

RESEARCH NATURAL AREAS ON THE
CLEARWATER NATIONAL FOREST: A SURVEY OF AQUATIC
AND RIPARIAN PLANT COMMUNITIES

by

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ABSTRACT

Six of the ten established Research Natural Areas (RNAs) on the Clearwater National Forest were visited during the summer of 1996, to document wetland plants and plant communities. Wetlands within the RNAs are associated with both high- and low-gradient streams, wet meadows, subalpine lakes, and cobble river banks. Sedge meadows and a peat fen are found in Sneakfoot Meadows RNA which is described elsewhere. High-gradient streams are the most common aquatic feature represented, and low-gradient streams are very poorly represented. The wetland communities observed are described briefly. An existing wetland community classification for northwestern Montana did not prove useful for classifying the communities encountered. Plot methods were used to describe examples of selected communities. The community types documented will be added to the Idaho Conservation Data Center's site basic records for the RNAs. Plant species observed in wetland communities are included as an appendix and will be added to the RNA files.

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Introduction

Research Natural Areas (RNAs) are small tracts of public land set aside to preserve examples of natural plant communities for study and use as reference areas. RNAs are part of a network of reserves, established by public and private organizations, designed to include examples of all natural plant communities in Idaho. Ten RNAs have thus far been established on the Clearwater National Forest: Aquarius, Bald Mountain, Bull Run Creek, Chateau Falls, Dutch Creek, Four-bit Creek, Grave Peak, Lochsa, Sneakfoot Meadows, and Steep Lakes. These areas all contain forest habitat types (Cooper *et al.* 1991) that help fill the needs of the Idaho RNA system. They also include incidental communities (*e.g.*, wet meadows, riparian, cliffs etc.) that were used to justify establishment. Such communities often represent a disproportionately large amount of the total biodiversity present.

Aquatic features represented in RNAs on the Clearwater National Forest include high-elevation lakes, rivers, streams, waterfalls, wet meadows, and peat fen. Sneakfoot Meadows and Chateau Falls RNAs in particular, were set aside for their aquatic features. Wetland plant communities associated with aquatic features often represent a high degree of plant diversity. For this reason, and because no classification of wetland communities exists for this region, wetland communities were not thoroughly documented during initial reconnaissance work for RNA establishment.

Documenting community elements within RNAs serves three purposes: 1) allows the evaluation of representativeness within the RNA system, 2) allows individual RNAs to be placed in a regional biodiversity context, and 3) indicates opportunities for research. The objective of this project was to document wetland plant communities or community complexes in RNAs on the Clearwater National Forest.

Between July and September of 1996, I attempted to visit six RNAs on the Clearwater National Forest—Aquarius, Chateau Falls, Dutch Creek, Four-bit Creek, Grave Peak, and Steep Lakes—and to document wetland plants and plant communities. Sneakfoot Meadows RNA has been previously described (Bursik 1990), and aquatic features of Bald Mountain, Bull Run Creek, and Lochsa RNAs are minimal. The wetland communities I observed were undisturbed by human factors such as grazing of domestic animals, logging, or recreation. Most are dynamic communities by virtue of their occurrence along steeply graded streams.

Methods

I described streams using the classification of Savage and Rabe (1979) which is based on order, gradient, and substrate. Within the RNAs visited, permanent streams are mostly of the cascade-pool type, with gradients greater than 9% and substrates of coarse sediments, bedrock, and/or log debris.

I attempted to classify the communities observed using the wetland vegetation classification for Northwestern Montana (Boggs *et al.* 1990), but with little success. Instead, I have provided brief descriptions of the communities present. Where a conifer overstory is present, the forest habitat types of Cooper *et al.* (1991) were used. Each community is given a

conservation ranking of A (excellent) through F (terrible) which will be part of the community occurrence record in the Conservation Data Center's (CDC) Database. Sample plots were described for selected communities using the methods of Bourgeron *et al.* (1991). The wetland community types described will be added to the site basic records for the RNAs. Plant species observed in wetlands are tabled in Appendix B and will be added to the RNA files. A set of slides is appended to copies of this report at the CDC and the Natural Areas Program, USDA Forest Service, Rocky Mountain Research Station, Missoula, Montana.

Aquarius RNA

Aquatic features of Aquarius include a section of the North Fork Clearwater River, six first-order perennial tributaries, and two second-order perennial tributaries. There are also ephemeral seeps, some associated with steep rock outcrops (Appendix D, slide 1), and supporting a diversity of herbaceous vegetation. Although I did not do a thorough survey of the riparian vegetation of Aquarius, it has been visited much more regularly than other RNAs on the forest because of an established monitoring program. Riparian communities are mostly limited to narrow, shaded stringers along steeply graded tributary streams. Along the North Fork are also found seasonally exposed rock bars and terraces. Most riparian plant species are also found in moist forest habitat types. An updated species list for Aquarius is included as Appendix B, Table 1.

