE, NW, NE    | 31      | T1N, R20E       | 45°37'30N, 120°22'30E |
| John Day   | 07   | McDonald      | Sherman          | OR    | NE, NE, NE, NW    | 25      | T1N, R19E       | 45°37'30N, 120°30'00E |
| John Day   | 08   | McDonald      | Sherman          | OR    | SE, SW, SW, NE    | 14      | T1N, R19E       | 45°37'30N, 120°30'00E |
| John Day   | 09   | McDonald      | Sherman          | OR    | SE, SW, SE, SW    | 02      | T1N, R19E       | 45°37'30N, 120°30'00E |
| John Day   | 10   | Sundale       | Sherman          | OR    | NE, SE, NW, SE    | 19      | T2N, R19E       | 45°45'00N, 120°30'00E |
| Umatilla   | 01   | Stanfield     | Umatilla         | OR    | NW, SE, SW, SE    | 05      | T3N, R29E       | 45°52'30N, 119°15'00E |

TABLE A.1. (contd)

| River                       | Site | Quadrangle           | County               | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|-----------------------------|------|----------------------|----------------------|-------|-------------------|---------|-----------------|-----------------------|
| Umatilla                    | 02   | Hermiston            | Umatilla             | OR    | SW, SW, SW, SE    | 28      | T4N, R28E       | 45°52'30N, 119°22'30E |
| Umatilla                    | 03   | Hermiston            | Umatilla             | OR    | SW, NW, NW, SE    | 20      | T4N, R28E       | 45°52'30N, 119°22'30E |
| Umatilla                    | 04   | Hermiston            | Umatilla             | OR    | SE, SE, SE, SE    | 08      | T4N, R28E       | 45°52'30N, 119°22'30E |
| Umatilla                    | 05   | Hermiston            | Umatilla             | OR    | NE, SE, SE, SW    | 33      | T5N, R28E       | 45°52'30N, 119°22'30E |
| Umatilla                    | 06   | Umatilla             | Umatilla             | OR    | NE, SW, SW, NW    | 21      | T5N, R28E       | 46°00'00N, 119°22'30E |
| Columbia<br>(Hanford Reach) | 01   | Priest Rapids        | Grant<br>(Yakima)    | WA    | SE, NE, SE, NE    | 11      | T13N, R23E      | 46°45'00N, 120°00'00E |
| Columbia<br>(Hanford Reach) | 02   | Priest Rapids        | Grant                | WA    | NE, NE, SW, NE    | 02      | T13N, R24E      | 46°45'00N, 119°52'30E |
| Columbia<br>(Hanford Reach) | 03   | NE<br>Priest Rapids  | (Benton)<br>Grant    | WA    | SW, NE, NW, SW    | 08      | T13N, R24E      | 46°45'00N, 119°52'30E |
| Columbia<br>(Hanford Reach) | 04   | NE<br>Vernita Bridge | (Benton)<br>Grant    | WA    | NE, SW, NW, NW    | 03      | T13N, R25E      | 46°45'00N, 119°45'00E |
| Columbia<br>(Hanford Reach) | 05   | Vernita Bridge       | (Benton)<br>Grant    | WA    | NE, SE, NW, SE    | 06      | T13N, R25E      | 46°45'00N, 119°45'00E |
| Columbia<br>(Hanford Reach) | 06   | Coyote Rapids        | (Benton)<br>Grant    | WA    | NW, NE, NE, NE    | 14      | T14N, R26E      | 46°45'00N, 119°37'30E |
| Columbia<br>(Hanford Reach) | 07   | Coyote Rapids        | (Benton)<br>Grant    | WA    | NE, SW, NE, NW    | 06      | T13N, R26E      | 46°45'00N, 119°37'30E |
| Columbia<br>(Hanford Reach) | 08   | Coyote Rapids        | (Benton)<br>Grant    | WA    | NW, NE, SE, SW    | 21      | T14N, R26E      | 46°45'00N, 119°37'30E |
| Columbia<br>(Hanford Reach) | 09   | Locke Island         | (Benton)<br>Grant    | WA    | NE, SW, NW, SW    | 07      | T14N, R27E      | 46°45'00N, 119°30'00E |
| Columbia<br>(Hanford Reach) | 10   | Locke Island         | Benton<br>(Franklin) | WA    | SW, NE, SW, NE    | 29      | T14N, R27E      | 46°45'00N, 119°30'00E |
| Columbia<br>(Hanford Reach) | 11   | Locke Island         | Benton<br>(Franklin) | WA    | SW, NE, NW, NE    | 10      | T13N, R27E      | 46°45'00N, 119°30'00E |
| Columbia<br>(Hanford Reach) | 12   | Hanford              | Benton<br>(Franklin) | WA    | NE, SE, SE, NW    | 25      | T13N, R27E      | 46°37'30N, 119°30'00E |
| Columbia<br>(Hanford Reach) | 13   | Savage Island        | Benton<br>(Franklin) | WA    | SE, NE, NW, SE    | 32      | T13N, R28E      | 46°37'30N, 119°22'30E |
| Columbia<br>(Hanford Reach) | 14   | Savage Island        | Benton<br>(Franklin) | WA    | NE, SE, NW, SE    | 23      | T12N, R28E      | 46°37'30N, 119°22'30E |
| Columbia<br>(Hanford Reach) | 15   | Wooded Island        | Benton<br>(Franklin) | WA    | SE, SW, NW, NW    | 36      | T12N, R28E      | 46°30'00N, 119°22'30E |
| Columbia<br>(Hanford Reach) | 16   | Wooded Island        | Benton<br>(Franklin) | WA    | SW, SW, SW, SW    | 13      | T11N, R28E      | 46°30'00N, 119°22'30E |
| Columbia<br>(Hanford Reach) | 17   | Wooded Island        | Benton<br>(Franklin) | WA    | NE, NW, NE, SE    | 01      | T10N, R28E      | 46°30'00N, 119°22'30E |

TABLE A.1. (contd)

| River        | Site | Quadrangle     | County               | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|----------------|----------------------|-------|-------------------|---------|-----------------|-----------------------|
| Columbia     | 18   | Richland       | Benton<br>(Franklin) | WA    | SW, NW, NE, SW    | 13      | T10N, R28E      | 46°22'30N, 119°22'30E |
| Columbia     | 19   | Columbia Pt    | Benton<br>(Franklin) | WA    | SE, NW, NW, SE    | 25      | T10N, R29E      | 46°22'30N, 119°15'00E |
| Columbia     | 20   | Richland       | Benton<br>(Franklin) | WA    | NE, SE, NE, SE    | 12      | T9N, R28E       | 46°22'30N, 119°22'30E |
| Columbia     | 21   | Columbia Pt    | Benton<br>(Franklin) | WA    | NW, SE, NW, SW    | 18      | T9N, R29E       | 46°22'30N, 119°15'00E |
| Lower Colum. | 01   | Rainier        | Columbia             | OR    | NW, NE, SW, NW    | 23      | T7N, R2W        | 46°07'30N, 123°00'00E |
| Lower Colum. | 02   | Rainier        | Columbia             | OR    | NW, SW, NW, NE    | 07      | T7N, R2W        | 46°07'30N, 123°00'00E |
| Lower Colum. | 03   | Kalama         | Columbia             | OR    | SE, NE, NW, SE    | 12      | T6N, R2W        | 46°07'30N, 122°52'30E |
| Lower Colum. | 04   | Deer Island    | Cowlitz              | WA    | SE, SE, NW, NW    | 53      | T5N, R1W        | 46°00'00N, 122°52'30E |
| Lower Colum. | 05   | Deer Island    | Columbia             | OR    | NE, SW, NW, SE    | 29      | T6N, R1W        | 46°00'00N, 122°52'30E |
| Lower Colum. | 06   | St. Helens     | Columbia             | OR    | NE, NE, SW, SE    | 02      | T3N, R1W        | 45°52'30N, 122°52'30E |
| Lower Colum. | 07   | St. Helens     | Columbia             | OR    | SE, SW, NE, SW    | 22      | T4N, R1W        | 45°52'30N, 122°52'30E |
| Lower Colum. | 08   | Coal Creek     | Columbia             | OR    | NE, SE, NE, SW    | 34      | T8N, R3W        | 46°15'00N, 123°07'30E |
| Lower Colum. | 09   | Coal Creek     | Columbia             | OR    | SE, SE, NE, NW    | 19      | T8N, R3W        | 46°15'00N, 123°07'30E |
| Lower Colum. | 10   | Coal Creek     | Cowlitz              | WA    | NW, SW, SE, SW    | 16      | T8N, R3W        | 46°15'00N, 123°07'30E |
| Lower Colum. | 11   | Oak Point      | Cowlitz              | WA    | NW, SE, SE, NE    | 39      | T8N, R4W        | 46°15'00N, 123°15'00E |
| Lower Colum. | 12   | Oak Point      | Wahkiakum            | WA    | SW, NW, NW, NW    | 24      | T8N, R4W        | 46°15'00N, 123°15'00E |
| Lower Colum. | 13   | Nassa Point    | Columbia             | OR    | NE, NW, NW, SW    | 35      | T8N, R5W        | 46°15'00N, 123°22'30E |
| Lower Colum. | 14   | Nassa Point    | Columbia             | OR    | NW, SW, NE, NW    | 32      | T8N, R5W        | 46°15'00N, 123°22'30E |
| Lower Colum. | 15   | Nassa Point    | Wahkiakum            | WA    | NW, NE, NW, NW    | 20      | T8N, R5W        | 46°15'00N, 123°22'30E |
| Lower Colum. | 16   | Cathlamet      | Wahkiakum            | WA    | SW, SW, SE, NE    | 16      | T8N, R6W        | 46°15'00N, 123°30'00E |
| Lower Colum. | 17   | Cathlamet      | Wahkiakum            | WA    | NW, NW, NW, SE    | 11      | T8N, R6W        | 46°15'00N, 123°30'00E |
| Lower Colum. | 18   | Cathlamet      | Clatsop              | OR    | NW, NE, NE, NE    | 06      | T8N, R6W        | 46°15'00N, 123°30'00E |
| Lower Colum. | 19   | Skamokawa      | Wahkiakum            | WA    | NE, SE, NE, NE    | 18      | T9N, R6W        | 46°22'30N, 123°30'00E |
| Lower Colum. | 20   | Grays River    | Wahkiakum            | WA    | SW, SE, SE, NW    | 16      | T9N, R7W        | 46°22'30N, 123°37'30E |
| Lower Colum. | 21   | Grays River    | Wahkiakum            | WA    | NE, NE, SE, SW    | 13      | T9N, R8W        | 46°22'30N, 123°37'30E |
| Lower Colum. | 22   | Knappa         | Clatsop              | OR    | SE, SW, SE, NW    | 26      | T9N, R7W        | 46°15'00N, 123°37'30E |
| Colum. Dams  | 01   | Grand Coulee   | Grant<br>(Lincoln)   | WA    | SE, SW, SE, NE    | 36      | T29N, R30E      | 48°00'00N, 119°00'00E |
| Colum. Dams  | 02   | Bridgeport 15' | Okanogan             | WA    | SE, NE, NW, NE    | 23      | T29N, R25E      | 48°15'00N, 119°45'00E |
| Colum. Dams  | 03   | Wells Dam      | (Douglas)<br>Chelan  | WA    | NE, SW, NE, NE    | 20      | T28N, R24E      | 48°00'00N, 119°52'30E |
| Colum. Dams  | 04   | Rocky Reach    | (Douglas)<br>Chelan  | WA    | SW, SE, SW, NW    | 02      | T23N, R20E      | 47°37'30N, 120°22'30E |

TABLE A.1. (contd)

| River                    | Site | Quadrangle    | County            | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------------------|------|---------------|-------------------|-------|-------------------|---------|-----------------|-----------------------|
| Colum. Dams              | 05   | Beverly       | Kititas (Grant)   | WA    | SW, NW, NE, NE    | 20      | T16N, R23E      | 46°52'30N, 120°00'00E |
| Colum. Dams              | 06   | Priest Rapids | Grant (Yakima)    | WA    | SW, SE, SW, SE    | 02      | T13N, R23E      | 46°45'00N, 120°00'00E |
| Colum. Dams              | 07   | Umatilla      | Umatilla          | OR    | SW, NE, SW, NW    | 09      | T5N, R28E       | 46°00'00N, 119°22'30E |
| Colum. Dams              | 08   | The Dalles S. | Benton            | WA    | SE, NW, SW, SE    | 35      | T2N, R13E       | 45°37'30N, 121°15'00E |
| Colum. Dams              | 09   | Bonneville    | Wasco             | OR    | SW, NW, NE, SW    | 21      | T2N, R7E        | 45°45'00N, 122°00'00E |
| Spokane                  | 01   | Little Falls  | Skamania          | WA    | NW, SE, NE, SW    | 24      | T27N, R38E      | 47°52'30N, 118°00'00E |
| Spokane                  | 02   | Little Falls  | Multnomah         | OR    | NW, NW, SW, NE    | 20      | T27N, R39E      | 47°52'30N, 118°00'00E |
| Spokane                  | 03   | Long Lake     | Stevens (Lincoln) | WA    | SE, NW, NW, SE    | 14      | T27N, R39E      | 47°52'30N, 117°52'30E |
| Spokane                  | 04   | Greenacres    | Stevens (Lincoln) | WA    | NW, SW, NE, SW    | 03      | T25N, R44E      | 47°45'00N, 117°15'00E |
| Spokane                  | 05   | Greenacres    | Spokane           | WA    | SW, SE, SW, SW    | 12      | T25N, R44E      | 47°45'00N, 117°15'00E |
| Spokane                  | 06   | Liberty Lake  | Spokane           | WA    | SW, SW, NE, SE    | 02      | T25N, R45E      | 47°45'00N, 117°07'30E |
| Spokane                  | 07   | Liberty Lake  | Spokane           | WA    | SW, NE, NW, NW    | 06      | T25N, R46E      | 47°45'00N, 117°07'30E |
| Spokane                  | 08   | Liberty Lake  | Kootenai          | ID    | SW, NE, NE, SE    | 07      | T50N, R6W       | 47°45'00N, 117°07'30E |
| Spokane                  | 09   | Greenacres    | Spokane           | WA    | SW, SW, NE, SE    | 12      | T25N, R44E      | 47°45'00N, 117°15'00E |
| Spokane                  | 10   | Greenacres    | Spokane           | WA    | NW, NW, NW, SW    | 08      | T25N, R45E      | 47°45'00N, 117°15'00E |
| Spokane (Coeur D' Alene) | 11   | Kellogg West  | Shoshone          | ID    | SE, NE, SW, NW    | 08      | T49N, R2E       | 47°37'30N, 116°15'00E |
| Spokane (Coeur D' Alene) | 12   | Steamboat Cr. | Shoshone          | ID    | SW, SE, SW, NW    | 26      | T50N, R2E       | 47°45'00N, 116°15'00E |
| Spokane (Coeur D' Alene) | 13   | Steamboat Cr. | Shoshone          | ID    | NW, SW, SW, SE    | 24      | T50N, R2E       | 47°45'00N, 116°15'00E |
| Spokane (Coeur D' Alene) | 14   | Lane          | Kootenai          | ID    | SW, NW, SE, NW    | 07      | T48N, R1W       | 47°37'30N, 116°37'30E |
| Spokane (Coeur D' Alene) | 15   | Rose Lake     | Kootenai          | ID    | SE, SW, SW, NE    | 05      | T48N, R1W       | 47°37'30N, 116°30'00E |
| Spokane (Coeur D' Alene) | 16   | Rose Lake     | Kootenai          | ID    | SW, NE, NE, NW    | 02      | T48N, R1W       | 47°37'30N, 116°30'00E |
| Spokane (Coeur D' Alene) | 17   | Cataldo       | Kootenai          | ID    | NE, NW, NE, SE    | 33      | T49N, R1E       | 47°37'30N, 116°22'30E |
| Spokane (Coeur D' Alene) | 18   | Cataldo       | Shoshone          | ID    | SE, NE, SW, NW    | 31      | T49N, R2E       | 47°37'30N, 116°22'30E |

TABLE A.1. (contd)

| River                        | Site | Quadrangle     | County   | State | Legal Description | Section | Township_Range | Northwest Map Corner  |
|------------------------------|------|----------------|----------|-------|-------------------|---------|----------------|-----------------------|
| Spokane<br>(Coeur D' Alene ) | 19   | Kellogg West   | Shoshone | ID    | NE, SE, NW, SW    | 35      | T49N, R2E      | 47°37'30N, 116°15'00E |
| Spokane                      | 20   | Fernwood 15'   | Benewah  | ID    | NW, SE, NW        | 08      | T44N, R1W      | 47°15'00N, 116°30'00E |
| (St. Maries )                | 21   | Fernwood 15'   | Benewah  | ID    | NE, NE, NW        | 26      | T44N, R1W      | 47°15'00N, 116°30'00E |
| Spokane                      | 22   | Lindstrom Pk.  | Benewah  | ID    | SE, NW, SW, NE    | 35      | T45N, R2W      | 47°15'00N, 116°37'30E |
| (St. Maries )                | 23   | Lindstrom Pk.  | Benewah  | ID    | NW, NE, SE, SW    | 20      | T45N, R2W      | 47°15'00N, 116°37'30E |
| Spokane                      | 24   | St. Marries    | Benewah  | ID    | SE, SW, SE, NW    | 09      | T45N, R2W      | 47°22'30N, 116°37'30E |
| (St. Marries )               | 25   | St. Marries    | Benewah  | ID    | SW, NW, SW, NW    | 25      | T46N, R2W      | 47°22'30N, 116°37'30E |
| Spokane                      | 26   | St. Joe        | Shoshone | ID    | NE, SW, SW, NW    | 24      | T46N, R1E      | 47°22'30N, 116°22'30E |
| (St. Marries )               | 27   | St. Joe        | Shoshone | ID    | NW, NW, NE, NW    | 06      | T45N, R2E      | 47°22'30N, 116°22'30E |
| Spokane                      | 28   | St. Joe        | Benewah  | ID    | SW, SE, NW, SW    | 21      | T46N, R1E      | 47°22'30N, 116°22'30E |
| (St. Joe )                   | 29   | St. Joe Baldy  | Benewah  | ID    | SE, SE, NE, NE    | 24      | T46N, R1W      | 47°22'30N, 116°30'00E |
| Spokane                      | 30   | St. Joe Baldy  | Benewah  | ID    | NE, NE, NE, NW    | 16      | T46N, R1W      | 47°22'30N, 116°30'00E |
| (St. Joe )                   | 31   | St. Marries    | Benewah  | ID    | SE, SE, SE, SE    | 12      | T46N, R2W      | 47°22'30N, 116°37'30E |
| Spokane                      | 32   | St. Marries    | Benewah  | ID    | SE, SE, NW, SE    | 16      | T46N, R2W      | 47°22'30N, 116°37'30E |
| (St. Joe )                   | 33   | Benewah Lake   | Benewah  | ID    | NE, NW, NW, SW    | 12      | T46N, R3W      | 47°22'30N, 116°45'00E |
| Spokane                      | 34   | Kellogg West   | Shoshone | ID    | NE, NW, NW, SW    | 03      | T49N, R2E      | 47°37'30N, 116°15'00E |
| (Coeur D' Alene )            | 01   | Winnemuc. Cr.  | Malheur  | OR    | SW, SW, NE, SW    | 19      | T23S, R37E     | 43°37'30N, 118°15'00E |
| Malheur                      | 02   | Winnemuc. Cr.  | Malheur  | OR    | NW, NW, SW, SE    | 23      | T23S, R37E     | 43°37'30N, 118°15'00E |
| Malheur                      | 03   | Juntura        | Malheur  | OR    | SW, SE, SE, NE    | 29      | T21S, R38E     | 43°45'00N, 118°07'30E |
| Malheur                      | 04   | Juntura        | Malheur  | OR    | NE, SW, SE, NE    | 20      | T21S, R38E     | 43°45'00N, 118°07'30E |
| Malheur                      | 05   | Beulah 15'     | Malheur  | OR    | NW, SW, NE,       | 10      | T21S, R38E     | 44°00'00N, 118°15'00E |
| Malheur                      | 06   | Wstfall Bt 15' | Malheur  | OR    | NE, SE, SW        | 29      | T20S, R39E     | 44°00'00N, 118°00'00E |
| Malheur                      | 07   | Wstfall Bt 15' | Malheur  | OR    | SE, SE, SW        | 25      | T20S, R39E     | 44°00'00N, 118°00'00E |