***Thuja plicata*/Adiantum pedatum and Thuja plicata/Athyrium filix-femina community types.** Tributaries to the North Fork within Aquarius, with gradients of nearly 2,000 ft per mile, are cascade-pool type streams (Savage and Rabe 1979). They are deeply entrenched and shaded by conifer or deciduous forest overstory (Appendix D, slide 2). Composition of these communities is essentially the same as the *Thuja plicata*/Adiantum pedatum and *Thuja plicata*/Athyrium filix-femina upland habitat types (potential natural communities; see Appendix B, Table 1 for common names). Associated with the streams are narrow stringers of wet-site plants, mostly *Athyrium filix-femina*, *Adiantum pedatum*, *Boykinia major*, *Streptopus amplexifolius*, *Montia siberica*, and *Circaea alpina*, as well as species from adjoining, drier habitat: *Gymnocarpium dryopteris*, *Tiarella trifoliata*, *Asarum caudatum*, *Viola glabella*, and *Sorbus scopulina*. *Oplopanax horridum* and *Lysichitum americanum* are scarce and never occur with high cover. Violent washouts initiate *Alnus rubra* as the overstory dominant along streams and on alluvial fans (Appendix D, slide 3). Such a community is described by plot 97JL001 (Appendix C). This example appears to be seral to the *Thuja plicata*/Athyrium filix-femina habitat type but may be long-persistent. Both the *T. plicata*/A. pedatum and *T. plicata*/A. filix-femina community types are extensive in the RNA (1310 and 69 acres respectively) and represent A-ranked element occurrences (EO).

***Boykinia major*-Calamagrostis canadensis community.** Unique riparian habitat is provided by seasonally submerged rock banks and point bars along the North Fork. The substrate is cobble or cobble and sand. This zone is habitat for the rare Idaho plant, *Tofieldia glutinosa* var. *brevistyla* (*Triantha occidentalis* (S. Watson) Gates subsp. *brevistyla* (Hitchcock) Packer). A large cobble bar is found on the south bank, 3/4 mile

downstream from the mouth of Beaver Creek. The bar is occupied by a *Boykinia major*–*Calamagrostis canadensis* community containing a diverse mixture of forbs and grasses. *Apocynum androsaemifolium* is abundant. Sprouts of *Alnus rubra* and *Cornus stolonifera* are present but do not attain any size. As sediment accumulates on such cobble bars, this community may succeed to *Alnus rubra*, and ultimately *Thuja plicata*.

Chateau Falls RNA

Chateau Creek is a third-order stream that joins Cave Creek just before its confluence with the North Fork Clearwater River. It is a very high-gradient, cascade-pool type stream in granitic bedrock. The lower third of Chateau Creek is included in the RNA (Appendix A, Map 2). The creek, with its series of waterfalls and several ephemeral tributaries, constitute the aquatic features of the RNA. Bob Moseley joined me in the survey and made a list of all vascular plant species we observed in the RNA (Appendix B, Table 2), significantly adding to the original plant list. Plants occurring in the riparian zone are noted in the table.

***Betula papyrifera*/*Alnus incana* community type.** Our survey began in Cave Creek, which forms the western boundary of the RNA and joins Chateau Creek just before entering the North Fork. Cave Creek has a steep, boulder and bedrock substrate, an overall gradient of 1400 ft/mile, and includes a spectacular waterfall (Appendix D, slide 5). Riparian vegetation consists of a narrow stringer of primarily deciduous trees and shrubs including *Betula papyrifera*, *Alnus incana*, *Acer glabrum*, *Prunus emarginata*, and *Pseudotsuga menziesii* (see Appendix B, Table 2 for common names). Upstream from the confluence with Chateau Creek, *Acer glabrum* comes to dominate the overstory with a subcanopy of *Salix drummondiana* in the stream channel. Rock crevices in the spray zone of the falls support small hanging gardens with mosses, *Saxifraga mertensiana*, and *S. occidentalis*.

We left the Cave Creek drainage at the base of the falls and intercepted Chateau Creek at 3500 ft elevation. At this point the stream channel is steep and the riparian zone very narrow or absent, occasionally widening to as much as 10 meters where ephemeral streams enter. There is an open forest overstory of *Pseudotsuga menziesii* with many large snags still standing from a circa-1930 fire. The forest habitat type is *Thuja plicata*/*Clintonia uniflora*.

***Alnus incana*/*Athyrium filix-femina* community type.** The widest areas of stream bottom are occupied by a tall shrub layer of *Alnus incana*, *Acer glabrum*, and *Amelanchier alnifolia* and an understory of *Rubus parviflorus*, *Ribes hudsonianum*, *Streptopus amplexifolius*, *Athyrium filix-femina*, *Gymnocarpium dryopteris*, and *Boykinia major*. Periodic flood events probably limit conifer establishment in this community. Because of the size and dynamic nature of this community it is difficult to describe or classify. Less than 0.1 acre of this type was observed (EO Rank = C).

Lower Chateau Creek descends over a series of four spectacular waterfalls (here numbered from down- to upstream) interspersed with lesser falls and cascades. We encountered the top of falls #4 at approximately 3500 ft. It drops about 50 ft over a sheer granite face, then cascades through a series of basins in the bedrock (Appendix D, slide 6). Three, first-order streams enter before the top of falls #3 at approximately 3100 ft. Falls #3 is a straight drop of about 40 ft followed by a series of cascades. Falls #2 occurs at 2800 ft (Appendix D, slide 9), and falls #1 at 2500 ft. Falls #1 drops about 80 ft in three steps, to the confluence with Cave Creek. At this point the valley widens somewhat and is characterized by an overstory of *Betula papyrifera*, which continues to the mouth.

Dutch Creek RNA

Dutch Creek, a first-order tributary of the Lochsa River, is a steeply graded, actively downcutting, cascade-pool type stream flowing over cobble and boulders (Appendix D, slide 11). Within the RNA, it descends from 2600 to 2200 ft elevation within a distance of 1/2 mile (Appendix A, Map 3). Depositional segments with sand bottom alternate with riffles and cascades. Outside the narrow riparian zone, vegetation is early seral forest and shrubfield. Many large snags remain standing along the stream from a circa-1929/1934 fire, and the stream is criss-crossed with downed logs (Appendix D, slide 13).

Along gentle stream segments, a narrow floodplain is occupied by a riparian community of very limited extent, consisting of *Boykinia major*, *Rubus parviflorus*, *Solidago canadensis*, *Pteridium aquilinum*, and *Cornus stolonifera*, with *Athyrium* lining the streambank (Appendix D, slide 14). Plant species found in the riparian zone are listed in Appendix B, Table 3.

Four-bit RNA

Four-bit Creek is a first-order stream that forms a portion of the northeast boundary of the RNA, from 3200 to 3600 ft elevation. It flows into Eldorado Creek, a low-gradient, meandering stream with a wide floodplain that is outside the RNA (Appendix A, Map 4). The only other aquatic feature present is an unnamed, ephemeral tributary of Eldorado Creek. Riparian species observed in the RNA are listed in Appendix B, Table 4.

Four-bit Creek has a moderately wide floodplain, 50 to 150 ft (20-40 m) across near its mouth, but narrows rapidly upstream as the gradient steepens. At its mouth, it is a clear, low-gradient stream with a sandy bottom. This stretch would be classified as a meandering-glide type stream (Savage and Rabe 1979). Slightly above the floodplain there is an open, *Picea engelmannii* overstory with a dense, tall-forb understory of *Senecio triangularis*, *Athyrium filix-femina*, *Ligusticum canbyi*, and *Symphoricarpos albus* (see Appendix B, Table 4 for common names).

The floodplain includes large areas of tall-forb meadow with no conifers. *Alnus incana*–*Cornus stolonifera* tall-shrub thickets adjoin the streambed in places. Further upstream,

where the gradient steepens, the floodplain narrows, then disappears. Shaded, riparian stringer vegetation is characteristic of the *Thuja plicata*/*Athyrium filix-femina* habitat type. The following two riparian communities occur along the low-gradient portion of Four-bit Creek:

***Alnus incana*–*Athyrium filix-femina* community type.** This community occurs occasionally in the lower, low-gradient portion of Four-bit Creek where it is associated with periodically flooded streambanks and overflow channels. The overstory is dominated by *A. incana* and *Cornus stolonifera*. Other shrubs include *Lonicera involucrata*, *Ribes hudsonianum*, and *Ribes lacustre*. The herbaceous understory is made up of *Senecio triangularis*, *Heracleum lanatum*, *Glyceria elata*, *Trautvetteria caroliniensis*, and *Athyrium filix-femina*. There is no forest overstory. Plot 96JL018 (Appendix C) is an example of this community. It occurs in small patches totalling only about 1/2 acre within the RNA. (EO Rank = B due to limited extent).

This community occupies sites similar to those of the *Alnus sinuata* community type of Boggs et al. (1990), but the *A. sinuata* c.t. is indicative of human disturbance and floristically dissimilar from that described here. An *Alnus incana*/*Ribes hudsonianum* c.t. is described by Youngblood et al. (1985) for riparian sites in Eastern Idaho. It has a lower shrub stratum of *R. hudsonianum* and highly variable herbaceous cover.

Tall-forb meadow. Open areas of the stream floodplain are dominated by tall-forb meadow. Major species are *Ligusticum canbyi*, *Senecio triangularis*, *Trautvetteria caroliniensis*, *Glyceria elata*, and *Sphagnum* sp. Shrubs are scarce. *Scirpus microcarpus* and *Carex aquatilis* occupy wetter microsites. Conifer reproduction is not evident. In the ephemeral stream, a smaller, more shaded meadow is dominated by *Boykinia major* and *Ligusticum canbyi*, with a carpet of *Sphagnum* moss and some conifer reproduction on rotting wood (see Appendix C, Plot 97JL002).