TABLE A.1. (cont'd)

| River        | Site | Quadrangle     | County   | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|----------------|----------|-------|-------------------|---------|-----------------|-----------------------|
| Malheur      | 08   | Wstfall Bt 15' | Malheur  | OR    | NE, NE, NE        | 10      | T21S, R40E      | 44°00'00N, 118°00'00E |
| Malheur      | 09   | Harper 15'     | Malheur  | OR    | SE, SW, NE        | 23      | T20S, R41E      | 44°00'00N, 117°45'00N |
| Malheur      | 10   | Harper 15'     | Malheur  | OR    | NW, SW, SW        | 26      | T19S, R42E      | 44°00'00N, 117°45'00N |
| Malheur      | 11   | Vines Hill     | Malheur  | OR    | NE, NW, SE, SE    | 01      | T19S, R43E      | 44°00'00N, 117°30'00E |
| Malheur      | 12   | Vale West      | Malheur  | OR    | NE, NE, NE, NE    | 07      | T19S, R44E      | 44°00'00N, 117°22'30E |
| Malheur      | 13   | Vale East      | Malheur  | OR    | SE, SW, NE, SW    | 22      | T18S, R45E      | 44°00'00N, 117°15'00E |
| Lower Owyhee | 01   | Owyhee Dam     | Malheur  | OR    | SW, NE, SE, SW    | 17      | T22S, R45E      | 43°45'00N, 117°15'00E |
| Lower Owyhee | 02   | Owyhee Dam     | Malheur  | OR    | NW, NE, NW, NW    | 10      | T22S, R45E      | 43°45'00N, 117°15'00E |
| Lower Owyhee | 03   | Owyhee Dam     | Malheur  | OR    | SW, SE, SE, SE    | 14      | T21S, R45E      | 43°45'00N, 117°15'00E |
| Lower Owyhee | 04   | Mitchell But.  | Malheur  | OR    | NE, SW, NW, SW    | 07      | T21S, R46E      | 43°52'30N, 117°15'00E |
| Lower Owyhee | 05   | Owyhee         | Malheur  | OR    | NE, NW, SE, NE    | 03      | T21S, R47E      | 43°52'30N, 117°07'30E |
| Lower Owyhee | 06   | Owyhee         | Malheur  | OR    | NE, NE, SE, SE    | 35      | T20S, R47E      | 43°52'30N, 117°07'30E |
| Clark Fork   | 01   | Tarkio         | Tarkio   | MT    | NW, NW, NE, NE    | 32      | T15N, R24W      | 47°07'30N, 114°45'00E |
| Clark Fork   | 02   | Tarkio         | Tarkio   | MT    | SE, NE, SW, NE    | 34      | T15N, R25W      | 47°07'30N, 114°45'00E |
| Clark Fork   | 03   | Lozeau         | Mineral  | MT    | SW, SW, SW, SE    | 16      | T15N, R25W      | 47°07'30N, 114°52'30E |
| Clark Fork   | 04   | Lozeau         | Mineral  | MT    | NW, NW, NE, SE    | 29      | T16N, R25W      | 47°07'30N, 114°52'30E |
| Clark Fork   | 05   | Lozeau         | Mineral  | MT    | SE, NW, SW, SE    | 28      | T15N, R25W      | 47°07'30N, 114°52'30E |
| Clark Fork   | 06   | Idaho Gulch    | Missoula | MT    | SE, SW, SE, NW    | 20      | T16N, R25W      | 47°15'00N, 114°52'30E |
| Clark Fork   | 07   | Idaho Gulch    | Mineral  | MT    | SE, NW, SE, SE    | 03      | T16N, R26W      | 47°15'00N, 114°52'30E |
| Clark Fork   | 08   | Superior       | Mineral  | MT    | SE, NW, NE, SW    | 29      | T17N, R26W      | 47°15'00N, 115°00'00E |
| Clark Fork   | 09   | Superior       | Mineral  | MT    | NW, SE, SW, SW    | 18      | T17N, R26W      | 47°15'00N, 115°00'00E |
| Clark Fork   | 10   | IL Peak 15'    | Mineral  | MT    | NW, NW, NW        | 16      | T17N, R27W      | 47°15'00N, 115°15'00E |
| Clark Fork   | 11   | St. Regis 15'  | Mineral  | MT    | SE, NE, SW        | 19      | T18N, R27W      | 47°30'00N, 115°15'00E |
| Clark Fork   | 12   | St. Regis 15'  | Mineral  | MT    | SW, SE, ME        | 10      | T18N, R27W      | 47°30'00N, 115°15'00E |
| Clark Fork   | 13   | Plains 15'     | Sanders  | MT    | NW, NW, NE        | 07      | T18N, R26W      | 47°30'00N, 115°00'00E |
| Clark Fork   | 14   | Plains 15'     | Sanders  | MT    | SW, NE, SE        | 14      | T18N, R26W      | 47°30'00N, 115°00'00E |
| Clark Fork   | 15   | Perma          | Sanders  | MT    | SE, SE, NW, SE    | 04      | T18N, R23W      | 47°22'30N, 114°37'30E |
| Clark Fork   | 16   | Perma          | Sanders  | MT    | NE, SE, NE, NW    | 31      | T19N, R23W      | 47°22'30N, 114°37'30E |
| Clark Fork   | 18   | Knowles        | Sanders  | MT    | SE, SE, SW, NE    | 09      | T18N, R24W      | 47°22'30N, 114°45'00E |
| Clark Fork   | 19   | Knowles        | Sanders  | MT    | NE, NW, SW, SW    | 06      | T18N, R24W      | 47°22'30N, 114°45'00E |
| Clark Fork   | 20   | Plains 15'     | Sanders  | MT    | NE, NE, NE        | 29      | T19N, R25W      | 47°30'00N, 115°00'00E |
| Clark Fork   | 21   | Plains 15'     | Sanders  | MT    | NW, NE, NE        | 04      | T18N, R25W      | 47°30'00N, 115°00'00E |
| Clark Fork   | 22   | Plains 15'     | Sanders  | MT    | NW, NE, NW        | 34      | T20N, R26W      | 47°30'00N, 115°00'00E |
| Clark Fork   | 23   | Weeksville     | Sanders  | MT    | NE, NE, NW, SE    | 08      | T20N, R26W      | 47°34'30N, 115°00'00E |
| Clark Fork   | 24   | Big Hole Peak  | Sanders  | MT    | SW, SE, SE, NW    | 04      | T20N, R27W      | 47°37'30N, 115°07'30E |

TABLE A.1. (contd)

| River      | Site | Quadrangle     | County   | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|------------|------|----------------|----------|-------|-------------------|---------|-----------------|-----------------------|
| Clark Fork | 25   | Big Hole Peak  | Sanders  | MT    | SW, SW, SE, SE    | 30      | T21N, R27W      | 47°37'30N, 115°07'30E |
| Clark Fork | 26   | Eddy Mtn.      | Sanders  | MT    | NE, SE, SE, NE    | 22      | T21N, R28W      | 47°37'30N, 115°15'00E |
| Clark Fork | 27   | Eddy Mtn       | Sanders  | MT    | NW, NW, SE, NW    | 16      | T21N, R28W      | 47°37'30N, 115°15'00E |
| Kootenai   | 01   | Alexander Mtn  | Lincoln  | MT    | SE, NE, SW, SW    | 33      | T31N, R29W      | 48°30'00N, 115°22'30E |
| Kootenai   | 02   | Tony Peak      | Lincoln  | MT    | NE, SE, SW, NW    | 17      | T30N, R29W      | 48°22'30N, 115°22'30E |
| Kootenai   | 03   | Swede Mtn.     | Lincoln  | MT    | SE, NE, SE, SE    | 09      | T30N, R30W      | 48°22'30N, 115°30'00E |
| Kootenai   | 04   | Vermicul Mtn   | Lincoln  | MT    | SE, SE, NW, SE    | 30      | T31N, R30W      | 48°30'00N, 115°30'00E |
| Kootenai   | 05   | Libby          | Lincoln  | MT    | NW, SE, SE, SW    | 19      | T31N, R31W      | 48°30'00N, 115°37'30E |
| Kootenai   | 06   | Scenery Mtn.   | Lincoln  | MT    | SW, NE, SE, SW    | 14      | T31N, R33W      | 48°30'00N, 115°45'00E |
| Kootenai   | 07   | Kootenai Falls | Lincoln  | MT    | SE, SW, NE, SE    | 15      | T31N, R33W      | 48°30'00N, 115°52'30E |
| Kootenai   | 08   | Kootenai Falls | Lincoln  | MT    | SE, NW, NW, SE    | 18      | T31N, R33W      | 48°30'00N, 115°52'30E |
| Kootenai   | 09   | Troy           | Lincoln  | MT    | NW, SW, SE, NW    | 35      | T32N, R34W      | 48°30'00N, 116°00'00E |
| Kootenai   | 10   | Kilbren. Lake  | Lincoln  | MT    | SE, NE, SW, SE    | 16      | T32N, R34W      | 48°37'30N, 116°00'00E |
| Kootenai   | 11   | Kilbren. Lake  | Lincoln  | MT    | NW, NE, NW, SE    | 05      | T32N, R34W      | 48°37'30N, 116°00'00E |
| Kootenai   | 12   | Leonia         | Lincoln  | MT    | SW, NW, NW, NW    | 20      | T33N, R34W      | 48°37'30N, 116°07'30E |
| Kootenai   | 13   | Moyie Springs  | Boundary | ID    | NW, NE, SW, SE    | 20      | T62N, R2E       | 48°45'00N, 116°15'00E |
| Kootenai   | 14   | Bonnors Ferry  | Boundary | ID    | NW, SE, SW, SW    | 20      | T62N, R1E       | 48°45'00N, 116°22'30E |
| Kootenai   | 15   | Moravia        | Boundary | ID    | SW, NW, NE, SW    | 18      | T62N, R1E       | 48°45'00N, 116°30'00E |
| Kootenai   | 16   | Farnham Peak   | Boundary | ID    | NE, NE, NW, SE    | 07      | T63N, R1E       | 48°52'30N, 116°30'00E |
| Kootenai   | 17   | Farnham Peak   | Boundary | ID    | NW, NW, NE, NE    | 36      | T64N, R1W       | 48°52'30N, 116°30'00E |
| Kootenai   | 18   | Copeland       | Boundary | ID    | SE, SE, SW, SE    | 12      | T64N, R1W       | 49°00'00N, 116°30'00E |
| Kootenai   | 19   | Copeland       | Boundary | ID    | SW, NE, NE, SW    | 04      | T64N, R1W       | 49°00'00N, 116°30'00E |
| Kootenai   | 20   | Copeland       | Boundary | ID    | SW, SE, SW, SE    | 20      | T65N, R1W       | 49°00'00N, 116°30'00E |
| Kootenai   | 21   | Smith Falls    | Boundary | ID    | SW, SE, NE, SW    | 07      | T65N, R1W       | 49°00'00N, 116°37'30E |
| Clearwater | 01   | Selway Falls   | Idaho    | ID    |                   | NA      | NA              | 46°07'30N, 115°22'30E |
| Clearwater | 02   | Selway Falls   | Idaho    | ID    | River Mile 117.5  | NA      | NA              | 46°07'30N, 115°22'30E |
| Clearwater | 03   | Selway Falls   | Idaho    | ID    | River Mile 113.0  | NA      | NA              | 46°07'30N, 115°22'30E |
| Clearwater | 04   | Stillman Point | Idaho    | ID    | River Mile 110.5  | NA      | NA              | 46°07'30N, 115°30'00E |
| Clearwater | 05   | Stillman Point | Idaho    | ID    | River Mile 106.3  | NA      | NA              | 46°07'30N, 115°30'00E |
| Clearwater | 06   | Goddard Point  | Idaho    | ID    | NE, SE, SW, NE    | 25      | T32N, R7E       | 46°07'30N, 115°37'30E |
| Clearwater | 07   | Goddard Point  | Idaho    | ID    | SE, SE, SE, NE    | 16      | T32N, R7E       | 46°07'30N, 115°37'30E |
| Clearwater | 08   | McLendonButte  | Idaho    | ID    | River Mile 19.0   | NA      | NA              | 46°22'30N, 115°30'00E |
| Clearwater | 09   | Coolwater Mtn. | Idaho    | ID    | River Mile 15.3   | NA      | NA              | 46°15'00N, 115°30'00E |
| Clearwater | 10   | Coolwater Mtn. | Idaho    | ID    | River Mile 15.4   | NA      | NA              | 46°15'00N, 115°30'00E |
| Clearwater | 11   | Coolwater Mtn. | Idaho    | ID    | River Mile 11.1   | NA      | NA              | 46°15'00N, 115°30'00E |
| Clearwater | 12   | Lowell         | Idaho    | ID    | NW, NW, NW, SW    | 12      | T33N, R7E       | 46°15'00N, 115°37'30E |
| Clearwater | 13   | Lowell         | Idaho    | ID    | NW, NW, SE, SW    | 22      | T33N, R7E       | 46°15'00N, 115°37'30E |
| Clearwater | 14   | Lowell         | Idaho    | ID    | SW, SE, NE, NW    | 33      | T33N, R7E       | 46°15'00N, 115°37'30E |
| Clearwater | 15   | Lowell         | Idaho    | ID    | SE, SW, SE, SW    | 04      | T32N, R7E       | 46°15'00N, 115°37'30E |



TABLE A.1. (contd)

| River       | Site | Quadrangle          | County       | State | Legal Description | Section | Township Range | Northwest Map Corner  |
|-------------|------|---------------------|--------------|-------|-------------------|---------|----------------|-----------------------|
| Clearwater  | 16   | Lowell              | Idaho        | ID    | NE, NW, NE, NE    | 07      | T32N, R7E      | 46°15'00N, 115°37'30E |
| Clearwater  | 17   | Syringa             | Idaho        | ID    | NE, SE, SE, SE    | 03      | T32N, R6E      | 46°15'00N, 115°45'00E |
| Clearwater  | 18   | Syringa             | Idaho        | ID    | SW, NE, NW, SW    | 03      | T32N, R6E      | 46°15'00N, 115°45'00E |
| Clearwater  | 19   | Glenwood            | Idaho        | ID    | NW, NE, NW, NE    | 11      | T32N, R5E      | 46°15'00N, 115°52'30E |
| Clearwater  | 20   | Glenwood            | Idaho        | ID    | SW, NE, NE, SW    | 05      | T32N, R5E      | 46°15'00N, 115°52'30E |
| Clearwater  | 21   | Kooskia             | Idaho        | ID    | NW, NE, NW, NE    | 35      | T32N, R4E      | 46°15'00N, 116°00'00E |
| Clearwater  | 22   | Kooskia             | Idaho        | ID    | NW, SE, NE, SW    | 04      | T32N, R4E      | 46°15'00N, 116°00'00E |
| Clearwater  | 23   | Kamahia             | Idaho        | ID    | NW, NE, SW, SE    | 13      | T33N, R3E      | 46°15'00N, 116°07'30E |
| Clearwater  | 24   | Kamahia             | Lewis        | ID    | NE, SW, SW, SW    | 36      | T34N, R3E      | 46°15'00N, 116°07'30E |
| Clearwater  | 25   | Woodland            | Lewis        | ID    | SW, SE, SE, SE    | 27      | T34N, R3E      | 46°22'30N, 116°07'30E |
| Clearwater  | 26   | Woodland            | Lewis        | ID    | SW, SW, SW, NW    | 17      | T34N, R3E      | 46°22'30N, 116°07'30E |
| Clearwater  | 27   | Sixmile Cr.         | Lewis        | ID    | SE, NE, NE, NE    | 01      | T34N, R2E      | 46°22'30N, 116°15'00E |
| Clearwater  | 28   | Sixmile Cr.         | Lewis        | ID    | SE, SE, SW, NE    | 23      | T35N, R2E      | 46°22'30N, 116°15'00E |
| Clearwater  | 29   | Orofino East        | Lewis        | ID    | SE, NW, NE, SE    | 33      | T36N, R2E      | 46°30'00N, 116°15'00E |
| Clearwater  | 30   | Orofino East        | (Clearwater) | ID    | SW, SE, NW, SE    | 17      | T36N, R2E      | 46°30'00N, 116°15'00E |
| Lower Snake | 01   | Captain John Rapids | Asotin       | WA    | SE, SE, SW, SE    | --      | T9N, R47E      | 46°15'00N, 117°00'00E |
| Lower Snake | 02   | Captain John Rapids | Nez Perce    | ID    | SE, SW, NW, SE    | 08      | T8N, R47E      | 46°15'00N, 117°00'00E |
| Lower Snake | 03   | Captain John Rapids | Asotin       | WA    | NW, SE, NW, SW    | 02      | T32N, R5W      | 46°15'00N, 117°00'00E |
| Lower Snake | 04   | Captain John Rapids | Nez Perce    | ID    | SW, SW, SE, NW    | 32      | T8N, R47E      | 46°15'00N, 117°00'00E |
| Lower Snake | 05   | Limekiln Rpd        | Asotin       | WA    | SW, SE, NW, SE    | 21      | T32N, R5W      | 46°07'30N, 117°00'00E |
| Lower Snake | 06   | Limekiln Rpd        | Nez Perce    | ID    | SE, SW, NE, NE    | 33      | T32N, R5W      | 46°07'30N, 117°00'00E |
| Lower Snake | 07   | Limekiln Rpd        | Asotin       | WA    | SW, NW, NE, SW    | 34      | T32N, R5W      | 46°07'30N, 117°00'00E |
| Lower Snake | 08   | Limekiln Rpd        | Nez Perce    | ID    | SW, SW, NE, SW    | 04      | T6N, R47E      | 46°07'30N, 117°00'00E |
| Lower Snake | 09   | Limekiln Rpd        | Asotin       | WA    | NW, SE, SE, NE    | 26      | T31N, R5W      | 46°07'30N, 117°00'00E |
| Lower Snake | 10   | Jim Cr. Butte       | Nez Perce    | ID    | SE, SW, NE, NW    | 36      | T31N, R5W      | 46°00'00N, 117°00'00E |
| Lower Snake | 11   | Jim Cr. Butte       | Wallowa      | OR    |                   |         |                |                       |
| Lower Snake | 12   | Wapshilla Cr.       | Nez Perce    | ID    | NW, SW, NE, SE    | 36      | T31N, R5W      | 46°00'00N, 117°00'00E |
|             |      |                     | Nez Perce    | ID    | SE, NW, SW, SW    | 29      | T30N, R4W      | 46°00'00N, 116°52'30E |
|             |      |                     | Wallowa      | OR    |                   |         |                |                       |



TABLE A.1. (contd)

| River        | Site | Quadrangle    | County    | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|---------------|-----------|-------|-------------------|---------|-----------------|-----------------------|
| Lower Snake  | 13   | Wapshilla Cr. | Nez Perce | ID    | NW, NW, SE, SW    | 33      | T30N, R4W       | 46°00'00N, 116°52'30E |
| Lower Snake  | 14   | DeadhorseRdge | Wallowa   | OR    | SW, SW, SE, SW    | 11      | T29N, R4W       | 45°52'30N, 116°52'30E |
| Lower Snake  | 15   | DeadhorseRdge | Wallowa   | OR    | NE, NE, SW, SE    | 25      | T29N, R4W       | 45°52'30N, 116°52'30E |
| Lower Snake  | 16   | DeadhorseRdge | Idaho     | ID    | NE, NE, SW, SE    | 25      | T29N, R4W       | 45°52'30N, 116°52'30E |
| Lower Snake  | 17   | Cactus Mtn.   | Wallowa   | OR    | NE, SE, NE, SE    | 28      | T29N, R3W       | 45°52'30N, 116°45'00E |
| Lower Snake  | 18   | Cactus Mtn.   | Idaho     | ID    | SE, SW, NE, NW    | 34      | T29N, R3W       | 45°52'30N, 116°45'00E |
| Lower Snake  | 19   | Cactus Mtn.   | Wallowa   | OR    | SW, SE, SW, NW    | 12      | T28N, R3W       | 45°52'30N, 116°45'00E |
| Lower Snake  | 20   | Wolf Creek    | Idaho     | ID    | SE, SE, NE, NE    | 07      | T28N, R2W       | 45°52'30N, 116°37'30E |
| Lower Snake  | 21   | Wolf Creek    | Wallowa   | OR    | NE, NW, SE, NE    | 04      | T3N, R50E       | 45°52'30N, 116°37'30E |
| Lower Snake  | 22   | Wolf Creek    | Idaho     | ID    | NE, SE, SW, NW    | 15      | T28N, R2W       | 45°52'30N, 116°37'30E |
| Lower Snake  | 23   | Wolf Creek    | Wallowa   | OR    | SE, SE, NW, NW    | 23      | T28N, R2W       | 45°52'30N, 116°37'30E |
| Lower Snake  | 24   | Grave Point   | Idaho     | ID    | NW, NW, NW, NE    | 20      | T2N, R51E       | 45°45'00N, 116°30'00E |
| Lower Snake  | 25   | Grave Point   | Wallowa   | OR    | NE, SW, SW, NE    | 25      | T27N, R1W       | 45°45'00N, 116°30'00E |
| Lower Snake  | 26   | Cuprum 15'    | Adams     | ID    | SE, NW, NE        | 28      | T22N, R3W       | 45°15'00N, 116°45'00E |
| Lower Snake  | 27   | Cuprum 15'    | Wallowa   | OR    | NW, SW, SE        | 33      | T22N, R3W       | 45°15'00N, 116°45'00E |
| Lower Snake  | 28   | Cuprum 15'    | Adams     | ID    | SE, NW, SE        | 08      | T21N, R3W       | 45°15'00N, 116°45'00E |
| Lower Snake  | 29   | Cuprum 15'    | Wallowa   | OR    | SW, SW, SW        | 20      | T21N, R3W       | 45°15'00N, 116°45'00E |
| Lower Snake  | 30   | Kirkwood Cr.  | Adams     | ID    | NW, NE, NE, SW    | 04      | T26N, R1W       | 45°37'30N, 116°30'00E |
| Lower Snake  | 31   | Kirkwood Cr.  | Wallowa   | OR    | NW, NW, NW, NE    | 20      | T26N, R1W       | 45°37'30N, 116°30'00E |
| Middle Snake | 01   | King Hill     | Wallowa   | OR    | SE, NE, NW, SE    | 12      | T5S, R10E       | 43°07'30N, 115°15'00E |
|              |      | Elmore        | Elmore    | ID    |                   |         |                 |                       |

TABLE A.1. (contd)

| River        | Site | Quadrangle      | County                  | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|-----------------|-------------------------|-------|-------------------|---------|-----------------|-----------------------|
| Middle Snake | 02   | Pasadena Valley | Elmore                  | ID    | NE, NW, SW, NE    | 17      | T5S, R11E       | 43°00'00N, 115°15'00E |
| Middle Snake | 03   | Pasadena Valley | Elmore                  | ID    | NW, SE, NW, NW    | 29      | T5S, R11E       | 43°00'00N, 115°15'00E |
| Middle Snake | 04   | Pasadena Valley | Elmore                  | ID    | SW, SW, SW, NE    | 04      | T6S, R11E       | 43°00'00N, 115°15'00E |
| Middle Snake | 05   | Pasadena Valley | Elmore                  | ID    | SE, SE, SW, NW    | 09      | T6S, R11E       | 43°00'00N, 115°15'00E |
| Middle Snake | 06   | Ticeska         | Elmore                  | ID    | NE, NW, NE, NW    | 14      | T6S, R11E       | 43°00'00N, 115°07'30E |
| Middle Snake | 07   | Ticeska         | Elmore                  | ID    | SW, NE, NW, SE    | 07      | T6S, R12E       | 43°00'00N, 115°07'30E |
| Middle Snake | 08   | Ticeska         | Gooding<br>(Twin Falls) | ID    | SW, SW, SW, NW    | 11      | T6S, R12E       | 43°00'00N, 115°07'30E |
| Middle Snake | 09   | Bliss           | Gooding<br>(Twin Falls) | ID    | NW, NE, NE, SE    | 12      | T6S, R12E       | 43°00'00N, 115°00'00E |
| Middle Snake | 10   | Bliss           | Gooding<br>(Twin Falls) | ID    | SE, SW, NW, SE    | 07      | T6S, R13E       | 43°00'00N, 115°00'00E |
| Middle Snake | 11   | Bliss           | Gooding<br>(Twin Falls) | ID    | SE, SW, SW, NE    | 20      | T6S, R13E       | 43°00'00N, 115°00'00E |
| Middle Snake | 12   | Tuttle          | Gooding<br>(Twin Falls) | ID    | SE, NW, SE        | 01      | T8S, R13E       | 42°52'30N, 114°52'30E |
| Middle Snake | 13   | Tuttle          | Gooding<br>(Twin Falls) | ID    | SW, SE, SW, SE    | 06      | T8S, R13E       | 42°52'30N, 114°52'30E |
| Middle Snake | 14   | Hagerman        | Gooding<br>(Twin Falls) | ID    | SW, SE, SW, SW    | 27      | T6S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 15   | Hagerman        | Gooding<br>(Twin Falls) | ID    | SW, NW, NE, SW    | 02      | T7S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 16   | Hagerman        | Gooding<br>(Twin Falls) | ID    | NE, SW, SE, NE    | 16      | T7S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 17   | Hagerman        | Gooding<br>(Twin Falls) | ID    | SW, NW, SW, NE    | 28      | T7S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 18   | Hagerman        | Gooding<br>(Twin Falls) | ID    | NE, NE, SE, SW    | 34      | T7S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 19   | Hagerman        | Gooding<br>(Twin Falls) | ID    | SW, NW, NW, NE    | 02      | T8S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 20   | Hagerman        | Gooding<br>(Twin Falls) | ID    | NE, NE, SE, NE    | 02      | T8S, R13E       | 42°52'30N, 115°00'00E |
| Middle Snake | 21   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID    | NW, NE, NE, NW    | 17      | T8S, R14E       | 42°45'00N, 114°52'30E |
| Middle Snake | 22   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID    | SE, NE, SE, SW    | 17      | T8S, R14E       | 42°45'00N, 114°52'30E |
| Middle Snake | 23   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID    | SW, SW, SW, SW    | 28      | T8S, R14E       | 42°45'00N, 114°52'30E |

TABLE A.1. (contd)

| River        | Site | Quadrangle      | County                  | State ID | Legal Description | Section | Township_Range | Northwest_Map_Corner  |
|--------------|------|-----------------|-------------------------|----------|-------------------|---------|----------------|-----------------------|
| Middle Snake | 24   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID       | NE, NE, SW, NE    | 28      | T8S, R14E      | 42°45'00N, 114°52'30E |
| Middle Snake | 25   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID       | NW, NE, SE, NW    | 33      | T8S, R14E      | 42°45'00N, 114°52'30E |
| Middle Snake | 26   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID       | SW, NW, NW, NE    | 10      | T9S, R14E      | 42°45'00N, 114°52'30E |
| Middle Snake | 27   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID       | NW, SE, SW, SE    | 02      | T9S, R14E      | 42°45'00N, 114°52'30E |
| Middle Snake | 28   | Thousand Spr.   | Gooding<br>(Twin Falls) | ID       | SW, NE, NW, SE    | 01      | T9S, R14E      | 42°45'00N, 114°52'30E |
| Middle Snake | 29   | Niagara Springs | Gooding<br>(Twin Falls) | ID       | NE, NW, NW, SE    | 06      | T9S, R15E      | 42°45'00N, 114°45'00E |
| Middle Snake | 30   | Niagara Springs | Gooding<br>(Twin Falls) | ID       | NW, SW, SE, SW    | 04      | T9S, R15E      | 42°45'00N, 114°45'00E |
| Middle Snake | 31   | Niagara Springs | Gooding<br>(Twin Falls) | ID       | NW, SW, SE, SW    | 04      | T9S, R15E      | 42°45'00N, 114°45'00E |
| Middle Snake | 32   | Niagara Springs | Gooding<br>(Twin Falls) | ID       | SE, NW, SW, NE    | 11      | T9S, R15E      | 42°45'00N, 114°45'00E |
| Middle Snake | 33   | Niagara Springs | Gooding<br>(Twin Falls) | ID       | NW, SE, SW, SW    | 07      | T9S, R16E      | 42°45'00N, 114°45'00E |
| Middle Snake | 34   | Jerome          | Gooding<br>(Twin Falls) | ID       | SW, SE, NE, NE    | 18      | T9S, R16E      | 42°45'00N, 114°37'30E |
| Middle Snake | 35   | Jerome          | Jerome<br>(Twin Falls)  | ID       | SE, NE, NE, NW    | 23      | T9S, R16E      | 42°45'00N, 114°37'30E |
| Middle Snake | 36   | Jerome          | Jerome<br>(Twin Falls)  | ID       | SE, NW, SE, NW    | 24      | T9S, R16E      | 42°45'00N, 114°37'30E |
| Middle Snake | 37   | Jerome          | Jerome<br>(Twin Falls)  | ID       | NW, SE, SW, NE    | 24      | T9S, R16E      | 42°45'00N, 114°37'30E |
| Middle Snake | 38   | Jerome          | Jerome<br>(Twin Falls)  | ID       | SW, SW, NE, SW    | 19      | T9S, R17E      | 42°45'00N, 114°37'30E |
| Middle Snake | 39   | Filer           | Jerome<br>(Twin Falls)  | ID       | SE, NE, NW, NW    | 30      | T9S, R17E      | 42°37'30N, 114°37'30E |
| Middle Snake | 40   | Twin Falls      | Jerome<br>(Twin Falls)  | ID       | NW, SE, SE, NW    | 34      | T9S, R17E      | 42°37'30N, 114°30'00E |
| Middle Snake | 41   | Kimberly        | Jerome<br>(Twin Falls)  | ID       | SW, NE, NE, NW    | 04      | T10S, R18E     | 42°37'30N, 114°22'30E |
| Middle Snake | 42   | Kimberly        | Jerome<br>(Twin Falls)  | ID       | NW, NE, SW, NE    | 10      | T10S, R18E     | 42°37'30N, 114°22'30E |

TABLE A.1. (contd)

| <u>River</u> | <u>Site</u> | <u>Quadrangle</u> | <u>County</u>          | <u>State</u> | <u>Legal Description</u> | <u>Section</u> | <u>Township_Range</u> | <u>Northwest Map Corner</u> |
|--------------|-------------|-------------------|------------------------|--------------|--------------------------|----------------|-----------------------|-----------------------------|
| Middle Snake | 43          | Kimberly          | Jerome<br>(Twin Falls) | ID           | NW, NE, SW, NE           | 10             | T10S, R18E            | 42°37'30N, 114°22'30E       |
| Middle Snake | 44          | Kimberly          | Jerome<br>(Twin Falls) | ID           | NW, SW, NE, SW           | 12             | T10S, R18E            | 42°37'30N, 114°22'30E       |
| Middle Snake | 45          | Kimberly          | Jerome<br>(Twin Falls) | ID           | SW, NE, NE, NW           | 17             | T10S, R19E            | 42°37'30N, 114°22'30E       |
| Middle Snake | 46          | Eden              | Jerome<br>(Twin Falls) | ID           | NE, SW, NW, NW           | 23             | T10S, R19E            | 42°37'30N, 114°15'00E       |
| Middle Snake | 47          | Eden              | Jerome<br>(Twin Falls) | ID           | NW, SW, SE, NE           | 25             | T10S, R19E            | 42°37'30N, 114°15'00E       |
| Middle Snake | 48          | Eden              | Jerome<br>(Twin Falls) | ID           | NE, NE, SE, SW           | 31             | T19S, R20E            | 42°37'30N, 114°15'00E       |
| Middle Snake | 49          | Murtaugh          | Jerome<br>(Twin Falls) | ID           | NE, SW, SE, NW           | 05             | T11S, R20E            | 42°30'00N, 114°15'00E       |
| Middle Snake | 50          | Milner            | Jerome<br>(Twin Falls) | ID           | NE, NW, NE, NE           | 35             | T10S, R20E            | 42°37'30N, 114°07'30E       |
| Middle Snake | 51          | Milner            | Jerome<br>(Twin Falls) | ID           | NE, NW, NE, NE           | 35             | T10S, R20E            | 42°37'30N, 114°07'30E       |
| Henry's Fork | 01          | Menan Buttes      | Madison                | ID           | SE, SE, NW, NE           | 11             | T5N, R38E             | 43°52'30N, 112°00'00E       |
| Henry's Fork | 02          | Menan Buttes      | Madison                | ID           | SE, SE, SW, SE           | 19             | T6N, R39E             | 43°52'30N, 112°00'00E       |
| Henry's Fork | 03          | Parker            | Madison                | ID           | SW, SE, NE, SW           | 34             | T7N, R39E             | 44°00'00N, 111°52'30E       |
| Henry's Fork | 04          | Parker            | Fremont                | ID           | NE, NW, SE, SE           | 24             | T7N, R39E             | 44°00'00N, 111°52'30E       |
| Henry's Fork | 05          | Parker            | Fremont                | ID           | SE, SE, SE, SE           | 18             | T7N, R40E             | 44°00'00N, 111°52'30E       |
| Henry's Fork | 06          | St. Anthony       | Fremont                | ID           | NE, SE, SE, NE           | 10             | T7N, R40E             | 44°00'00N, 111°45'00E       |
| Henry's Fork | 07          | Newdale           | Fremont                | ID           | SW, NE, NW, NE           | 33             | T8N, R41E             | 44°00'00N, 111°37'30E       |
| Henry's Fork | 08          | Lemon Lake        | Fremont                | ID           | SW, SE, NW, SE           | 14             | T8N, R41E             | 44°07'30N, 111°37'30E       |
| Henry's Fork | 09          | Lemon Lake        | Fremont                | ID           | NE, SW, NW, NW           | 05             | T8N, R42E             | 44°07'30N, 111°37'30E       |
| Henry's Fork | 10          | Lemon Lake        | Fremont                | ID           | SW, NW, NW, SE           | 12             | T8N, R41E             | 44°07'30N, 111°37'30E       |
| Henry's Fork | 11          | Lemon Lake        | Fremont                | ID           | NW, NE, NE, NW           | 33             | T9N, R42E             | 44°07'30N, 111°37'30E       |
| Henry's Fork | 12          | Ashton            | Fremont                | ID           | SW, NE, NE, SW           | 13             | T9N, R42E             | 44°07'30N, 111°30'00E       |
| Henry's Fork | 13          | Ashton            | Fremont                | ID           | SW, SW, NE, NW           | 28             | T9N, R42E             | 44°07'30N, 111°30'00E       |
| Henry's Fork | 14          | Ashton            | Fremont                | ID           | NE, SE, NW, NE           | 19             | T9N, R43E             | 44°07'30N, 111°30'00E       |
| Henry's Fork | 15          | Warm River        | Fremont                | ID           | NE, NE, SE, NE           | 14             | T9N, R43E             | 44°07'30N, 111°22'30E       |
| Henry's Fork | 16          | Warm River        | Fremont                | ID           | SW, NE, NE, NW           | 22             | T9N, R43E             | 44°07'30N, 111°22'30E       |
| Henry's Fork | 17          | Snake R Butte     | Fremont                | ID           |                          | NA             | T10N, R44E            | 44°15'00N, 111°22'30E       |
| Henry's Fork | 18          | Snake R Butte     | Fremont                | ID           | NW, SW, NW, SE           | 24             | T10N, R43E            | 44°15'00N, 111°22'30E       |
| Henry's Fork | 19          | Snake R Butte     | Fremont                | ID           | SE, NE, NW, SW           | 13             | T10N, R43E            | 44°15'00N, 111°22'30E       |
| Henry's Fork | 20          | Lookout Butte     | Fremont                | ID           |                          | NA             | T10N, R43E            | 44°15'00N, 111°30'00E       |
| Henry's Fork | 21          | Last Chance       | Fremont                | ID           | NE, NE, NW, NW           | 25             | T12N, R42E            | 44°22'30N, 111°30'00E       |