Grave Peak RNA

Wetland vegetation of Grave Peak RNA is associated with a series of five subalpine lakes lying in two drainages (Appendix A, Map 5). Lake 1 is the highest and does not have a distinct zone of hydrophytic vegetation. However, the fellfield *Carex nigricans* community that continues to the water's edge is considered a wetland community type by some (e.g. Kovalchik 1993). In fact, none of lakes 1 through 3 are associated with well developed wetland communities. Scattered forbs and graminoids occur in the narrow zones below their high-water lines. *Carex lenticularis*, *Juncus mertensianus*, and *Gentiana calycosa* are common in this zone (see Appendix B, Table 5 for common names). Other species that may be present are *Senecio triangularis*, *Dodecatheon* sp., *Erigeron peregrinus* var. *scaposus*, *Luetkea pectinata*, *Juncus drummondii*, and *Carex nigricans*. In the narrow riparian zones along steeply graded streams connecting lakes 1, 2, and 3, *Senecio triangularis*, *Erigeron peregrinus*, *Hypericum formosum*, and *Athyrium distentifolium* were noted. These streams are deeply incised in places, flowing over cobble and bedrock.

Only lakes 4 and 5 are associated with well-developed graminoid meadows. The most extensive and floristically diverse meadow is that of lake 5. In Table 1, species are listed as they were encountered, moving from lake 1 to lake 5. The following three sedge-meadow communities were identified at lakes 4 and 5. Additional species associated with each can be found in Table 1. Appendix B, Table 5 lists all plants identified during the 1996 field visit.

***Carex utriculata* community type** (Lake 4): A monoculture of *Carex utriculata* is found on the most recently exposed sediments at the lake edge. It is about 0.5 acre in extent. (EO rank = A).

***Carex lenticularis*–*C. praeceptorum* community type** (Lake 4) occupies a slightly drier zone, on lake sediments between the *Carex utriculata* community and the rocky upland. It is about 0.5 acre in extent. (EO rank = A).

***Carex scopulorum* community type** (Lake 5): This sedge-dominated community borders open water and is seasonally inundated. *Carex aquatilis* is codominant with *C. scopulorum*. *C. aquatilis*, *C. scopulorum*, *C. illota*, and *Sphagnum* sp. were found only in this community (Table 1). Forbs are minor and include *Tofieldia glutinosa* ssp. *montana*, *Gentiana calycosa*, and *Dodecatheon* sp. *Kalmia microphylla* is an inconspicuous shrub. This community occupies about 2 acres (EO rank = A).

Steep Lakes RNA

The RNA encompasses a subalpine basin between 5,750 and 7,290 ft. I visited only the lower of the two lakes in the basin. The lower lake occupies a steep-sided basin surrounded by bedrock slopes and talus, leaving only a narrow zone beneath the high water line. A steep outlet stream flows less than 1000 ft before leaving the RNA boundary. The stream flows over and between large boulders and has a cobble bed. *Alnus sinuata* lines the stream, along with *Salix scouleriana*, *Lonicera involucrata*, and *Athyrium* sp. Plant species associated with the outlet stream and a seepy area between the trail and the stream are listed in Appendix B, Table 6. A more thorough survey will be necessary to adequately describe wetland vegetation of the RNA since there is an additional lake, a permanent pond, and several small, wet meadows in the upper basin (Appendix A, Map 6).

Table 1. Plant taxa associated with aquatic and wetland features of Grave Peak RNA, and their presence at each of the five lakes. Lakes are numbered from highest (1) to lowest (5) in elevation as in the Establishment Record. Species are ordered as they were encountered, moving from lake 1 to lake 5.

Scientific Name	Common Name	Lake					Upland
		1	2	3	4	5	
<i>Carex nigricans</i>	black alpine sedge	x		x			x
<i>Juncus drummondii</i>	Drummond's rush	x	x	x			
<i>Juncus mertensianus</i>	Merten's rush	x	x	x			
<i>Hypericum formosum</i>	w. St. John's-wort	x	x				
<i>Luetkea pectinata</i>	luetkea	x		x			
<i>Carex lenticularis</i>	lentil-fruited sedge		x	x	x		
<i>Deschampsia cespitosa</i>	tufted hairgrass		x		x	x	x
<i>Dodecatheon</i> sp.	shooting star		x	x		x	
<i>Erigeron peregrinus</i> ssp. <i>callianthemus</i> var. <i>scaposus</i>	subalpine daisy	x	x		x		
<i>Gentiana calycosa</i>	mountain bog gentian		x	x		x	
<i>Senecio triangularis</i>	arrowleaf groundsel		x	x			
<i>Carex multicostata</i>	many-nerved sedge			x			
<i>Phyllodoce empetriformis</i>	pink mountain heather			x			x
<i>Spiraea douglasii</i>	Douglas' spiraea			x			x
<i>Athyrium distentifolium</i>	alpine ladyfern				x		
<i>Carex praeceptorum</i>	teacher's sedge				x	x	
<i>Carex utriculata</i>	beaked sedge				x		
<i>Kalmia microphylla</i>	small-leaved laurel				x	x	
<i>Carex aquatilis</i>	water sedge					x	
<i>Carex illota</i>	small-headed sedge					x	
<i>Carex scopulorum</i>	Rocky Mtn. sedge					x	
<i>Sphagnum</i> sp.	sphagnum moss					x	
<i>Tofieldia glutinosa montana</i>	sticky tofieldia					x	