TABLE A.1. (contd)

| River        | Site | Quadrangle     | County     | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------------|------|----------------|------------|-------|-------------------|---------|-----------------|-----------------------|
| Henry's Fork | 22   | Last Chance    | Fremont    | ID    | SW, SW, NE, SW    | 36      | T12N, R42E      | 44°22'30N, 111°30'00E |
| Henry's Fork | 23   | Last Chance    | Fremont    | ID    | NW, NE, SW, SE    | 01      | T11N, R42E      | 44°22'30N, 111°30'00E |
| Henry's Fork | 24   | Last Chance    | Fremont    | ID    | NE, NW, NW, SE    | 17      | T12N, R43E      | 44°22'30N, 111°30'00E |
| Henry's Fork | 25   | Last Chance    | Fremont    | ID    | SW, NE, NW, NW    | 20      | T12N, R43E      | 44°22'30N, 111°30'00E |
| Henry's Fork | 26   | Last Chance    | Fremont    | ID    | SE, SE, SE, SE    | 11      | T11N, R42E      | 44°22'30N, 111°30'00E |
| Henry's Fork | 27   | Last Chance    | Fremont    | ID    | SW, SE, NW, SW    | 24      | T11N, R42E      | 44°22'30N, 111°30'00E |
| Weiser       | 01   | Fruitvale      | Adams      | ID    | NW, NE, NW, NW    | 15      | T17N, R1W       | 44°52'30N, 116°30'00E |
| Weiser       | 02   | Fruitvale      | Adams      | ID    | SE, SE, SW, NE    | 04      | T16N, R1W       | 44°52'30N, 116°30'00E |
| Weiser       | 03   | Goodrich       | Adams      | ID    | NW, NE, NE, SE    | 10      | T15N, R2W       | 44°45'00N, 116°37'30E |
| Weiser       | 04   | Council        | Adams      | ID    | NW, SE, NW, SE    | 21      | T16N, R1W       | 44°45'00N, 116°30'00E |
| Weiser       | 05   | Council        | Adams      | ID    | NE, SW, SE, NW    | 05      | T15N, R1W       | 44°45'00N, 116°30'00E |
| Weiser       | 06   | Council        | Adams      | ID    | SW, SW, SW, SW    | 03      | T15N, R1W       | 44°45'00N, 116°30'00E |
| Weiser       | 07   | Cambridge      | Washington | ID    | SE, SE, SW, NE    | 01      | T14N, R3W       | 44°37'30N, 116°45'00E |
| Weiser       | 08   | Cambridge      | Washington | ID    | SE, SE, SE, SW    | 27      | T14N, R3W       | 44°37'30N, 116°45'00E |
| Weiser       | 09   | Midvale        | Washington | ID    | SE, SE, NW, NW    | 08      | T13N, R3W       | 44°30'00N, 116°45'00E |
| Weiser       | 10   | Weiser Cove    | Washington | ID    | SW, SW, NE, NE    | 06      | T10N, R4W       | 44°15'00N, 116°52'30E |
| Weiser       | 11   | Weiser South   | Washington | ID    | SE, NE, SE, SW    | 33      | T11N, R5W       | 44°15'00N, 117°00'00N |
| Upper Snake  | 01   | Springfield    | Bingham    | ID    | NE, NE, NE, NE    | 06      | T5S, R33E       | 43°07'30N, 112°45'00E |
| Upper Snake  | 02   | Pingree        | Bingham    | ID    | NW, ---, SE       | 28      | T4S, R33E       | 43°07'30N, 112°37'30E |
| Upper Snake  | 03   | Pingree        | Bingham    | ID    | SW, NW, NE, SE    | 01      | T4S, R33E       | 43°07'30N, 112°37'30E |
| Upper Snake  | 04   | Pingree        | Bingham    | ID    | NW, SE, NW, SE    | 31      | T3S, R33E       | 43°07'30N, 112°37'30E |
| Upper Snake  | 05   | Rockford       | Bingham    | ID    | NE, NW, NW, NE    | 29      | T3S, R34E       | 43°15'00N, 112°37'30E |
| Upper Snake  | 06   | Rockford       | Bingham    | ID    | NE, SW, NW, SW    | 29      | T3S, R34E       | 43°15'00N, 112°37'30E |
| Upper Snake  | 07   | Moreland       | Bingham    | ID    | NW, SE, NW, SW    | 15      | T3S, R34E       | 43°15'00N, 112°30'00E |
| Upper Snake  | 08   | Moreland       | Bingham    | ID    | SE, SW, SE, NE    | 12      | T3S, R34E       | 43°15'00N, 112°30'00E |
| Upper Snake  | 09   | Moreland       | Bingham    | ID    | NW, SE, SE, SE    | 06      | T3S, R34E       | 43°15'00N, 112°30'00E |
| Upper Snake  | 10   | Blackfoot      | Bingham    | ID    | NE, SE, NE, SW    | 23      | T2S, R35E       | 43°15'00N, 112°22'30E |
| Upper Snake  | 11   | Blackfoot      | Bingham    | ID    | SW, SE, NE, SE    | 14      | T2S, R35E       | 43°15'00N, 112°22'30E |
| Upper Snake  | 12   | Rose           | Bingham    | ID    | NW, NE, SE, NE    | 12      | T2S, R35E       | 43°22'30N, 112°22'30E |
| Upper Snake  | 13   | Firth          | Bingham    | ID    | NW, NE, NE, NE    | 34      | T1S, R36E       | 43°22'30N, 112°15'00E |
| Upper Snake  | 14   | Firth          | Bingham    | ID    | NW, SE, SE, NE    | 04      | T2S, R36E       | 43°22'30N, 112°15'00E |
| Upper Snake  | 15   | Firth          | Bingham    | ID    | SE, SE, SW, SE    | 20      | T1S, R36E       | 43°22'30N, 112°15'00E |
| Upper Snake  | 16   | Firth          | Bingham    | ID    | SW, NW, SE, SE    | 36      | T1N, R36E       | 43°22'30N, 112°15'00E |
| Upper Snake  | 17   | Firth          | Bingham    | ID    | NE, NW, NE, NE    | 18      | T1S, R36E       | 43°22'30N, 112°15'00E |
| Upper Snake  | 18   | Woodville      | Bingham    | ID    | SE, NW, SW, SE    | 18      | T1N, R37E       | 43°30'00N, 112°15'00E |
| Upper Snake  | 19   | Woodville      | Bingham    | ID    | SE, NE, SW, SE    | 36      | T1N, R36E       | 43°30'00N, 112°15'00E |
| Upper Snake  | 20   | Idaho Falls S. | Bonneville | ID    | NE, NW, NW, SE    | 03      | T1N, R37E       | 43°30'00N, 112°07'30E |
| Upper Snake  | 21   | Idaho Falls S. | Bonneville | ID    | NW, NW, NE, NW    | 10      | T1N, R37E       | 43°30'00N, 112°07'30E |
| Upper Snake  | 22   | Idaho Falls S. | Bonneville | ID    | SE, SW, NW, NW    | 15      | T1N, R37E       | 43°30'00N, 112°07'30E |

TABLE A.1. (contd)

| <u>River</u> | <u>Site</u> | <u>Quadrangle</u> | <u>County</u>         | <u>State</u> | <u>Legal Description</u> | <u>Section</u> | <u>Township, Range</u> | <u>Northwest Map Corner</u> |
|--------------|-------------|-------------------|-----------------------|--------------|--------------------------|----------------|------------------------|-----------------------------|
| Upper Snake  | 23          | Idaho Falls S.    | Bingham               | ID           | NW, SW, SW, SW           | 16             | T1N, R37E              | 43°30'00N, 112°07'30E       |
| Upper Snake  | 24          | Idaho Falls S.    | Bonneville            | ID           | NE, NE, SW, NE           | 35             | T2N, R37E              | 43°30'00N, 112°07'30E       |
| Upper Snake  | 25          | Idaho Falls N.    | Bonneville            | ID           | SE, NE, SW, SW           | 36             | T3N, R37E              | 43°37'30N, 112°07'30E       |
| Upper Snake  | 26          | Idaho Falls N.    | Bonneville            | ID           | NW, SW, SE, SW           | 13             | T3N, R37E              | 43°37'30N, 112°07'30E       |
| Upper Snake  | 27          | Idaho Falls N.    | Bonneville            | ID           | NW, SW, SE, NW           | 13             | T3N, R37E              | 43°37'30N, 112°07'30E       |
| Upper Snake  | 28          | Lewisville        | Jefferson             | ID           | SE, NW, NE, SW           | 14             | T4N, R37E              | 43°45'00N, 112°07'30E       |
| Upper Snake  | 29          | Lewisville        | Jefferson             | ID           | SE, SW, SE, SW           | 23             | T4N, R37E              | 43°45'00N, 112°07'30E       |
| Upper Snake  | 30          | Lewisville        | Jefferson             | ID           | NE, SW, SE, NE           | 34             | T5N, R37E              | 43°45'00N, 112°07'30E       |
| Upper Snake  | 31          | Lewisville        | Jefferson             | ID           | NE, NE, NE, NW           | 28             | T5N, R37E              | 43°45'00N, 112°07'30E       |
| Upper Snake  | 32          | Deer Parks        | Jefferson             | ID           | NE, SE, NE, NW           | 13             | T5N, R37E              | 43°52'30N, 112°07'30E       |
| Upper Snake  | 33          | Deer Parks        | Jefferson             | ID           | NE, SW, SW, SW           | 17             | T5N, R37E              | 43°52'30N, 112°07'30E       |
| Upper Snake  | 34          | Menan Buttes      | Madison               | ID           | NW, NE, SW, NW           | 22             | T5N, R38E              | 43°52'30N, 112°00'00E       |
| Upper Snake  | 35          | Menan Buttes      | Madison               | ID           | NW, NW, SE, NE           | 13             | T5N, R38E              | 43°52'30N, 112°00'00E       |
| Upper Snake  | 36          | Ririe             | Madison/<br>Jefferson | ID           | NW, SE, SE, SE           | 28             | T5N, R39E              | 43°45'00N, 111°52'30E       |
| Upper Snake  | 37          | Heise             | Jefferson             | ID           | SE, NE, NW, SW           | 25             | T4N, R40E              | 43°45'00N, 111°45'00N       |
| Upper Snake  | 38          | Heise             | Jefferson             | ID           | SE, SE, NW, SE           | 36             | T4N, R40E              | 43°45'00N, 111°45'00N       |
| Salmon       | 01          | Challis 15'       | Custer                | ID           | NW, SW, NW               | 35             | T15N, R19E             | 44°45'00N, 114°15'00E       |
| Salmon       | 02          | Challis 15'       | Custer                | ID           | SE, SE, NW               | 18             | T15N, R20E             | 44°45'00N, 114°15'00E       |
| Salmon       | 03          | Challis 15'       | Custer                | ID           | NE, SW, NE               | 03             | T16N, R20E             | 44°45'00N, 114°15'00E       |
| Salmon       | 04          | Challis 15'       | Custer                | ID           |                          | 24             | T16N, R20E             | 44°45'00N, 114°15'00E       |
| Salmon       | 05          | Allison Cr.       | Lemhi                 | ID           | NE, SW, NE, SE           | 32             | T17N, R21E             | 44°52'30N, 114°00'00E       |
| Salmon       | 06          | Allison Cr.       | Lemhi                 | ID           | SE, SE, SW, SE           | 20             | T17N, R21E             | 44°52'30N, 114°00'00E       |
| Salmon       | 07          | Hat Creek         | Lemhi                 | ID           | NW, NE, SW, NW           | 17             | T17N, R21E             | 44°52'30N, 114°07'30E       |
| Salmon       | 08          | Allison Cr.       | Lemhi                 | ID           | NW, SE, NW, NW           | 09             | T17N, R21E             | 44°52'30N, 114°00'00E       |
| Salmon       | 09          | Allison Cr.       | Lemhi                 | ID           | SW, NE, NE, NE           | 28             | T18N, R21E             | 44°52'30N, 114°00'00E       |
| Salmon       | 10          | Goldburg Ridge    | Lemhi                 | ID           | NW, NE, SW, SW           | 15             | T18N, R21E             | 45°00'00N, 114°00'00E       |
| Salmon       | 11          | Goldburg Ridge    | Lemhi                 | ID           | SW, SW, SE, NE           | 10             | T18N, R21E             | 45°00'00N, 114°00'00E       |
| Salmon       | 12          | Goldburg Ridge    | Lemhi                 | ID           | NE, NE, SW, NE           | 34             | T19N, R21E             | 45°00'00N, 114°00'00E       |
| Salmon       | 13          | Goldburg Ridge    | Lemhi                 | ID           | NE, NE, SW, SW           | 23             | T19N, R21E             | 45°00'00N, 114°00'00E       |
| Salmon       | 14          | Goldburg Ridge    | Lemhi                 | ID           | SE, SW, NW, NE           | 11             | T19N, R21E             | 45°00'00N, 114°00'00E       |
| Salmon       | 15          | Salmon 15'        | Lemhi                 | ID           | SW, SW, NE               | 30             | T19N, R21E             | 45°15'00N, 114°00'00E       |
| Salmon       | 16          | Salmon 15'        | Lemhi                 | ID           | NE, NW, NE               | 07             | T21N, R21E             | 45°15'00N, 114°00'00E       |
| Salmon       | 17          | Salmon 15'        | Lemhi                 | ID           | NE, NE, NE               | 13             | T21N, R21E             | 45°15'00N, 114°00'00E       |
| Salmon       | 18          | Salmon 15'        | Lemhi                 | ID           | SE, SE, SE               | 18             | T22, R22E              | 45°15'00N, 114°00'00E       |
| Salmon       | 19          | Bird Creek        | Lemhi                 | ID           | SW, NE, SE, SW           | 06             | T22N, R22E             | 45°22'30N, 114°00'00E       |
| Salmon       | 20          | Bird Creek        | Lemhi                 | ID           | NW, NE, SE, SE           | 30             | T23N, R22E             | 45°22'30N, 114°00'00E       |
| Salmon       | 21          | Bird Creek        | Lemhi                 | ID           | SE, SW, SE, NW           | 19             | T23N, R22E             | 45°22'30N, 114°00'00E       |
| Salmon       | 22          | Bird Creek        | Lemhi                 | ID           | NE, SW, NE, SW           | 12             | T23N, R21E             | 45°22'30N, 114°00'00E       |

TABLE A.1. (contd)

| River  | Site | Quadrangle      | County | State | Legal Description | Section | Township, Range | Northwest Map Corner  |
|--------|------|-----------------|--------|-------|-------------------|---------|-----------------|-----------------------|
| Salmon | 23   | Bird Creek      | Lemhi  | ID    | NE, SE, NE, SE    | 34      | T24N, R21E      | 45°22'30N, 114°00'00E |
| Salmon | 24   | North Fork      | Lemhi  | ID    | NW, SE, SE, SW    | 22      | T24N, R21E      | 45°30'00N, 114°00'00E |
| Salmon | 25   | Ulysses Mt. 15' | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°15'00E |
| Salmon | 26   | Ulysses Mt. 15' | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°15'00E |
| Salmon | 27   | Ulysses Mt. 15' | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°15'00E |
| Salmon | 28   | Shoup 15'       | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°30'00E |
| Salmon | 29   | Shoup 15'       | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°30'00E |
| Salmon | 30   | Shoup 15'       | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°30'00E |
| Salmon | 31   | Long Tom Mt.    | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°37'30E |
| Salmon | 32   | Long Tom Mt.    | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°37'30E |
| Salmon | 33   | Long Tom Mt.    | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°37'30E |
| Salmon | 34   | Long Tom Mt.    | Lemhi  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°37'30E |
| Salmon | 35   | Butts Cr. Pt.   | Idaho  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°45'00E |
| Salmon | 36   | Butts Cr. Pt.   | Idaho  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°45'00E |
| Salmon | 37   | Butts Cr. Pt.   | Idaho  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°45'00E |
| Salmon | 38   | Butts Cr. Pt.   | Idaho  | ID    | NW, SE, SE, NW    | 01      | T23N, R14E      | 45°22'30N, 114°45'00E |
| Salmon | 39   | Square Top      | Idaho  | ID    | not surveyed      | NA      | NA              | 45°22'30N, 114°45'00E |
| Salmon | 40   | Deadhorse Ridge | Idaho  | ID    | not surveyed      | NA      | NA              | 45°30'00N, 114°45'00E |
| Salmon | 41   | Rattlesnake R   | Idaho  | ID    | SE, NE, SE, SW    | 29      | T30N, R3W       | 46°00'00N, 116°45'00E |
| Salmon | 42   | Wapshilla Cr.   | Idaho  | ID    | SE, SW, SE, NW    | 18      | T30N, R3W       | 46°00'00N, 116°52'30E |
| Salmon | 43   | Rattlesnake R   | Idaho  | ID    | NE, SE, SW, SE    | 32      | T30N, R3W       | 46°00'00N, 116°45'00E |
| Salmon | 44   | Rattlesnake R   | Idaho  | ID    | SW, NE, SE, SE    | 06      | T31N, R3W       | 46°00'00N, 116°45'00E |
| Salmon | 45   | Rattlesnake R   | Idaho  | ID    | NE, SE, SE, SE    | 26      | T31N, R3W       | 46°00'00N, 116°45'00E |
| Salmon | 46   | Rattlesnake R   | Idaho  | ID    | SW, NW, NW, SW    | 27      | T31N, R3W       | 46°00'00N, 116°45'00E |
| Salmon | 47   | Hoover Pt.      | Idaho  | ID    | SE, NE, SE, SW    | 07      | T31N, R2W       | 46°00'00N, 116°45'00E |
| Salmon | 48   | Hoover Pt.      | Idaho  | ID    | NE, SE, SW, NE    | 24      | T31N, R3W       | 46°07'30N, 116°45'00E |
| Salmon | 49   | Westlake        | Idaho  | ID    | SE, SE, NW, NW    | 17      | T31N, R2W       | 46°07'30N, 116°45'00E |
| Salmon | 50   | Boles           | Idaho  | ID    | NW, NE, SW, NW    | 01      | T30N, R2W       | 46°00'00N, 116°37'30E |
| Salmon | 51   | Boles           | Idaho  | ID    | SW, SE, SE, NW    | 34      | T31N, R2W       | 46°00'00N, 116°37'30E |
| Salmon | 52   | Burgdorf 15'    | Idaho  | ID    | SE, SW, NW, --    | 09      | T24N, R4E       | 45°30'00N, 116°00'00E |
| Salmon | 53   | Kelly Min.      | Idaho  | ID    | SW, NE, NW, NW    | 18      | T24N, R4E       | 45°30'00N, 116°07'30E |
| Salmon | 54   | Kelly Min.      | Idaho  | ID    | NW, NE, SE, SE    | 20      | T24N, R3E       | 45°30'00N, 116°07'30E |
| Salmon | 55   | Kelly Min.      | Idaho  | ID    | SW, NE, SE, SW    | 20      | T24N, R3E       | 45°30'00N, 116°07'30E |
| Salmon | 56   | RigginsHot Spr. | Idaho  | ID    | SW, SE, NE, NE    | 19      | T24N, R3E       | 45°30'00N, 116°15'00E |
| Salmon | 57   | RigginsHot Spr. | Idaho  | ID    | SE, NE, NE, SE    | 14      | T24N, R2E       | 45°30'00N, 116°15'00E |
| Salmon | 58   | RigginsHot Spr. | Idaho  | ID    | SW, NW, SE, SE    | 21      | T24N, R3E       | 45°30'00N, 116°15'00E |
| Salmon | 59   | RigginsHot Spr. | Idaho  | ID    | NE, NE, NW, SW    | 18      | T24N, R2E       | 45°30'00N, 116°22'30E |
| Salmon | 60   | RigginsHot Spr. | Idaho  | ID    | NE, NW, NE, NE    | 22      | T24N, R1E       | 45°30'00N, 116°22'30E |
| Salmon | 61   | RigginsHot Spr. | Idaho  | ID    | SE, NE, NW, SE    | 10      | T24N, R1E       | 45°30'00N, 116°22'30E |

TABLE A.1. (contd)

| River   | Site | Quadrangle            | County | State | Legal Description | Section | Township_Range | Northwest Map Corner  |
|---------|------|-----------------------|--------|-------|-------------------|---------|----------------|-----------------------|
| Salmon  | 62   | RigginsHot Spr.       | Idaho  | ID    | NE, SW, SW, NW    | 02      | T24N, R1E      | 45°30'00N, 116°22'30E |
| Salmon  | 63   | RigginsHot Spr.       | Idaho  | ID    | SW, NE, NW, SE    | 22      | T25N, R1E      | 45°30'00N, 116°22'30E |
| Salmon  | 64   | Lucile                | Idaho  | ID    | SW, SE, NE, SW    | 11      | T25N, R1E      | 45°37'30N, 116°22'30E |
| Salmon  | 65   | Lucile                | Idaho  | ID    | NW, NW, NW, SW    | 02      | T25N, R1E      | 45°37'30N, 116°22'30E |
| Salmon  | 66   | Lucile                | Idaho  | ID    | SW, SE, NE, SW    | 26      | T26N, R1E      | 45°37'30N, 116°22'30E |
| Salmon  | 67   | Lucile                | Idaho  | ID    | SW, NW, NE, SE    | 14      | T26N, R1E      | 45°37'30N, 116°22'30E |
| Salmon  | 68   | Lucile                | Idaho  | ID    | NE, SW, SW, NE    | 12      | T26N, R1E      | 45°37'30N, 116°22'30E |
| Salmon  | 69   | Slate Creek           | Idaho  | ID    | SW, NE, NW, SE    | 23      | T27N, R1E      | 45°45'00N, 116°22'30E |
| Salmon  | 70   | Slate Creek           | Idaho  | ID    | SW, SE, SW, SW    | 35      | T27N, R1E      | 45°45'00N, 116°22'30E |
| Salmon  | 71   | Slate Creek           | Idaho  | ID    | SW, NE, NE, NE    | 15      | T27N, R1E      | 45°45'00N, 116°22'30E |
| Salmon  | 72   | Slate Creek           | Idaho  | ID    | SE, SW, SW, SE    | 34      | T28N, R1E      | 45°45'00N, 116°22'30E |
| Salmon  | 73   | Slate Creek           | Idaho  | ID    | SE, NW, SW, SW    | 22      | T28N, R1E      | 45°45'00N, 116°22'30E |
| Salmon  | 74   | White Bird            | Idaho  | ID    | NW, NE, SW, NW    | 15      | T28N, R1E      | 45°52'30N, 116°22'30E |
| Salmon  | 75   | White Bird            | Idaho  | ID    | NW, NW, NW, NE    | 03      | T28N, R1E      | 45°52'30N, 116°22'30E |
| Salmon  | 76   | Fenn                  | Idaho  | ID    | NE, SW, SE, SE    | 33      | T30N, R1E      | 46°00'00N, 116°22'30E |
| Salmon  | 77   | Fenn                  | Idaho  | ID    | SE, NW, SE, NE    | 31      | T30N, R1E      | 46°00'00N, 116°22'30E |
| Payette | 01   | Garden Valley         | Boise  | ID    | NE, NE, SE        | 32      | T9E, R6E       | 44°15'00N, 116°00'00E |
| Payette | 02   | Garden Valley         | Boise  | ID    | NW, SW, NW        | 01      | T9E, R5E       | 45°15'00N, 116°00'00E |
| Payette | 03   | Garden Valley         | Boise  | ID    | SW, SE, NW        | 32      | T11N, R5E      | 44°15'00N, 116°00'00E |
| Payette | 04   | Garden Valley         | Boise  | ID    | NE, SW, NE        | 23      | T10N, R4E      | 44°15'00N, 116°00'00E |
| Payette | 05   | Garden Valley         | Boise  | ID    | NW, SW, NE        | 09      | T8N, R53       | 44°15'00N, 116°00'00E |
| Payette | 06   | Garden Valley         | Boise  | ID    | SE, NE, NW        | 10      | T9N, R4E       | 44°15'00N, 116°00'00E |
| Payette | 07   | Banks                 | Boise  | ID    | SE, NE, SW, NE    | 30      | T9N, R4E       | 44°07'30N, 116°07'30E |
| Payette | 08   | PackerJohnMtn. Valley | Boise  | ID    | SW, SE, SE, NE    | 33      | T11N, R3E      | 44°15'00N, 116°07'30E |
| Payette | 09   | PackerJohnMtn. Valley | Boise  | ID    | SE, NE, SE, NW    | 09      | T10N, R3E      | 44°15'00N, 116°07'30E |
| Payette | 10   | PackerJohnMtn. Valley | Boise  | ID    | SE, NE, SW, SW    | 16      | T10N, R3E      | 44°15'00N, 116°07'30E |
| Payette | 11   | PackerJohnMtn. Valley | Boise  | ID    | NE, SW, SE, NE    | 29      | T10N, R3E      | 44°15'00N, 116°07'30E |
| Payette | 12   | Banks                 | Boise  | ID    | SW, SW, NW, SE    | 16      | T9N, R3E       | 44°07'30N, 116°07'30E |
| Payette | 13   | Banks                 | Boise  | ID    | SE, SE, NE, SE    | 29      | T9N, R3E       | 44°07'30N, 116°07'30E |
| Payette | 14   | Dry Back Valley       | Boise  | ID    | SW, NE, NE, SE    | 24      | T8N, R3E       | 44°07'30N, 116°15'00E |
| Payette | 15   | Horseshoe Bnd         | Boise  | ID    | NE, NE, NE, SW    | 35      | T8N, R2E       | 44°00'00N, 116°15'00E |
| Payette | 16   | Horseshoe Bnd         | Boise  | ID    | SW, NE, NE, SE    | 15      | T7N, R2E       | 44°00'00N, 116°15'00E |
| Payette | 17   | Horseshoe Bnd         | Boise  | ID    | SE, SW, NW, NE    | 34      | T7N, R2E       | 44°00'00N, 116°15'00E |
| Payette | 18   | Horseshoe Bnd         | Boise  | ID    | SE, SE, NW, NW    | 32      | T7N, R2E       | 44°00'00N, 116°15'00E |
| Payette | 19   | Montour 15'           | Boise  | ID    | NW, NE, SE        | 25      | T7N, R1E       | 44°00'00N, 116°30'00E |
| Payette | 20   | Montour 15'           | Boise  | ID    | SW, SE, NE        | 21      | T7N, R1E       | 44°00'00N, 116°30'00E |
| Payette | 21   | NE Emmet              | Gem    | ID    | SW, SE, SE, NW    | 22      | T7N, R1W       | 44°00'00N, 116°30'00E |
| Payette | 22   | NE Emmet              | Gem    | ID    | NW, NE, NE, NW    | 22      | T7N, R1W       | 44°00'00N, 116°30'00E |



TABLE A.1. (contd)

| <u>River</u> | <u>Site</u> | <u>Quadrangle</u> | <u>County</u> | <u>State</u> | <u>Legal Description</u> | <u>Section</u> | <u>Township, Range</u> | <u>Northwest Map Corner</u> |
|--------------|-------------|-------------------|---------------|--------------|--------------------------|----------------|------------------------|-----------------------------|
| Payette      | 23          | NE Emmet          | Gem           | ID           | NE, NE, NE, NE           | 33             | T7N, R1W               | 44°00'00N, 116°30'00E       |
| Payette      | 24          | NE Emmet          | Gem           | ID           | NW, NW, SE, NE           | 05             | T7N, R1W               | 44°00'00N, 116°30'00E       |
| Payette      | 25          | NW Emmet          | Gem           | ID           | NW, SE, SW, SE           | 04             | T6N, R2W               | 44°00'00N, 116°37'30E       |
| Payette      | 26          | NW Emmet          | Gem           | ID           | SW, SW, SW, SE           | 31             | T6N, R2W               | 44°00'00N, 116°37'30E       |
| Payette      | 27          | Letha             | Gem           | ID           | SE, NE, SW, SW           | 31             | T7N, R2W               | 44°00'00N, 116°45'00E       |
| Payette      | 28          | Letha             | Gem           | ID           | SE, NW, NE, SW           | 36             | T7N, R3W               | 44°00'00N, 116°45'00E       |
| Payette      | 29          | Letha             | Gem           | ID           | NE, SW, NW, SW           | 16             | T7N, R3W               | 44°00'00N, 116°45'00E       |
| Payette      | 30          | Letha             | Payette       | ID           | NW, SW, SE, SE           | 08             | T7N, R3W               | 44°00'00N, 116°45'00E       |
| Payette      | 31          | New Plymouth      | Payette       | ID           | SE, NW, SE, NE           | 02             | T7N, R4W               | 44°00'00N, 116°52'30E       |
| Payette      | 32          | New Plymouth      | Payette       | ID           | SW, NW, SE, NE           | 34             | T8N, R4W               | 44°00'00N, 116°52'30E       |
| Payette      | 33          | Birding Island    | Payette       | ID           | SW, NW, SW, SE           | 20             | T8N, R4W               | 44°07'30N, 116°52'30E       |
| Payette      | 34          | Payette           | Payette       | ID           | SW, SW, SW, SW           | 13             | T8N, R5W               | 44°07'30N, 117°00'00E       |
| Payette      | 35          | Payette           | Payette       | ID           | SW, NE, SE, SW           | 10             | T8N, R47E              | 44°07'30N, 117°00'00E       |
| Payette      | 36          | Payette           | Payette       | ID           | SW, NW, NE, NE           | 04             | T17S, R47E             | 44°07'30N, 117°00'00E       |

APPENDIX B

COLLECTION INFORMATION FOR THE  
COLUMBIA PEBBLESNAIL *Fluminicola columbiana*  
AND SHORTFACE LANS *Fisherola nuttalli*

## APPENDIX B

### COLLECTION INFORMATION FOR THE COLUMBIA PEBBLESNAIL *Fluminicola columbiana* AND SHORTFACE LANX *Fisherola nuttalli*

More than 500 locations on more than 30 streams were considered as collection sites during our 1988 through 1991 surveys. Table B.1 lists the river name, site number, collection method, a "yes/no" indication as to the occurrence of Columbia pebblesnail and shortface lanx, a list of the other molluscs collected at the site, and our comments about the condition of the environment at the site. The other molluscs collected at these sites are listed in Table B.1 as numbers. The taxonomic identification code to these numbers is listed in Table B.2. The site numbers correspond with, and can be used when referring to, the location information in Appendix A. The location includes the river name, site number, quadrangle, county, state, legal description, section number, township, range, and northwest map corner.

TABLE B.1. Collection Information for the Columbia Pebblesnail *Fluminicola columbiana* and Shortface Lanx *Fisherola nuttalli*, 1988 Through 1991 Survey Sites

| <u>Location</u> | <u>Site</u> | <u>Method</u> | <u><i>E. columbiana</i></u> | <u><i>E. nuttalli</i></u> | <u>Other Molluscs</u>      | <u>Comments</u>   |
|-----------------|-------------|---------------|-----------------------------|---------------------------|----------------------------|---|
| Wenatchee       | 01          | Collection    | No                          | No                        | 30,38                      | Mobile bottom habitat                                       |
| Wenatchee       | 02          | Visual        |                             |                           |                            | Human modification  |
| Wenatchee       | 03          | Collection    | No                          | No                        | 30,38                      | Mobile bottom habitat                                       |
| Wenatchee       | 04          | Collection    | No                          | No                        | 38                         | Lumber mill pollution                                       |
| Wenatchee       | 05          | Collection    | No                          | No                        | 13,30,38                   | Lumber mill pollution; juveniles only for pebblesnail; rare |
| Wenatchee       | 06          | Collection    | No                          | No                        | (2),5,6,13,20,30,38        | Lumber mill pollution; full ontogeny for pebblesnail; rare  |
| Wenatchee       | 07          | Collection    | No                          | No                        |                            | Bridge construction; no live molluscs                       |
| Wenatchee       | 08          | Collection    | No                          | No                        |                            | Lumber mill pollution; sewage                               |
| Wenatchee       | 09          | Collection    | No                          | No                        | (2),20,26,38               | Lumber mill pollution; sewage                               |
| Wenatchee       | 10          | Collection    | No                          | No                        | 30                         | Silt bottom   |
| Wenatchee       | 11          | Collection    | No                          | No                        | 24,30                      | Silt bottom   |
| Entiat          | 01          | Skipped       |                             |                           |                            | Silt bottom   |
| Entiat          | 02          | Collection    | No                          | No                        | 30,38                      | Good habitat  |
| Entiat          | 03          | Collection    | No                          | No                        | 5,6,20,30,38               | Mud bottom; Columbia River influence                        |
| Okanogan        | 01          | Collection    | Yes                         | No                        | 10,30,38                   | Good habitat  |
| Okanogan        | 02          | Collection    | Yes                         | No                        | 10,30,38                   | Good habitat  |
| Okanogan        | 03          | Skipped       |                             |                           |                            | Potential habitat; small spillway; mud bottom               |
| Okanogan        | 04          | Collection    | No                          | No                        | 5,30,38                    | Human modification  |
| Okanogan        | 05          | Visual        |                             |                           |                            | Good potential  |
| Okanogan        | 06          | Visual        |                             |                           |                            | Good potential  |
| Okanogan        | 07          | Visual        |                             |                           |                            | Good potential  |
| Okanogan        | 08          | Visual        |                             |                           |                            | Good potential  |
| Okanogan        | 09          | Collection    | Yes                         | Yes                       | 3, 4, 5, 6, 10, 20, 32, 38 | Good site   |
| Okanogan        | 10          | Skipped       |                             |                           |                            | Good potential  |
| Okanogan        | 11          | Skipped       |                             |                           |                            | Good potential  |
| Okanogan        | 12          | Skipped       |                             |                           |                            | Good potential  |
| Okanogan        | 13          | Collection    | Yes                         | Yes                       | (2),3,(4),5,6,10,30,38     | Very good site  |
| Okanogan        | 14          | Collection    | Yes                         | Yes                       |                            | Very good site  |
| Okanogan        | 15          | Skipped       |                             |                           |                            | Columbia River backwater                                    |
| Okanogan        | 16          | Skipped       |                             |                           |                            | Columbia River backwater                                    |
| Okanogan        | 17          | Skipped       |                             |                           |                            | Columbia River backwater                                    |
| Okanogan        | 18          | Collection    | No                          | No                        | 3                          | Mud and organic debris; juvenile <i>G. angulata</i> only    |
| Methow          | 01          | Skipped       |                             |                           |                            | Should have Columbia pebblesnail                            |
| Methow          | 03          | Skipped       |                             |                           |                            | Should have Columbia pebblesnail                            |
| Methow          | 04          | Skipped       |                             |                           |                            | Should have Columbia pebblesnail                            |

TABLE B.1. (contd)

| Location | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs     | Comments  |
|----------|------|------------|----------------------|--------------------|--------------------|---|
| Methow   | 05   | Skipped    |                      |                    |                    | Should be Columbia pebblesnail  |
| Methow   | 06   | Collection | Yes                  | No                 | 30,38              | Comparatively sparse population   |
| Methow   | 07   | Collection | Yes                  | No                 | 30,38              | Comparatively sparse population   |
| Methow   | 08   | Collection | Yes                  | Yes                | 20, 30, 38         | shortface lanx rare   |
| Methow   | 09   | Skipped    |                      |                    |                    | Should be good for both   |
| Methow   | 10   | Skipped    |                      |                    |                    | Should be good for both   |
| Methow   | 11   | Skipped    |                      |                    |                    | Should be good for both   |
| Methow   | 12   | Collection | Yes                  | Yes                | 30,38              | Shortface lanx rare; full ontogeny for Columbia pebblesnail; adults only for shortface lanx |
| Methow   | 13   | Collection | Yes                  | Yes                | 30                 | Shortface lanx rare; juveniles only; full ontogeny for Columbia pebblesnail                 |
| Methow   | 14   | Collection | No                   | No                 | 5,6,30,34,38       | Sandy; Columbia River influence   |
| Nespelem | 01   | Collection | No                   | No                 | 30                 | Mud; too warm   |
| Nespelem | 02   | Collection | No                   | No                 | 38                 | Mud; too warm   |
| Nespelem | 03   | Collection | No                   | No                 | 30,38              | Mud; too warm   |
| Nespelem | 04   | Collection | No                   | No                 | 30                 | Mud; too warm   |
| Nespelem | 05   | Collection | No                   | No                 | 30                 | Mud; too warm   |
| Sanpoil  | 01   | Visual     |                      |                    |                    | Pollution from old lumber mill  |
| Sanpoil  | 02   | Visual     |                      |                    |                    | Pollution from old lumber mill  |
| Sanpoil  | 03   | Visual     |                      |                    |                    | Pollution from old lumber mill  |
| Sanpoil  | 04   | Collection | No                   | No                 | (4),5,6,30,38      | Pollution from old lumber mill  |
| Sanpoil  | 05   | Collection | No                   | No                 | 30,38              | Pollution from old lumber mill  |
| Sanpoil  | 06   | Collection | No                   | No                 | 30                 | Pollution from old lumber mill  |
| Sanpoil  | 07   | Skipped    | No                   | No                 |                    | Pollution from old lumber mill  |
| Sanpoil  | 08   | Skipped    | No                   | No                 |                    | Back flooding from Columbia River   |
| Colville | 01   | Skipped    | No                   | No                 |                    | Back flooding from Columbia River   |
| Colville | 02   | Skipped    | No                   | No                 |                    | Back flooding from Columbia River   |
| Colville | 03   | Skipped    | No                   | No                 |                    | Back flooding from Columbia River   |
| Cowlitz  | 01   | Skipped    |                      |                    |                    | Back flooding from Columbia River   |
| Cowlitz  | 02   | Collection | No                   | No                 | 5,6,10,17,18,30,38 | Possible  |
| Cowlitz  | 03   | Collection | No                   | No                 | 10,30,38           | Good mollusc habitat  |
| Cowlitz  | 04   | Collection | No                   | No                 | 5,6,10,30          | Good mollusc habitat  |
| Cowlitz  | 05   | Visual     |                      |                    |                    | Good mollusc habitat  |
| Lewis    | 01   | Collection | No                   | No                 | 38                 | Scour   |
| Lewis    | 02   | Collection | No                   | No                 | 10,18              | Scour   |
| Lewis    | 03   | Skipped    |                      |                    |                    | Possible good habitat   |
| Lewis    | 04   | Skipped    |                      |                    |                    | Possible good habitat   |
| Lewis    | 05   | Skipped    |                      |                    |                    | Possible good habitat   |

TABLE B.1. (contd)

| <u>Location</u> | <u>Site</u> | <u>Method</u> | <u><i>E. columbiana</i></u> | <u><i>E. nuttalli</i></u> | <u>Other Molluscs</u> | <u>Comments</u>                                     |
|-----------------|-------------|---------------|-----------------------------|---------------------------|-----------------------|---|
| Lewis           | 06          | Skipped       |                             |                           |                       | Possible good habitat                               |
| Lewis           | 07          | Collection    | No                          | No                        | 10,30,38              | Columbia River backwater                            |
| Lewis           | 08          | Collection    | No                          | No                        | 10,30,38              | Good Habitat  |
| Lewis           | 09          | Collection    | No                          | No                        |                       | Columbia River backwater; no live molluscs seen     |
| Wind            | 01          | Visual        | No                          | No                        | 30                    | Columbia River backwater; no live molluscs seen     |
| Wind            | 02          | Collection    | No                          | No                        | 30,38                 | Columbia River backwater; no live molluscs seen     |
| Wind            | 03          | Collection    | No                          | No                        | 30,38                 | Whitewater  |
| Wind            | 04          | Collection    | No                          | No                        | 38                    | Whitewater  |
| Wind            | 05          | Visual        |                             |                           |                       | Whitewater  |
| Wind            | 06          | Visual        |                             |                           |                       | Columbia River backwater                            |
| White Salmon    | 01          | Skipped       |                             |                           |                       | Lumber mill pollution; siltation from deforestation |
| White Salmon    | 02          | Collection    | No                          | No                        | 30,38                 | Lumber mill pollution; siltation from deforestation |
| White Salmon    | 03          | Collection    | No                          | No                        | 38                    | Lumber mill pollution; siltation from deforestation |
| White Salmon    | 04          | Skipped       |                             |                           |                       | Columbia River backwater                            |
| Klickitat       | 01          | Visual        | No                          | No                        | 30,38                 | Glacial flour                                       |
| Klickitat       | 02          | Collection    |                             |                           |                       | Glacial flour                                       |
| Klickitat       | 03          | Visual        |                             |                           |                       | Glacial flour                                       |
| Klickitat       | 04          | Visual        |                             |                           |                       | Glacial flour                                       |
| Klickitat       | 05          | Visual        |                             |                           |                       | Glacial flour                                       |
| Klickitat       | 06          | Visual        |                             |                           |                       | Glacial flour                                       |
| Klickitat       | 07          | Collection    | No                          | No                        | 30                    | Glacial flour                                       |
| Klickitat       | 08          | Collection    | No                          | No                        |                       | No live molluscs seen; Lumber mill pollution        |
| Klickitat       | 09          | Collection    | No                          | No                        |                       | No live molluscs seen; Lumber mill pollution        |
| Klickitat       | 10          | Collection    | No                          | No                        |                       | No live molluscs seen; Lumber mill pollution        |
| Klickitat       | 11          | Skipped       |                             |                           |                       | Lumber mill pollution                               |
| Klickitat       | 12          | Skipped       |                             |                           |                       | Lumber mill pollution                               |
| Klickitat       | 13          | Collection    | No                          | No                        |                       | Lumber mill pollution                               |
| Klickitat       | 14          | Collection    | No                          | No                        |                       | Lumber mill pollution                               |
| Klickitat       | 15          | Collection    | No                          | No                        |                       | Lumber mill pollution; Columbia River backwater     |
| Palouse         | 01          | Collection    | No                          | No                        | 30,38                 | poor mollusc habitat; agricultural runoff           |
| Palouse         | 02          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 03          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 04          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 05          | Collection    | No                          | No                        | 30                    | poor mollusc habitat; agricultural runoff           |
| Palouse         | 06          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 07          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 08          | Skipped       |                             |                           |                       | poor mollusc habitat; agricultural runoff           |
| Palouse         | 09          | Collection    | No                          | No                        | 20,30,38              | poor mollusc habitat; agricultural runoff           |