Summary and Recommendations

Within RNAs on the Clearwater National Forest, wetland communities are associated with a variety of aquatic features including rivers; perennial streams; ephemeral streams; subalpine lakes and ponds; vernal pools and seeps; peatlands; and wet meadows (Table 2). The feature most abundantly represented is that of high gradient, low-order streams. These are the cascade-pool type streams of Savage and Rabe (1979). Low-gradient, meandering -glide streams are poorly represented. Classification and inventory of wetland communities is difficult because of the lack of a classification system for this region.

Table 2. Summary of aquatic features found in established RNAs on the Clearwater National Forest.

RNA	Aquatic features
Aquarius	Fifth-order trunk stream; steeply graded ephemeral streams; perennial, cascade-pool streams; and seeps.
Bald Mountain	High-elevation ephemeral streams.
Bull Run Creek	A second-order, cascade-pool type stream.
Chateau Falls	A third-order, cascade-pool type stream; cascades and waterfalls.
Dutch Creek	A first-order cascade-pool type stream.
Four-bit Creek	A first-order perennial stream with both cascade-pool and meandering-glide reaches (borders RNA), and a low-gradient ephemeral stream.
Grave Peak	Five subalpine lakes and associated wet meadows.
Lochsa	Two, steeply graded perennial streams.
Sneakfoot Meadows	High-elevation peat fen and wet meadows.
Steep Lakes	Two subalpine lakes and one pond with associated wet meadows.

Existing classifications of wetland and riparian plant communities, written for western Montana and eastern Washington, do not work well on the Clearwater National Forest. This points to the need for quantitative descriptions of wetland communities in this region. Some work has been done on the adjoining Nez Perce National Forest, but the data have not yet been analyzed. Plant communities associated with high-gradient streams are especially difficult to classify because of their spatial variability and dynamic nature.

The wetland habitat that is most obviously under-represented is that of low-gradient meandering streams. A great deal of such habitat exists on the Clearwater at low and moderate elevations, but none is represented in Research Natural Areas. Expanding one of the established RNAs, or establishing an additional RNA with a meandering stream

reach would greatly increase the biodiversity represented in the Forest's RNA system, adding an unrepresented aquatic feature and probably several new plant communities. Faunal diversity would also be greatly enhanced, including fish spawning habitat. The floodplain of Eldorado Creek, which borders Four-bit RNA is a good example of such habitat and would be an important addition to the RNA.

Upper Hemlock Creek, on the Pierce Ranger District has been proposed as an RNA for its perennial, meandering-glide stream with associated sedge meadows (Rabe *et al.* 1996). The pristine nature of upper Hemlock Creek makes it an excellent reference area for comparison with the many landslide-affected streams on the Forest. The RNA program on the Forest should target such meandering stream/wet meadow systems, especially those offering a range of both forested and open community types.

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APPENDIX A

MAPS

APPENDIX B
PLANT SPECIES LISTS

Table 1
Aquarius RNA

The following is a list of vascular plant taxa observed in Aquarius RNA during field visits by Chuck Wellner, Fred Johnson, Bob Moseley, Juanita Lichthardt, Michael Mancuso, and Mike Hays, between 1965 and 1997. This list differs from that in the Establishment Record in that it only includes taxa that have been observed in the RNA, rather than those suspected to occur there. A list of mosses and lichens occurring in the RNA, with sources, is on file at the Rocky Mountain Research Station, Forestry Sciences Lab, Missoula, Montana.

Scientific Name	Common Name
TREES	
<i>Abies grandis</i>	grand fir
<i>Alnus rubra</i>	red alder
<i>Betula papyrifera subcordata</i>	paper birch
<i>Larix occidentalis</i>	western larch
<i>Picea engelmannii</i>	Engelmann spruce
<i>Pinus monticola</i>	western white pine
<i>Pinus ponderosa</i>	ponderosa pine
<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Taxus brevifolia</i>	Pacific yew
<i>Thuja plicata</i>	western redcedar
<i>Tsuga heterophylla</i>	western hemlock
<i>Tsuga mertensiana</i>	mountain hemlock
SHRUBS AND SUBSHRUBS	
<i>Acer glabrum</i>	Rocky Mountain maple
<i>Amelanchier alnifolia</i>	serviceberry
<i>Artemisia douglasiana</i>	Douglas' sagewort
<i>Artemisia ludoviciana latiloba</i>	prairie sagewort
<i>Berberis repens</i>	creeping Oregon grape
<i>Ceanothus sanguineus</i>	shiny-leaf ceanothus
<i>Chimaphila menziesii</i>	little prince's pine
<i>Chimaphila umbellata</i>	common prince's pine
<i>Clematis columbiana</i>	Columbia clematis
<i>Cornus stolonifera</i>	red osier dogwood
<i>Crataegus douglasii</i>	black hawthorn
<i>Holodiscus discolor</i>	ocean spray
<i>Linnaea borealis</i>	twinflower
<i>Lonicera ciliosa</i>	orange honeysuckle
<i>Lonicera utahensis</i>	Utah honeysuckle
<i>Menziesia ferruginea</i>	fool's huckleberry
<i>Oplopanax horridum</i>	devil's club