TABLE B.1. (contd)

| Location       | Site | Method     | <i>F. columbiana</i> | <i>F. nuttalli</i> | Other Molluscs | Comments  |
|----------------|------|------------|----------------------|--------------------|----------------|---|
| Palouse        | 10   | Skipped    |                      |                    |                | poor mollusc habitat; agricultural runoff                               |
| Palouse        | 11   | Skipped    |                      |                    |                | poor mollusc habitat; agricultural runoff                               |
| Palouse        | 12   | Skipped    |                      |                    |                | poor mollusc habitat; agricultural runoff                               |
| Palouse        | 13   | Skipped    |                      |                    |                | poor mollusc habitat; agricultural runoff                               |
| Palouse        | 14   | Visual     |                      |                    |                | Possible good habitat   |
| Palouse        | 15   | Visual     |                      |                    |                | Possible good habitat   |
| Palouse        | 16   | Skipped    |                      |                    |                | Possible good habitat   |
| (Cow Creek)    | 17   | Skipped    |                      |                    |                | Possible good habitat   |
| (Cow Creek)    | 01   | Collection | ?                    | Yes                | 12,30          | Possible Columbia pebblesnail; complete ontogeny for <i>F. nuttalli</i> |
| Grande Ronde   | 02   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 03   | Collection | No                   | No                 | 12,30          | Should be like site 1   |
| (Joseph Creek) | 04   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 05   | Collection | ?                    | Yes                | 12,30,38       | Should be like site 1   |
| Grande Ronde   | 06   | Skipped    |                      |                    |                | <i>F. Nuttalli</i> rare; possible Columbia pebblesnail                  |
| Grande Ronde   | 07   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 08   | Collection | No                   | Yes                | 12,30          | Should be like site 1   |
| Grande Ronde   | 09   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 10   | Skipped    |                      |                    |                | Same as site 5; shortface lanx rare; complete ontogeny                  |
| Grande Ronde   | 11   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 12   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 13   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 14   | Skipped    |                      |                    |                | Should be like site 1   |
| Grande Ronde   | 15   | Collection | ?                    | No                 | 12             | Possible Columbia pebblesnail   |
| Grande Ronde   | 16   | Visual     |                      |                    |                | Good habitat  |
| Grande Ronde   | 17   | Visual     |                      |                    |                | Good habitat  |
| Grande Ronde   | 18   | Collection | No                   | No                 | 5,6,10,30,33   | Good habitat  |
| (Wenaha)       | 19   | Visual     |                      |                    |                | Good habitat  |
| Grande Ronde   | 20   | Visual     |                      |                    |                | Good habitat  |
| Grande Ronde   | 21   | Collection | No                   | No                 | 12,30,38       | Good mollusc habitat  |
| Walla Walla    | 01   | Collection | No                   | No                 | 30,38          | Agricultural impact   |
| Walla Walla    | 02   | Visual     |                      |                    |                | Agricultural impact   |
| Walla Walla    | 03   | Collection | No                   | No                 | 30,38          | Agricultural impact   |
| Walla Walla    | 04   | Collection | No                   | No                 | 30,38          | Agricultural impact   |

TABLE B.1. (contd)

| Location    | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs                    | Comments  |
|-------------|------|------------|----------------------|--------------------|-----------------------------------|---|
| Walla Walla | 05   | Visual     |                      |                    |                                   | Agricultural impact                                   |
| Walla Walla | 06   | Visual     |                      |                    |                                   | Agricultural impact                                   |
| Walla Walla | 07   | Collection | No                   | No                 | 30,38                             | Agricultural impact                                   |
| Walla Walla | 08   | Collection | No                   | No                 | 30,38                             | Agricultural impact                                   |
| Walla Walla | 09   | Skipped    |                      |                    |                                   | Agricultural impact                                   |
| Walla Walla | 10   | Skipped    |                      |                    |                                   | Agricultural impact                                   |
| Walla Walla | 11   | Collection | No                   | No                 | 30,38                             | Agricultural impact                                   |
| Walla Walla | 12   | Skipped    |                      |                    |                                   | Agricultural impact                                   |
| Walla Walla | 13   | Collection | No                   | No                 | 30,38                             | Agricultural impact                                   |
| Tucannon    | 01   | Collection | No                   | No                 | 5,10,30,38                        | Agricultural impact; <i>Fluminicola</i> sp. long dead |
| Tucannon    | 02   | Collection | No                   | No                 | 30,38                             | Agricultural impact                                   |
| Tucannon    | 03   | Visual     |                      |                    |                                   | Agricultural impact                                   |
| Tucannon    | 04   | Collection | No                   | No                 | 30                                | Agricultural impact                                   |
| Hood        | 01   | Collection | No                   | No                 |                                   | Glacial flour; no live molluscs seen                  |
| Hood        | 02   | Collection | No                   | No                 |                                   | Glacial flour; no live molluscs seen                  |
| Hood        | 03   | Collection | No                   | No                 | 30                                | Glacial flour   |
| Hood        | 04   | Collection | No                   | No                 |                                   | Irrigation return; no live molluscs seen              |
| Deschutes   | 01   | Collection | No                   | No                 |                                   | Sewage pollution; no live molluscs seen               |
| Deschutes   | 02   | Visual     |                      |                    |                                   | Same as site 1  |
| Deschutes   | 03   | Visual     |                      |                    |                                   | Same as site 1  |
| Deschutes   | 04   | Collection | No                   | No                 | 30,38                             | No gravel; bare basalt                                |
| Deschutes   | 05   | Visual     |                      |                    |                                   | Site looked bad                                       |
| Deschutes   | 06   | Visual     |                      |                    |                                   | Site looked bad                                       |
| Deschutes   | 07   | Collection | No                   | No                 | 3,5,6,32,33,34,36,38              | Good mollusc habitat                                  |
| Deschutes   | 08   | Skipped    |                      |                    |                                   | Looks like site 7                                     |
| Deschutes   | 09   | Collection | No                   | No                 |                                   | Dam scour; no live molluscs                           |
| (Crooked)   |      |            |                      |                    |                                   |   |
| Deschutes   | 10   | Skipped    |                      |                    |                                   | Potentially good habitat                              |
| Deschutes   | 11   | Skipped    |                      |                    |                                   | Potentially good habitat                              |
| Deschutes   | 12   | Skipped    |                      |                    |                                   | Potentially good habitat                              |
| Deschutes   | 13   | Collection | No                   | Yes                | 3,(4),5,6,10,12<br>16,19,30,36,38 | Excellent mollusc habitat                             |
| Deschutes   | 14   | Collection | No                   | No                 | 30                                | Lumber mill pollution                                 |
| Deschutes   | 15   | Skipped    |                      |                    |                                   | Potentially good                                      |
| Deschutes   | 16   | Skipped    |                      |                    |                                   | Potentially good                                      |
| Deschutes   | 17   | Skipped    |                      |                    |                                   | Potentially good                                      |
| Deschutes   | 18   | Skipped    |                      |                    |                                   | Potentially good                                      |
| Deschutes   | 19   | Skipped    |                      |                    |                                   | Potentially good                                      |



TABLE B.1. (contd)

| Location  | Site | Method     | <i>E. columbiana</i> | <i>F. nuttalli</i> | Other Molluscs   | Comments   |
|-----------|------|------------|----------------------|--------------------|--|--|
| Deschutes | 20   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 21   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 22   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 23   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 24   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 25   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 26   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 27   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 28   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 29   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 30   | Skipped    |                      |                    |  | Potentially good                                   |
| Deschutes | 31   | Collection | No                   | No                 | 2,5,6,12,20,27,30,33                                     | Good mollusc habitat                               |
| Deschutes | 32   | Collection | No                   | Yes                | 5,6,10,12,16,30,31                                       | Good mollusc habitat                               |
| Deschutes | 33   | Collection | No                   | No                 | 10,12,30,36,38   | Steelhead fishermen; rafters                       |
| Deschutes | 34   | Collection | No                   | No                 | 5,6,10,12,20   | Good mollusc habitat                               |
| Deschutes | 35   | Skipped    |                      |                    |  | Lumber mill; powerhouse on White River, above site |
| Deschutes | 36   | Collection | No                   | No                 | 10,12,20,24,30,31,36                                     | Rock bottom  |
| Deschutes | 37   | Collection | No                   | Yes                | (2),(3),5,6,10,12,16<br>17,19,20,24,27,31,32<br>33,36,38 | Excellent mollusc habitat                          |
| Deschutes | 38   | Collection | No                   | No                 | 3,5,6,10,12,30,36,38                                     | Might have <i>Fisherola</i>                        |
| Deschutes | 39   | Collection | No                   | No                 | 5,6,10,12,24,30,36,38                                    | Might have <i>Fisherola</i>                        |
| Deschutes | 40   | Visual     |                      |                    |  | Might have <i>Fisherola</i>                        |
| Deschutes | 41   | Visual     |                      |                    |  | Might have <i>Fisherola</i>                        |
| Deschutes | 42   | Visual     |                      |                    |  | Might have <i>Fisherola</i>                        |
| Deschutes | 43   | Visual     |                      |                    |  | Might have <i>Fisherola</i>                        |
| Deschutes | 44   | Visual     |                      |                    |  | Might have <i>Fisherola</i>                        |
| Deschutes | 45   | Collection | No                   | Yes                | (3),5,6,10,12,17,<br>30,36,38                            | Might have <i>Fisherola</i>                        |
| Deschutes | 46   | Visual     |                      |                    |  | Potential habitat; should have <i>Fisherola</i>    |
| Deschutes | 47   | Collection | No                   | No                 | (2),5,6,10,12,16,<br>17,24,30,38                         | Potential habitat; should have <i>Fisherola</i>    |
| Deschutes | 48   | Visual     |                      |                    |  | Looked good  |
| Deschutes | 49   | Collection | No                   | Yes                | (2),(3),(4),5,6,10,20,24<br>25?,27,30,33,34,36,38        | Excellent mollusc habitat                          |
| Deschutes | 50   | Visual     |                      | Looked good        |  |  |
| Deschutes | 51   | Collection | No                   | Yes                | 5,6,10,12,24,30,31,36,38                                 | Excellent mollusc habitat                          |
| Deschutes | 52   | Visual     |                      | Looked good        |  |  |

TABLE B.1. (contd)

| Location   | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs                 | Comments   |
|------------|------|------------|----------------------|--------------------|--------------------------------|--|
| Deschutes  | 53   | Collection | No                   | Yes                | 10,17,30,36,38                 | Looked good  |
| Willamette | 01   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 02   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 03   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 04   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 05   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 06   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 07   | Skipped    |                      |                    |                                | Looked good  |
| Willamette | 08   | Collection | No                   | No                 | 3,5,6,10,11,17,<br>18,32,37,38 | Good mollusc habitat   |
| Willamette | 09   | Skipped    |                      |                    |                                | Good mollusc habitat   |
| Willamette | 10   | Skipped    |                      |                    |                                | Good mollusc habitat   |
| Willamette | 11   | Skipped    |                      |                    |                                | Good mollusc habitat   |
| Willamette | 12   | Collection | No                   | No                 |                                | Industrial pollution; no live molluscs                       |
| Willamette | 13   | Skipped    | No                   | No                 |                                | Industrial pollution; no live molluscs                       |
| Willamette | 14   | Collection | No                   | No                 | 5,6,12,30,38                   | Sandy  |
| Willamette | 15   | Skipped    |                      |                    |                                | Sandy  |
| Willamette | 16   | Skipped    |                      |                    |                                | Sandy  |
| Willamette | 17   | Skipped    |                      |                    |                                | Sandy  |
| Willamette | 18   | Skipped    |                      |                    |                                | Sandy  |
| Willamette | 19   | Collection | No                   | No                 | (3),5,6,10,11,18,30,38         | Good habitat   |
| Willamette | 20   | Skipped    |                      |                    |                                | Good habitat   |
| Willamette | 21   | Skipped    |                      |                    |                                | Good habitat   |
| Willamette | 22   | Collection | No                   | No                 | 1,5,6,11,20,25,<br>30,32,33,38 | Good habitat   |
| Willamette | 23   | Skipped    |                      |                    |                                | Good habitat   |
| Willamette | 24   | Collection | No                   | No                 | 38                             | Sewage   |
| Willamette | 25   | Collection | No                   | No                 | 30,38                          | Polluted   |
| Willamette | 26   | Collection | No                   | No                 | 30                             | Long-dead <i>Anodonta</i> ; may be <i>A. wahlameterensis</i> |
| Willamette | 27   | Collection | No                   | No                 | 30                             | Polluted   |
| Willamette | 28   | Collection | No                   | No                 | (1),30                         | Polluted   |
| John Day   | 01   | Skipped    |                      |                    |                                | Good habitat; canyon   |
| John Day   | 02   | Skipped    |                      |                    |                                | Good habitat; canyon   |
| John Day   | 03   | Collection | No                   | Yes                | 5,6,12,23,30,38                | Mostly warm water  |
| John Day   | 04   | Skipped    |                      |                    |                                | Good habitat; canyon   |
| John Day   | 05   | Skipped    |                      |                    |                                | Good habitat; canyon   |
| John Day   | 06   | Skipped    |                      |                    |                                | Good habitat; canyon   |
| John Day   | 07   | Skipped    |                      |                    |                                | Good habitat; canyon   |

TABLE B.1. (contd)

| Location                    | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs | Comments                                   |
|-----------------------------|------|------------|----------------------|--------------------|----------------|--|
| John Day                    | 08   | Skipped    |                      |                    |                | Good habitat; canyon                       |
| John Day                    | 09   | Collection | No                   | Yes                | 1,5,6,12,30,38 | Mostly warm water habitat; snails rare     |
| John Day                    | 10   | Skipped    |                      |                    |                | Mostly warm water habitat; snails rare     |
| Umatilla                    | 01   | Collection | No                   | No                 | 30             | Irrigation                                 |
| Umatilla                    | 02   | Collection | No                   | No                 |                | Irrigation; no live molluscs               |
| Umatilla                    | 03   | Collection | No                   | No                 |                | Irrigation; no live molluscs               |
| Umatilla                    | 04   | Collection | No                   | No                 | 23,30,38       | Irrigation                                 |
| Umatilla                    | 05   | Collection | No                   | No                 |                | Irrigation; no live molluscs               |
| Umatilla                    | 06   | Collection | No                   | No                 |                | Irrigation; no live molluscs               |
| Columbia<br>(Hanford Reach) | 01   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 02   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 03   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 04   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 05   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 06   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 07   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 08   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 09   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 10   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 11   | Collection | Yes                  | Yes                | 10,30,37,38    | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 12   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 13   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |
| Columbia<br>(Hanford Reach) | 14   | Skipped    |                      |                    |                | Good habitat below water fluctuation level |

TABLE B.1. (contd)

| Location                    | Site | Method     | <i>E. columbiana</i><br>Yes | <i>E. nuttalli</i><br>Yes | Other Molluscs<br>10,30,37    | Comments   |
|-----------------------------|------|------------|-----------------------------|---------------------------|-------------------------------|--|
| Columbia<br>(Hanford Reach) | 15   | Collection | Yes                         | Yes                       | 10,30,37                      | Supply System Collections                        |
| Columbia<br>(Hanford Reach) | 16   | Collection | Yes                         | Yes                       | 10,30,37                      | Supply System Collections                        |
| Columbia<br>(Hanford Reach) | 17   | Skipped    |                             |                           |                               | Supply System Collections                        |
| Columbia<br>(Hanford Reach) | 18   | Collection | Yes                         | No                        |                               | <i>Fluminicola columbiana</i> rare               |
| Columbia<br>(Hanford Reach) | 19   | Collection | Yes                         | No                        |                               | <i>Fluminicola columbiana</i> rare               |
| Columbia<br>(Hanford Reach) | 20   | Collection | Yes                         | No                        |                               | <i>Fluminicola columbiana</i> rare               |
| Columbia                    | 21   | Collection | Yes                         | No                        |                               | <i>Fluminicola columbiana</i> rare               |
| Lower Columbia 01           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 02           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 03           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 04           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 05           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 06           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 07           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 08           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 09           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 10           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 11           |      | Collection | No                          | No                        | 1,5,6,10,11,17<br>25,30,37,38 | Good habitat below water fluctuation level       |
| Lower Columbia 12           |      | Collection | No                          | No                        | 1,5,10,11,17,30,32,38         | Good habitat below water fluctuation level       |
| Lower Columbia 13           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 14           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 15           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 16           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 17           |      | Collection | No                          | No                        | (1),(2),24,30                 | Mud and sand bottom; long-dead <i>M. falcata</i> |
| Lower Columbia 18           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 19           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 20           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 21           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Lower Columbia 22           |      | Skipped    |                             |                           |                               | Doesn't look good                                |
| Columbia Dams 01            |      | Collection | No                          | No                        |                               | No live molluscs                                 |
| Columbia Dams 02            |      | Collection | No                          | No                        |                               | No live molluscs                                 |

TABLE B.1. (contd)

| Location         | Site    | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs  | Comments   |
|------------------|---------|------------|----------------------|--------------------|-----------------|--|
| Columbia         | Dams 03 | Collection | No                   | No                 |                 | No live molluscs; scour                          |
| Columbia         | Dams 04 | Collection | No                   | No                 | (1),30          | No live molluscs; scour                          |
| Columbia         | Dams 05 | Collection | No                   | No                 |                 | No live molluscs                                 |
| Columbia         | Dams 06 | Skipped    |                      |                    |                 | Potentially bad                                  |
| Columbia         | Dams 07 | Collection | No                   | No                 | (1),(12),30     |  |
| Columbia         | Dams 08 | Collection | No                   | No                 | 20,21,23,24,25  | Bare rock; no live molluscs                      |
| Lake Celilo      | 8A      | Collection | No                   | No                 | 30,32,33,34,38  | Impoundment habitat                              |
| At Celilo        |         |            |                      |                    | (1),20,22,23,24 |  |
| Columbia         | Dams 09 | Collection | No                   | No                 | 4,17            | Impoundment habitat                              |
| Rooster R.S.P.   | 9A      | Collection | Shell                | No                 |                 | Columbia pebblesnail was long dead; sandy bottom |
| Spokane          | 01      | Collection | No                   | No                 |                 | No snails; substrate correct size; gradient slow |
| Spokane          | 02      | Collection | No                   | No                 |                 | No snails; organic slime on rocks                |
| Spokane          | 03      | Collection | No                   | No                 |                 | No snails; organic slime on rocks                |
| Spokane          | 04      | Collection | No                   | No                 | 30              | No snails; organic slime on rocks                |
| Spokane          | 05      | Skipped    |                      |                    |                 | Slow water; industrial influence                 |
| Spokane          | 06      | Skipped    |                      |                    |                 | Slow water; industrial influence                 |
| Spokane          | 07      | Collection | No                   | No                 | 30              | Slow water; industrial influence                 |
| Spokane          | 08      | Collection | No                   | No                 |                 | Sponges; reach has been channelized              |
| Spokane          | 09      | Skipped    | No                   | No                 |                 | Sponges; reach has been channelized              |
| Spokane          | 10      | Skipped    | No                   | No                 |                 | Sponges; reach has been channelized              |
| Spokane          | 11      | Skipped    | No                   | No                 |                 | Sponges; reach has been channelized              |
| (Coeur D' Alene) | 12      | Skipped    |                      |                    |                 | Sponges; reach has been channelized              |
| Spokane          | 13      | Collection | No                   | No                 | 20,24,30        | shallow clear water                              |
| (Coeur D' Alene) | 14      | Visual     |                      |                    |                 | Muddy substrate; slow moving                     |
| Spokane          | 15      | Visual     |                      |                    |                 | Muddy substrate; slow moving                     |
| (Coeur D' Alene) | 16      | Collection | No                   | No                 | 24,30           | Muddy substrate; slow moving; many snails        |
| Spokane          | 17      | Visual     |                      |                    |                 | Muddy substrate; slow moving                     |
| (Coeur D' Alene) | 18      | Collection | No                   | No                 | 30,38           | Muddy substrate; slow moving                     |
| Spokane          | 19      | Skipped    |                      |                    |                 | Muddy substrate; slow moving                     |
| (Coeur D' Alene) |         |            |                      |                    |                 | Muddy substrate; slow moving                     |

TABLE B.1. (contd)

| Location                 | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs | Comments  |
|--------------------------|------|------------|----------------------|--------------------|----------------|---|
| Spokane (St. Maries)     | 20   | Collection | No                   | No                 | 5,30,38        | Habitat looks good; good bottom, medium gradient              |
| Spokane (St. Maries)     | 21   | Skipped    |                      |                    |                | Habitat looks good; good bottom, medium gradient              |
| Spokane (St. Maries)     | 22   | Skipped    |                      |                    |                | Habitat looks good; good bottom, medium gradient              |
| Spokane (St. Maries)     | 23   | Skipped    |                      |                    |                | Habitat looks good; good bottom, medium gradient              |
| Spokane (St. Maries)     | 24   | Skipped    |                      |                    |                | Habitat looks good; good bottom, medium gradient              |
| Spokane (St. Maries)     | 25   | Collection | No                   | No                 | 30             | Sandy bottom  |
| Spokane (St. Maries)     | 26   | Collection | No                   | No                 | 30             | Clean water   |
| Spokane (St. Joe)        | 27   | Skipped    |                      |                    |                | Clean water   |
| Spokane (St. Joe)        | 28   | Skipped    |                      |                    |                | Clean water   |
| Spokane (St. Joe)        | 29   | Skipped    |                      |                    |                | Clean water   |
| Spokane (St. Joe) Jr     | 30   | Skipped    |                      |                    |                | Clean water   |
| Spokane (St. Joe)        | 31   | Collection | No                   | No                 |                | Poor habitat; urban development and logging; no live molluscs |
| Spokane (St. Joe)        | 32   | Collection | No                   | No                 |                | Mud substrate; HS smell when walk in mud; no live molluscs    |
| Spokane (St. Joe)        | 33   | Collection | No                   | No                 |                | Mud substrate; HS smell when walk in mud; no live molluscs    |
| Spokane (Coeur D' Alene) | 34   | Skipped    |                      |                    |                | Mud substrate; HS smell when walk in mud; no live molluscs    |
| Malheur                  | 01   | Skipped    |                      |                    |                | Algae; irrigation   |
| Malheur                  | 02   | Collection | No                   | No                 | 23,30          | Algae; irrigation   |
| Malheur                  | 03   | Collection | No                   | No                 | 23,24,30       | Algae; irrigation   |
| Malheur                  | 04   | Skipped    |                      |                    |                | Algae; irrigation   |
| Malheur                  | 05   | Skipped    |                      |                    |                | Algae; irrigation   |
| Malheur                  | 06   | Skipped    |                      |                    |                | Algae; irrigation   |
| Malheur                  | 07   | Collection | No                   | No                 | 24,30          | Algae; irrigation   |
| Malheur                  | 08   | Skipped    |                      |                    |                | Algae; irrigation   |

TABLE B.1. (contd)

| Location     | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs   | Comments   |
|--------------|------|------------|----------------------|--------------------|--|--|
| Malheur      | 09   | Skipped    |                      |                    |  | Algae; irrigation  |
| Malheur      | 10   | Skipped    |                      |                    |  | Algae; irrigation  |
| Malheur      | 11   | Visual     |                      |                    |  | Algae; irrigation  |
| Malheur      | 12   | Visual     |                      |                    |  | Algae; irrigation  |
| Malheur      | 13   | Visual     |                      |                    |  | Algae; irrigation  |
| Lower Owyhee | 01   | Skipped    |                      |                    |  | Algae; irrigation  |
| Upper Owyhee | 1A   | Collection | No                   | No                 | 3,(4),5,6,7,10,12,20,23<br>24,30,31,32,33,34<br>35,36,38 | Excellent mollusc habitat; could have Columbia pebblesnail or shortface lanx |
| Lower Owyhee | 02   | Visual     |                      |                    |  | Algae; irrigation  |
| Lower Owyhee | 03   | Collection | No                   | No                 | 23,30  | Algae; irrigation  |
| Lower Owyhee | 04   | Collection | No                   | No                 | 30   | Algae; irrigation  |
| Lower Owyhee | 05   | Visual     |                      |                    |  | Algae; irrigation  |
| Lower Owyhee | 06   | Collection | No                   | No                 | 30   | Algae; irrigation  |
| Clark Fork   | 01   | Collection | No                   | No                 | 30   | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 02   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 03   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 04   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 05   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 06   | Collection | No                   | No                 | 30   | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 07   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 08   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 09   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 10   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 11   | Collection | No                   | No                 | 30,32  | Gravelly bottom; no shale  |
| Clark Fork   | 12   | Visual     |                      |                    |  | Temperature fluctuation; poor mollusc habitat                                |
| Clark Fork   | 13   | Visual     |                      |                    |  | No molluscs  |
| Clark Fork   | 14   | Visual     | No                   | No                 |  | High gradient; white-water   |
| Clark Fork   | 15   | Collection | No                   | No                 | 29,30,33,34  | Temperature fluctuation; good mollusc habitat; macrophytes                   |
| (Flathead)   |      |            |                      |                    |  |  |
| Clark Fork   | 16   | Collection | No                   | No                 | 23,29,30,34  | Good snail habitat; lots of snails   |
| (Flathead)   |      |            |                      |                    |  |  |
| Clark Fork   | 18   | Visual     |                      |                    |  | Good snail habitat; lots of snails   |
| (Flathead)   |      |            |                      |                    |  |  |
| Clark Fork   | 19   | Visual     |                      |                    |  | Good snail habitat; lots of snails   |
| (Flathead)   |      |            |                      |                    |  |  |
| Clark Fork   | 20   | Visual     |                      |                    |  | Good snail habitat; lots of snails   |
| Clark Fork   | 21   | Collection | No                   | No                 | 30   | Temperature fluctuation; Scour   |

TABLE B.1. (contd)

| Location                         | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs | Comments                                      |
|----------------------------------|------|------------|----------------------|--------------------|----------------|---|
| Clark Fork                       | 22   | Collection | No                   | No                 | 29,30,38       | Temperature fluctuation; scour                |
| Clark Fork                       | 23   | Visual     |                      |                    |                | Temperature fluctuation; scour                |
| Clark Fork                       | 24   | Collection | No                   | No                 | 29,30,33       | Good snail habitat                            |
| Clark Fork                       | 25   | Visual     |                      |                    |                | Looks good; poor access                       |
| Clark Fork                       | 26   | Collection | No                   | No                 | 29,30,33,35    | Good snail habitat                            |
| Clark Fork                       | 27   | Visual     |                      |                    |                | Good snail habitat                            |
| Kootenai                         | 01   | Collection | No                   | No                 |                | Looks good                                    |
| Kootenai                         | 02   | Collection | No                   | No                 | 24,25,30       | Good snail habitat                            |
| Kootenai                         | 03   | Collection | No                   | No                 | 24,25,30       | Good snail habitat                            |
| Kootenai                         | 04   | Skipped    |                      |                    |                | Good snail habitat                            |
| Kootenai                         | 05   | Skipped    |                      |                    |                | Good snail habitat                            |
| Kootenai                         | 07   | Skipped    |                      |                    |                | Good snail habitat                            |
| Kootenai                         | 08   | Collection | No                   | No                 |                | Looks good but no snails                      |
| Kootenai                         | 09   | Collection | No                   | No                 | 24             | Looks good but only two snails                |
| Kootenai                         | 10   | Skipped    |                      |                    |                |   |
| Kootenai                         | 11   | Collection | No                   | No                 |                | Looks good                                    |
| Kootenai                         | 12   | Collection | No                   | No                 | 24,30          | Looks good                                    |
| Kootenai                         | 13   | Collection | No                   | No                 | 30             | Looks good                                    |
| Kootenai                         | 14   | Visual     |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 15   | Skipped    |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 16   | Skipped    |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 17   | Skipped    |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 18   | Collection | No                   | No                 |                | Agricultural land; meander river through soil |
| Kootenai                         | 19   | Skipped    |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 20   | Skipped    |                      |                    |                | Agricultural land; meander river through soil |
| Kootenai                         | 21   | Collection | No                   | No                 |                | Agricultural land; meander river through soil |
| Kootenai                         | 01   | Collection | No                   | No                 | 30             | Slow water; looks like backwater              |
| Clearwater (Selway ; Meadow Cr.) |      |            |                      |                    |                | Steep gradient                                |
| Clearwater (Selway )             | 02   | Collection | No                   | No                 | 30             | Steep gradient                                |
| Clearwater (Selway )             | 03   | Collection | No                   | No                 | 30             | Steep gradient                                |
| Clearwater (Selway )             | 04   | Collection | No                   | No                 | 30,37          | Steep gradient                                |
| Clearwater (Selway )             | 05   | Collection | No                   | No                 | 30,37          | Steep gradient                                |
| Clearwater (Selway )             | 06   | Collection | No                   | No                 | (3),37         | Steep gradient                                |



TABLE B.1. (contd)

| Location             | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs         | Comments                                |
|----------------------|------|------------|----------------------|--------------------|------------------------|---|
| Clearwater (Selway ) | 07   | Visual     |                      |                    |                        | Steep gradient                          |
| Clearwater (Lochsa ) | 08   | Collection | No                   | No                 | 30                     | Steep gradient                          |
| Clearwater (Lochsa ) | 09   | Visual     |                      |                    |                        | Steep gradient                          |
| Clearwater (Lochsa ) | 10   | Visual     |                      |                    |                        | Steep gradient                          |
| Clearwater (Lochsa ) | 11   | Collection | No                   | No                 | 30,32,38               | Steep gradient                          |
| Clearwater (Lochsa ) | 12   | Collection | No                   | No                 | 5,30,38                | Steep gradient                          |
| Clearwater (Lochsa ) | 13   | Visual     |                      |                    |                        | Steep gradient                          |
| Clearwater (Lochsa ) | 14   | Collection | No                   | No                 | 30                     | Steep gradient                          |
| Clearwater (Lochsa ) | 15   | Collection | No                   | No                 |                        | Sandy bar; no live molluscs             |
| Clearwater (Selway ) | 16   | Collection | No                   | No                 | 30,38                  | Sandy bar                               |
| Clearwater           | 17   | Collection | No                   | No                 |                        | Rapids; no live molluscs                |
| Clearwater           | 18   | Visual     |                      |                    |                        | Rapids; no live molluscs                |
| Clearwater           | 20   | Visual     |                      |                    |                        | Rapids; no live molluscs                |
| Clearwater           | 21   | Visual     |                      |                    |                        | Rapids; no live molluscs                |
| Clearwater           | 22   | Collection | No                   | No                 |                        | Lumber mill pollution; no live molluscs |
| S.F. Clearwater      | 22A  | Collection | No                   | No                 | 3,5,6,10,24,30,38      | Good potential habitat                  |
| Clearwater           | 23   | Collection | No                   | No                 |                        | Lumber mill pollution; no live molluscs |
| Clearwater           | 24   | Visual     |                      |                    |                        | Lumber mill pollution; no live molluscs |
| Clearwater           | 25   | Visual     |                      |                    |                        | Lumber mill pollution; no live molluscs |
| Clearwater           | 26   | Collection | No                   | No                 | 30                     | Lumber mill pollution; no live molluscs |
| Clearwater           | 27   | Visual     |                      |                    |                        | Good potential habitat                  |
| Clearwater           | 28   | Visual     |                      |                    |                        | Good potential habitat                  |
| Clearwater           | 29   | Visual     |                      |                    |                        | Good potential habitat                  |
| Clearwater           | 30   | Collection | No                   | No                 | (4),5,6,10,20,30,33,38 | Good potential habitat                  |
| Innaha               | 01   | Collection | No                   | Yes                |                        | Good habitat                            |
| Lower Snake          | 01   | Visual     |                      |                    |                        | Unlikely                                |
| Lower Snake          | 02   | Visual     |                      |                    |                        | Unlikely                                |
| Lower Snake          | 03   | Visual     |                      |                    |                        | Potential                               |
| Lower Snake          | 04   | Visual     |                      |                    |                        | Potential                               |

TABLE B.1. (contd)

| <u>Location</u> | <u>Site</u> | <u>Method</u> | <u><i>E. columbiana</i></u> | <u><i>E. nuttalli</i></u> | <u>Other Molluscs</u>             | <u>Comments</u>                           |
|-----------------|-------------|---------------|-----------------------------|---------------------------|-----------------------------------|---|
| Lower Snake     | 05          | Visual        |                             |                           |                                   | Potential                                 |
| Lower Snake     | 06          | Collection    | No                          | No                        | 27,30,38                          | Looks good                                |
| Lower Snake     | 07          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 08          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 09          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 10          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 11          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 12          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 13          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 14          | Collection    | Yes                         | Yes                       | 3,(4),5,6,9,30,38                 | shortface lanx rare; good mollusc habitat |
| Lower Snake     | 15          | Collection    | No                          | No                        | (4),(5),(6)                       | Dead shortface lanx                       |
| Lower Snake     | 16          | Collection    | No                          | Yes                       | (3),(4),5,6,9,30,38               | Fair mollusc habitat                      |
| Lower Snake     | 17          | Collection    | No                          | Yes                       | (3),(5),(6),30,(38)               | Fair mollusc habitat; sandy bar           |
| Lower Snake     | 18          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 19          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 20          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 21          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 22          | Visual        |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 23          | Skipped       |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 24          | Collection    |                             |                           |                                   | Looks good for shortface lanx             |
| Lower Snake     | 25          | Collection    | No                          | Yes                       | (3),(9),30,38                     | Abundant dead shortface lanx              |
| Lower Snake     | 26          | Collection    | No                          | Yes                       | (3),5,6,9,30,38                   | Abundant dead shortface lanx              |
| Lower Snake     | 27          | Skipped       |                             |                           |                                   |   |
| Lower Snake     | 28          | Skipped       |                             |                           |                                   |   |
| Lower Snake     | 29          | Skipped       |                             |                           |                                   |   |
| Lower Snake     | 30          | Skipped       |                             |                           |                                   |   |
| Lower Snake     | 31          | Skipped       |                             |                           |                                   |   |
| Middle Snake    | 01          | Collection    | No                          | No                        | (9),20,24,30,33,38                | Siltation                                 |
| Middle Snake    | 02          | Collection    | No                          | No                        |                                   | Siltation; no live molluscs               |
| Middle Snake    | 03          | Collection    | No                          | No                        |                                   | Siltation; no live molluscs               |
| Middle Snake    | 04          | Collection    | No                          | Yes                       | 5,6,9,14,15,30,36,38              | Good mollusc habitat                      |
| Middle Snake    | 05          | Visual        |                             |                           |                                   | Some potential; introduced snails         |
| Middle Snake    | 06          | Collection    | No                          | No                        | 5,6,9,13,23,27,30                 | Common molluscs; tolerant species only    |
| Middle Snake    | 07          | Collection    | No                          | No                        | 5,6,20,23,30                      | Impacted by impoundment                   |
| Middle Snake    | 08          | Visual        |                             |                           |                                   | Some potential; introduced snails         |
| Middle Snake    | 09          | Collection    | No                          | Yes                       | 3,5,6,7,9,13,20,27<br>30,33,36,38 | Good habitat                              |
| Middle Snake    | 10          | Collection    | Yes                         | Yes                       | 3,5,6,9,13,30,35,38               | Good habitat                              |