<i>Pachistima myrsinites</i>	mountain-lover
<i>Philadelphus lewisii</i>	Lewis' mock orange
<i>Physocarpus capitatus</i>	Pacific ninebark
<i>Physocarpus malvaceus</i>	mallow ninebark
<i>Prunus emarginata mollis</i>	bittercherry
<i>Prunus virginiana</i>	chokecherry
<i>Rhamnus purshiana</i>	cascara
<i>Ribes irriguum</i>	Idaho gooseberry
<i>Ribes lacustre</i>	swamp currant
<i>Ribes viscosissimum</i>	sticky currant
<i>Rosa gymnocarpa</i>	bald-hip rose
<i>Rosa nutkana</i>	Nootka rose
<i>Rosa woodsii</i>	Wood's rose
<i>Rubus idaeus</i>	red raspberry
<i>Rubus leucodermis</i>	black cap
<i>Rubus nivalis</i>	snow bramble
<i>Rubus parviflorus</i>	thimbleberry
<i>Rubus ursinus</i>	Pacific blackberry
<i>Salix scouleriana</i>	Scouler's willow
<i>Sambucus cerulea</i>	blue elderberry
<i>Sambucus racemosa</i>	black elderberry
<i>Sorbus scopulina</i>	mountain ash
<i>Spiraea betulifolia</i>	birch-leaf spiraea
<i>Symphoricarpos albus</i>	common snowberry
<i>Symphoricarpos mollis</i>	creeping snowberry
<i>Vaccinium globulare</i>	globe huckleberry
<i>Vaccinium membranaceum</i>	thin-leaf huckleberry

FORBS

<i>Achillea millefolium californicum</i>	yarrow
<i>Actea rubra</i>	baneberry
<i>Adenocaulon bicolor</i>	trail plant
<i>Allium geoyeri</i>	Geyer's onion
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Anemone piperi</i>	Piper's anemone
<i>Antennaria racemosa</i>	raceme pussytoes
<i>Apocynum androsaemifolium</i>	dogbane
<i>Arabis glabra</i>	tower mustard
<i>Arenaria macrophyllum</i>	bigleaf sandwort
<i>Arenaria serpyllifolia</i>	thyme-leaf sandwort
<i>Arnica amplexicaulis</i>	clasping arnica
<i>Arnica cordifolia</i>	heart-leaf arnica
<i>Arnica latifolia</i>	broadleaf arnica
<i>Asarum caudatum</i>	wild ginger
<i>Aster conspicuus</i>	showy aster
<i>Aster foliaceus</i>	leafy aster

<i>Athysanus pusillus</i>	sandweed
<i>Bolandra oregana</i>	Oregon bolandra
<i>Boykinia major</i>	mountain boykinia
<i>Calochortus elegans selwayensis</i>	northwest mariposa lily
<i>Calypso bulbosa</i>	fairy-slipper
<i>Campanula rotundifolia</i>	harebells
<i>Cardamine constancei</i>	Constance's bittercress
<i>Cardamine oligosperma</i>	few-seeded bittercress
<i>Castilleja miniata</i>	scarlet paintbrush
<i>Centaurea maculosa</i>	spotted knapweed
<i>Cerastium arvense</i>	field chickweed
<i>Cerastium viscosum</i>	sticky chickweed
<i>Cerastium vulgatum</i>	common chickweed
<i>Chrysanthemum leucanthemum</i>	ox-eye daisy
<i>Circaea alpina</i>	enchanter's nightshade
<i>Cirsium arvense</i>	Canada thistle
<i>Cirsium vulgare</i>	bull thistle
<i>Clarkia pulchella</i>	clarkia
<i>Clarkia rhomboidea</i>	common clarkia
<i>Claytonia sibirica</i>	Siberian springbeauty
<i>Clintonia uniflora</i>	queen's cup beadlily
<i>Collinsia parviflora</i>	baby blue eyes
<i>Collomia grandiflora</i>	large-flowered collomia
<i>Collomia heterophylla</i>	varied-leaf collomia
<i>Collomia linearis</i>	narrow-leaf collomia
<i>Coptis occidentalis</i>	golden thread
<i>Corallorhiza mertensiana</i>	western coral-root
<i>Cornus canadensis</i>	bunchberry dogwood
<i>Corydalis caseana hastata</i>	Case's corydalis
<i>Cynoglossum officinale</i>	hound's tongue
<i>Cypripedium fasciculatum</i>	clustered lady's slipper orchid
<i>Delphinium depauperatum</i>	slim larkspur
<i>Dianthus barbatus</i>	sweet William
<i>Disporum hookeri</i>	fairy bells
<i>Dodecatheon dentatum</i>	white shooting star
<i>Dodecatheon jefferyi</i>	Jeffery's shooting star
<i>Draba verna</i>	spring Whitlow-grass
<i>Eburophyton austiniae</i>	ghost orchid
<i>Epilobium angustifolium</i>	fireweed
<i>Epilobium glaberrimum</i>	smooth willow-herb
<i>Epilobium paniculatum</i>	Autumn willow-herb
<i>Epilobium watsonii</i>	Watson's willow-herb
<i>Erigeron peregrinus</i>	subalpine daisy
<i>Erigeron speciosus</i>	showy fleabane
<i>Erythronium grandiflorum</i>	avalanche lily
<i>Fragaria vesca</i>	woods strawberry

<i>Gaillardia aristata</i>	blanketflower
<i>Galium aparine</i>	goosegrass
<i>Galium bifolium</i>	thin-leaf bedstraw
<i>Galium boreale</i>	northern bedstraw
<i>Galium triflorum</i>	sweet scented bedstraw
<i>Geum macrophyllum</i>	big-leaf geum
<i>Goodyera oblongifolia</i>	rattlesnake plantain
<i>Habenaria saccata</i>	slender bogorchid
<i>Habenaria unalascensis</i>	Alaska rein-orchid
<i>Heracleum lanatum</i>	cow parsnip
<i>Heterocodon rariflorum</i>	heterocodon
<i>Heuchera cylindrica</i>	round-leaf alumroot
<i>Hieracium albiflorum</i>	white-flowered hawkweed
<i>Hydrophyllum capitatum</i>	ball-flower waterleaf
<i>Hypericum perforatum</i>	common St. John's-wort
<i>Iliamna rivularis</i>	streambank globne-mallow
<i>Lactuca biennis</i>	tall blue lettuce
<i>Lactuca seriola</i>	prickly lettuce
<i>Lathyrus bijugatus</i>	pinewoods peavine
<i>Lathyrus nevadensis parkeri</i>	Sierran peavine
<i>Ligusticum canbyi</i>	Canby's ligusticum
<i>Ligusticum verticillatum</i>	verticillate-leaf ligusticum
<i>Listera convallarioides</i>	broad-lipped twayblade
<i>Listera cordata</i>	heart-leaf twayblade
<i>Lithophragma parviflora</i>	woodland star
<i>Lupinus polyphyllus burkei</i>	many-leaved lupine
<i>Lysichitum americanum</i>	skunk cabbage
<i>Melissa officinalis</i>	balm
<i>Mertensia paniculata</i>	panicle bluebells
<i>Microseris nutans</i>	nodding microseris
<i>Microsteris gracilis</i>	pink microsteris
<i>Mimulus clivicola</i>	bank monkeyflower
<i>Mimulus floribundus</i>	purple-stem monkeyflower
<i>Mimulus guttatus</i>	common monkeyflower
<i>Mitella caulescens</i>	leafy mitrewort
<i>Mitella stauropetala</i>	one-sided mitrewort
<i>Monotropa uniflora</i>	Indian pipe
<i>Montia parvifolia</i>	small-leaved montia
<i>Montia perfoliata</i>	miner's lettuce
<i>Montia sibirica</i>	Siberian spring-beauty
<i>Nemophila breviflora</i>	Great Basin nemophila
<i>Osmorhiza chilensis</i>	sweet cicely
<i>Pedicularis racemosa</i>	sickle-top lousewort
<i>Penstemon wilcoxii</i>	Wilcox's penstemon
<i>Phacelia hastata leucophylla</i>	Silver-lef phacelia
<i>Plantago lanceolata</i>	plantain