TABLE B.1. (contd)

| Location     | Site | Method     | <i>F. columbiana</i> | <i>F. nuttalli</i> | Other Molluscs                             | Comments                                |
|--------------|------|------------|----------------------|--------------------|--|---|
| Middle Snake | 11   | Skipped    |                      |                    |  | Good habitat                            |
| Middle Snake | 12   | Collection | No                   | No                 | 5,6,9,13,20,24,30,33,38                    | Fish feces degradation                  |
| Middle Snake | 13   | Collection | No                   | No                 | 5,6,9,13,20,24,27,30,33,38                 | Fish feces degradation                  |
| Middle Snake | 14   | Collection | No                   | No                 | 5,6,24,27,30,38                            | Bad habitat; agriculture                |
| Middle Snake | 15   | Collection | No                   | No                 | 5,6,24,27,30,33,38                         | Bad habitat; power plant                |
| Middle Snake | 16   | Collection | No                   | No                 | 2,5,6,(8),9,13,23,27,30                    | Good habitat but no pebblesnail or lanx |
| Middle Snake | 17   | Collection | No                   | No                 | 2,5,6,(8),(9),20,21,23,24,27,30,33,(35),38 | Siltation                               |
| Middle Snake | 18   | Skipped    | Siltation            |                    |  |   |
| Middle Snake | 19   | Skipped    | Siltation            |                    |  |   |
| Middle Snake | 20   | Collection | No                   | No                 | 5,6,9,20,21,22,23,24,27,30,33,35,38        | Bad habitat; irrigation                 |
| Middle Snake | 21   | Collection | No                   | No                 | 5,6,9,13,20,24,30,33,34,38                 | Good habitat                            |
| Middle Snake | 22   | Skipped    | No                   | No                 | 5,6,(8),9,(14),20                          | Good habitat                            |
| Middle Snake | 23   | Collection | No                   | No                 | 21,27,30,33,38                             | Long-dead shortface lanx                |
| Middle Snake | 24   | Collection | No                   | No                 | 5,6,7,8,9,13,14,20,21,23,27,30,33,36,38    | Good habitat                            |
| Middle Snake | 25   | Collection | No                   | No                 | (3),5,6,7,(8),9,13,14,20,24,27,30,33,36,38 | Dead shortface lanx                     |
| Middle Snake | 26   | Skipped    |                      |                    |  |   |
| Middle Snake | 27   | Skipped    |                      |                    |  |   |
| Middle Snake | 28   | Skipped    |                      |                    |  |   |
| Middle Snake | 29   | Skipped    |                      |                    |  |   |
| Middle Snake | 30   | Skipped    |                      |                    |  |   |
| Middle Snake | 31   | Skipped    |                      |                    |  |   |
| Middle Snake | 32   | Skipped    |                      |                    |  |   |
| Middle Snake | 33   | Collection | No                   | No                 | 5,6,9,27,30,36                             | Good habitat                            |
| Middle Snake | 34   | Visual     |                      |                    |  | May be good habitat                     |
| Middle Snake | 35   | Visual     |                      |                    |  | May be good habitat                     |
| Middle Snake | 36   | Visual     |                      |                    |  | May be good habitat                     |
| Middle Snake | 37   | Visual     |                      |                    |  | Irrigation and power; rapids survive    |
| Middle Snake | 38   | Visual     |                      |                    |  | Irrigation and power; bad habitat       |
| Middle Snake | 39   | Visual     |                      |                    |  | Irrigation and power; bad habitat       |
| Middle Snake | 40   | Visual     |                      |                    |  | Irrigation and power; bad habitat       |
| Middle Snake | 41   | Skipped    |                      |                    |  | Irrigation and power; bad habitat       |

TABLE B.1. (contd)

| Location     | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs | Comments                          |
|--------------|------|------------|----------------------|--------------------|----------------|-----------------------------------|
| Middle Snake | 42   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 43   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 44   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 45   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 46   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 47   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 48   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 49   | Visual     |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 50   | Visual     |                      |                    |                | Irrigation and power; bad habitat |
| Middle Snake | 51   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Henry's Fork | 01   | Skipped    |                      |                    |                | Irrigation and power; bad habitat |
| Henry's Fork | 02   | Collection | No                   | No                 | 5,6,9,20,27,30 | Irrigation and power; bad habitat |
| Henry's Fork | 03   | Skipped    |                      |                    |                | Moderately good mollusc habitat   |
| Henry's Fork | 04   | Skipped    |                      |                    |                | Moderately good mollusc habitat   |
| Henry's Fork | 05   | Skipped    |                      |                    |                | Moderately good mollusc habitat   |
| Henry's Fork | 06   | Skipped    |                      |                    |                | Moderately good mollusc habitat   |
| Henry's Fork | 07   | Collection | No                   | No                 |                | Moderately good mollusc habitat   |
| Henry's Fork | 08   | Skipped    |                      |                    |                | Eutrophic                         |
| Henry's Fork | 09   | Skipped    |                      |                    |                | Eutrophic                         |
| Henry's Fork | 10   | Skipped    |                      |                    |                | Eutrophic                         |
| Henry's Fork | 11   | Skipped    |                      |                    |                | Eutrophic                         |
| Henry's Fork | 12   | Collection | No                   | No                 | 30             | Eutrophic                         |
| Henry's Fork | 13   | Skipped    | No                   | No                 |                | Eutrophic                         |
| Henry's Fork | 14   | Collection | No                   | No                 | 24,30,38       | Eutrophic                         |
| Henry's Fork | 15   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 16   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 17   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 18   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 19   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 20   | Skipped    |                      |                    |                | Partly eutrophic                  |
| Henry's Fork | 21   | Collection | No                   | No                 | 24,30,35,38    | Slow flow                         |
| Henry's Fork | 22   | Collection | No                   | No                 | 30,35          | Poor mollusc habitat              |
| Henry's Fork | 23   | Skipped    |                      |                    |                | Poor mollusc habitat              |
| Henry's Fork | 24   | Collection | No                   | No                 | 5,20,24,30,33  | Slow flow                         |
| Henry's Fork | 25   | Skipped    |                      |                    |                | Slow flow                         |
| Henry's Fork | 26   | Skipped    |                      |                    |                | Slow flow                         |
| Henry's Fork | 27   | Skipped    |                      |                    |                | Slow flow                         |
| Henry's Fork | 27   | Skipped    |                      |                    |                | Slow flow                         |
| Weiser       | 01   | Collection | No                   | No                 | 30             | Agriculture                       |

TABLE B.1. (contd)

| <u>Location</u> | <u>Site</u> | <u>Method</u> | <u><i>E. columbiana</i></u> | <u><i>E. nautalli</i></u> | <u>Other Molluscs</u>          | <u>Comments</u>         |
|-----------------|-------------|---------------|-----------------------------|---------------------------|--------------------------------|-------------------------|
| Weiser          | 02          | Collection    | No                          | No                        | 30                             | Agriculture             |
| Weiser          | 03          | Collection    | No                          | No                        | 30                             | Agriculture             |
| Weiser          | 04          | Collection    | No                          | No                        | 5,6,23,24,30,38                | Agriculture             |
| Weiser          | 05          | Collection    | No                          | No                        | 30                             | Agriculture             |
| Weiser          | 06          | Collection    | No                          | No                        | 3,5,6,20,24,30,33,38           | Agriculture             |
| Weiser          | 07          | Visual        |                             |                           |                                | Looks bad               |
| Weiser          | 08          | Visual        |                             |                           |                                | Looks bad               |
| Weiser          | 09          | Visual        |                             |                           |                                | Looks bad               |
| Weiser          | 10          | Collection    | No                          | No                        | 30                             | Agriculture             |
| Weiser          | 11          | Collection    | No                          | No                        |                                | No live molluscs        |
| Upper Snake     | 01          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 02          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 03          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 04          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 05          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 06          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 07          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 08          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 09          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 10          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 11          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 12          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 13          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 14          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 15          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 16          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 17          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 18          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 19          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 20          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 21          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 22          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 23          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 24          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 25          | Skipped       |                             |                           |                                |                         |
| Upper Snake     | 26          | Collection    | No                          | No                        | 5,(12),20,23,(27),<br>30,33,35 | Moderately good habitat |
| Upper Snake     | 27          | Skipped       |                             |                           |                                | Moderately good habitat |

TABLE B.1. (contd)

| Location    | Site | Method     | <i>F. columbiana</i> | <i>F. nuttalli</i> | Other Molluscs            | Comments                        |
|-------------|------|------------|----------------------|--------------------|---------------------------|---------------------------------|
| Upper Snake | 28   | Skipped    | No                   | No                 |                           | Moderately good habitat         |
| Upper Snake | 29   | Collection | No                   | No                 | 5,6,(9),20,24,(27),30     | Moderately good habitat         |
| Upper Snake | 30   | Skipped    | No                   | No                 |                           | Moderately good habitat         |
| Upper Snake | 31   | Collection | No                   | No                 | 5,6,20,24,30,38           | Moderately good habitat         |
| Upper Snake | 32   | Skipped    | No                   | No                 |                           | Moderately good habitat         |
| Upper Snake | 33   | Skipped    | No                   | No                 |                           | Moderately good habitat         |
| Upper Snake | 34   | Collection | No                   | No                 | 5,6,20,30,38              | Moderately good habitat         |
| Upper Snake | 35   | Skipped    | No                   | No                 |                           | Moderately good habitat         |
| Upper Snake | 36   | Collection | No                   | No                 | 20,24,30,33               | Moderately good habitat         |
| Upper Snake | 37   | Collection | No                   | No                 | 6,9,20,24,30,32           | Moderately good mollusc habitat |
| Upper Snake | 38   | Collection | No                   | No                 | 3,5,6,9,20,27,30,32,33,38 | Moderately good mollusc habitat |
| Salmon      | 01   | Collection | No                   | No                 | (3),5,9,20,27,30,32,34,38 | Molluscs abundant and diverse   |
| Salmon      | 02   | Visual     | No                   | No                 |                           | Should be good                  |
| Salmon      | 03   | Collection | No                   | No                 | (3),5,9,20,27,30,32,34,38 | Good mollusc habitat            |
| Salmon      | 04   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 05   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 06   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 07   | Collection | No                   | No                 | 5,6,9,20,30,34,38         | Good mollusc habitat            |
| Salmon      | 08   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 09   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 10   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 11   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 12   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 13   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 14   | Collection | No                   | No                 | 3,5,6,9,20,30,33,34       | Good mollusc habitat            |
| Salmon      | 15   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 16   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 17   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 18   | Collection | No                   | No                 | 9,24,30                   | Good habitat                    |
| Salmon      | 19   | Visual     | No                   | No                 |                           | Should be good                  |
| Salmon      | 20   | Collection | No                   | No                 | 5,20,24,33,34,38          | Relatively poor habitat         |
| Salmon      | 21   | Collection | No                   | No                 | 20,24,33,38               | Poor mollusc habitat            |
| Salmon      | 22   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 23   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 24   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 25   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 26   | Visual     |                      |                    |                           | Should be good                  |
| Salmon      | 27   | Visual     |                      |                    |                           | Should be good                  |

TABLE B.1. (contd)

| Location | Site | Method     | <i>F. columbiana</i> | <i>F. nuttalli</i> | Other Molluscs | Comments   |
|----------|------|------------|----------------------|--------------------|----------------|--|
| Salmon   | 28   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 29   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 30   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 31   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 32   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 33   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 34   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 35   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 36   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 37   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 38   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 39   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 40   | Collection | No                   | Yes                | 3,(4),9,30,38  | Should be good   |
| Salmon   | 41   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 43   | Skipped    |                      |                    |                | Should be good   |
| Salmon   | 44   | Skipped    |                      |                    |                | Should be good   |
| Salmon   | 45   | Visual     |                      |                    |                | Should be good   |
| Salmon   | 46   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 47   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 48   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 49   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 50   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 51   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 52   | Visual     |                      |                    |                | Looks good   |
| Salmon   | 53   | Collection | No                   | No                 | 9,24,30,38     | Good habitat; snails very abundant   |
| Salmon   | 54   | Skipped    |                      |                    |                | Good habitat   |
| Salmon   | 55   | Collection | No                   | No                 | 9,24,30        | Good habitat; snails very abundant   |
| Salmon   | 56   | Skipped    |                      |                    |                | Good habitat   |
| Salmon   | 57   | Collection | No                   | Yes                | 9,24,30,38     | Good habitat; snails very abundant; shortface lanx rare                            |
| Salmon   | 58   | Collection | No                   | No                 | 9,24,30        | Good mollusc habitat; common snails  |
| Salmon   | 59   | Collection | No                   | No                 | 9              | Poor habitat; deep pool; silt and sand   |
| Salmon   | 60   | Collection | No                   | No                 |                | Sand; no molluscs  |
| Salmon   | 61   | Collection | Yes                  | Yes                | 4,28,30        | Good habitat; shortface lanx rare; 1 live Columbia pebblesnail, rest recently dead |
| Salmon   | 62   | Visual     |                      |                    |                |  |
| Salmon   | 63   | Visual     |                      |                    |                |  |
| Salmon   | 64   | Visual     |                      |                    |                |  |

TABLE B.1. (contd)

| Location | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs        | Comments   |
|----------|------|------------|----------------------|--------------------|-----------------------|--|
| Salmon   | 66   | Visual     |                      |                    |                       |  |
| Salmon   | 67   | Visual     |                      |                    |                       |  |
| Salmon   | 68   | Visual     |                      |                    |                       |  |
| Salmon   | 69   | Skipped    |                      |                    |                       |  |
| Salmon   | 70   | Collection | No                   | No                 | 3,28,30               | Good habitat; shortface lanx rare; all Columbia pebblesnail recently dead. |
| Salmon   | 71   | Collection | Yes                  | Yes                | 28,30                 | Should be good   |
| Salmon   | 72   | Skipped    |                      |                    |                       | Should be good   |
| Salmon   | 73   | Skipped    |                      |                    |                       | Should be good   |
| Salmon   | 74   | Skipped    |                      |                    |                       | Should be good   |
| Salmon   | 75   | Collection | No                   | Yes                | (4),5,9,20,28,30,(35) | Shortface lanx common; full ontogeny                                       |
| Salmon   | 76   | Skipped    |                      |                    |                       | Should be good   |
| Salmon   | 77   | Collection | No                   | Yes                | 5,9,20,28,30          | Shortface lanx common; full ontogeny                                       |
| Payette  | 01   | Skipped    |                      |                    |                       | Shortface lanx common; full ontogeny                                       |
| Payette  | 02   | Skipped    | No                   | No                 | 30                    | Shortface lanx common; full ontogeny                                       |
| Payette  | 03   | Collection | No                   | No                 | 38                    | Shortface lanx common; full ontogeny                                       |
| Payette  | 04   | Collection | No                   | No                 |                       | Shortface lanx common; full ontogeny                                       |
| Payette  | 05   | Skipped    |                      |                    |                       | Steep gradient   |
| Payette  | 06   | Collection | No                   | No                 | 30                    | Steep gradient   |
| Payette  | 07   | Collection | No                   | No                 | 30,38                 | Steep gradient   |
| Payette  | 08   | Collection | No                   | No                 | 30                    | Steep gradient   |
| Payette  | 09   | Collection | No                   | No                 | 30                    | Steep gradient   |
| Payette  | 10   | Collection | No                   | No                 | 30                    | Steep gradient   |
| Payette  | 11   | Collection | No                   | No                 | 38                    | Steep gradient   |
| Payette  | 12   | Skipped    |                      |                    |                       | Steep gradient   |
| Payette  | 13   | Collection | No                   | No                 | 30,38                 | Steep gradient   |
| Payette  | 14   | Skipped    |                      |                    |                       | Steep gradient   |
| Payette  | 15   | Collection | No                   | No                 | 30,38                 | Steep gradient   |
| Payette  | 16   | Skipped    |                      |                    |                       | Steep gradient   |
| Payette  | 17   | Skipped    |                      |                    |                       | Steep gradient   |
| Payette  | 18   | Collection | No                   | No                 | 30                    | Irrigation   |
| Payette  | 19   | Skipped    |                      |                    |                       | Irrigation   |
| Payette  | 20   | Collection | No                   | No                 | 30                    | Irrigation; long-dead <i>Fluminicola</i> hindsi                            |
| Payette  | 21   | Collection | No                   | No                 |                       | Irrigation; Dwight Taylor pos. for Columbia pebblesnail in 1970's;         |
| Payette  | 22   | Collection | No                   | No                 |                       | Irrigation; no live molluscs   |
| Payette  | 23   | Skipped    |                      |                    |                       | Irrigation   |
| Payette  | 24   | Skipped    |                      |                    |                       | Irrigation   |



TABLE B.1. (contd)

| Location | Site | Method     | <i>E. columbiana</i> | <i>E. nuttalli</i> | Other Molluscs | Comments                 |
|----------|------|------------|----------------------|--------------------|----------------|--------------------------|
| Payette  | 25   | Collection | No                   | No                 | 24,30,38       | Irrigation               |
| Payette  | 26   | Collection | No                   | No                 |                | Irrigation               |
| Payette  | 27   | Collection | No                   | No                 | 23,24,30,38    | Irrigation               |
| Payette  | 28   | Visual     |                      |                    |                | Irrigation               |
| Payette  | 29   | Visual     |                      |                    |                | Irrigation               |
| Payette  | 31   | Collection | No                   | No                 | 23,29,38       | Irrigation               |
| Payette  | 32   | Visual     |                      |                    |                | Irrigation               |
| Payette  | 33   | Skipped    |                      |                    |                | Irrigation               |
| Payette  | 34   | Visual     |                      |                    |                | Irrigation and siltation |
| Payette  | 35   | Visual     |                      |                    |                | Irrigation and siltation |
| Payette  | 36   | Skipped    |                      |                    |                | Irrigation and siltation |

**TABLE B.2.** Scientific Names of the Molluscs Collected in the Columbia River Basin 1988 Through 1991. The cross reference numbers correlate with the numbers in Table B.1.

| Cross Reference Number | Scientific Name  |
|------------------------|--|
| 1.                     | <i>Corbicula</i> spp. (introduced genus)                   |
| 2.                     | <i>Anodonta californiensis</i> (Lea)                       |
| 3.                     | <i>Gonidea angulata</i> (Lea)                              |
| 4.                     | <i>Margaritifera falcata</i> (Gould)                       |
| 5.                     | <i>Sphaerium</i> spp.                                      |
| 6.                     | <i>Pisidium</i> spp.                                       |
| 7.                     | <i>Valvata humeralis</i> (Say)                             |
| 8.                     | <i>Valvata utahensis</i> (Call)                            |
| 9.                     | <i>Flumicola hindsii</i> (Baird)                           |
| 10.                    | <i>Flumicola nuttalliana</i> (Lea)                         |
| 11.                    | <i>Flumicola virens</i> (Lea)                              |
| 12.                    | <i>Flumicola</i> spp.                                      |
| 13.                    | <i>Potamopyrgus antipodarum</i> (Gray; introduced species) |
| 14.                    | Bliss Rapids Snail   |
| 15.                    | <i>Pyrgulopsis idahoensis</i> (Pilsbry)                    |
| 16.                    | <i>Juga (Juga) hemphilli maupinensis</i> (Henderson)       |
| 17.                    | <i>Juga (Juga) plicifera plicifera</i> (Lea)               |
| 18.                    | <i>Juga (Juga) silicula</i> (Gould)                        |
| 19.                    | <i>Juga (Oreobasis) bulbosa</i> (Gould)                    |
| 20.                    | <i>Fossaria</i> spp.                                       |
| 21.                    | <i>Lymnaea stagnalis appressa</i> (Say)                    |
| 22.                    | <i>Pseudosuccinea columella</i> (Say; introduced species)  |
| 23.                    | <i>Radix auricularia</i> (Linne; introduced species)       |
| 24.                    | <i>Stagnicola</i> spp.                                     |
| 25.                    | <i>Stagnicola apicina</i> (Lea)                            |
| 26.                    | <i>Stagnicola elrodiana</i> (F.C. Baker)                   |
| 27.                    | <i>Stagnicola hinkleyi</i> (F.C. Baker)                    |
| 28.                    | <i>Stagnicola idahoense</i> (Henderson)                    |
| 29.                    | <i>Stagnicola elrodi</i> (F.C. Baker & Henderson)          |
| 30.                    | <i>Physella</i> spp.                                       |
| 31.                    | <i>Physella (Physella) columbiana</i> (Hemphill)           |
| 32.                    | <i>Physella (Physella) lordi</i> (Baird)                   |
| 33.                    | <i>Gyraulus (Torquis) parvus</i> (Say)                     |
| 34.                    | <i>Menetus (Menetus) opercularis</i> (Gould)               |
| 35.                    | <i>Planorbella (Pierosoma) subcrenatum</i> (Carpenter)     |
| 36.                    | <i>Vorticifex effusa effusa</i> (Lea)                      |
| 37.                    | <i>Vorticifex effusa costata</i> (Henderson)               |
| 38.                    | <i>Ferrissia</i> spp.                                      |

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