<i>Potentilla glandulosa</i>	sticky cinquefoil
<i>Prenanthes sagittata</i>	rattlesnake-root
<i>Prunella vulgaris</i>	self-heal
<i>Pterospora andromedea</i>	pinedrops
<i>Pyrola aphylla</i>	leafless wintergreen
<i>Pyrola asarifolia</i>	pink wintergreen
<i>Pyrola picta</i>	white-vein pyrola
<i>Pyrola secunda</i>	one-sided wintergreen
<i>Ranunculus uncinatus</i>	little buttercup
<i>Rudbeckia occidentalis</i>	western coneflower
<i>Rumex acetosella</i>	sheep sorrel
<i>Sanguisorba sitchensis</i>	Sitka burnet
<i>Saxifraga arguta</i>	brook saxifrage
<i>Saxifraga occidentalis idahoensis</i>	western saxifrage
<i>Saxifraga lyallii</i>	red-stemmed saxifrage
<i>Scrophularia lanceolata</i>	lance-leaf figwort
<i>Sedum stenopetalum</i>	wormleaf stonecrop
<i>Senecio triangularis</i>	arrowleaf groundsel
<i>Silene cserei</i>	smooth catch-fly
<i>Silene menziesii</i>	Menies' silene
<i>Smilacina racemosa</i>	false Solomon's seal
<i>Smilacina stellata</i>	starrt Solomon's seal
<i>Solidago canadensis</i>	Canada goldenrod
<i>Spiranthes romanzoffiana</i>	hooded ladies-tresses
<i>Stenanthium occidentale</i>	western stenanthium
<i>Streptopus amplexifolius</i>	twisted stalk
<i>Suksdorfia ranunculifolia</i>	suksdorfia
<i>Taraxacum officinale</i>	dandelion
<i>Thalictrum occidentale</i>	meadowrue
<i>Thermopsis montana</i>	golden banner
<i>Tiarella trifoliata</i>	foamflower
<i>Tofieldia glutinosa brevistyla</i>	sticky tofieldia
<i>Tragapogon dubius</i>	goat's beard
<i>Trautvetteria caroliniensis</i>	false bug-bane
<i>Trientalis latifolia</i>	western starflower
<i>Trifolium pratense</i>	red clover
<i>Trillium ovatum</i>	white trillium
<i>Triodanis perfoliata</i>	Venus'-looking-glass
<i>Urtica dioica gracilis</i>	stinging nettles
<i>Valeriana sitchensis</i>	Sitka valerian
<i>Veratrum californicum caudatum</i>	California false hellebore
<i>Verbascum thapsus</i>	mullein
<i>Veronica americana</i>	American speedwell
<i>Veronica serpyllifolia</i>	thyme-leaved speedwell
<i>Vicia americana</i>	American vetch
<i>Viola adunca</i>	early blue violet

<i>Viola canadensis</i>	western Canadian violet
<i>Viola glabella</i>	heart-leaf violet
<i>Viola orbiculata</i>	round-leaf violet
<i>Viola palustris</i>	marsh violet
<i>Viola sempervirens</i>	redwoods violet
<i>Waldsteinia idahoensis</i>	Idaho barren-ground strawberry

PTERIDOPHYTES:

<i>Adiantum pedatum</i>	maidenhair fern
<i>Aspidotis densa</i>	podfern
<i>Athyrium filix-femina</i>	lady-fern
<i>Botrychium virginianum</i>	Virginia grapefern
<i>Cryptogramma crista</i>	parsely fern
<i>Cystopteris fragilis</i>	brittle bladderfern
<i>Dryopteris carthusiana</i>	mountain wood-fern
<i>Dryopteris expansa</i>	mountain wood-fern
<i>Dryopteris filix-mas</i>	male fern
<i>Equisetum arvense</i>	common horsetail
<i>Equisetum sylvaticum</i>	wood horsetail
<i>Equisetum telmateia</i>	giant horsetail
<i>Gymnocarpium dryopteris</i>	oak fern
<i>Lycopodium clavatum</i>	ground vine
<i>Lycopodium selago</i>	fir clubmoss
<i>Polypodium hesperium</i>	western polypody
<i>Polystichum munitum</i>	swordfern
<i>Pteridium aquilinum</i>	bracken fern
<i>Selaginella wallacei</i>	Wallace's selaginella
<i>Woodsia oregana</i>	Oregon woodsia

GRAMINOIDS

<i>Agropyron spicatum</i>	bluebunch wheatgrass
<i>Agrostis stolonifera</i>	redtop
<i>Agrostis tenuis</i>	
<i>Bromus japonicus</i>	Japanese brome
<i>Bromus tectorum</i>	cheatgrass
<i>Bromus vulgaris</i>	Columbia brome
<i>Calamagrostis canadensis</i>	bluejoint reedgrass
<i>Calamagrostis rubescens</i>	pinegrass
<i>Carex amplifolia</i>	big-leaf sedge
<i>Carex athrostachya</i>	slender beaked sedge
<i>Carex deweyana</i>	Dewey's sedge
<i>Carex geyeri</i>	Geyer's sedge
<i>Carex hendersonii</i>	Henderson's sedge
<i>Carex hoodii</i>	Hood's sedge
<i>Carex lenticularis</i>	lentil-fruited sedge
<i>Carex pachystachya</i>	thick-headed sedge

<i>Carex rossii</i>	Ross' sedge
<i>Carex utriculata</i>	beaked sedge
<i>Carex vesicaria</i>	inflated sedge
<i>Carex vulpinoidea</i>	fox sedge
<i>Cinna latifolia</i>	drooping woodreed
<i>Dactylis glomerata</i>	orchardgrass
<i>Danthonia spicata</i>	oatgrass
<i>Deschampsia cespitosa</i>	tufted hairgrass
<i>Eleocharis palustris</i>	common spike rush
<i>Elymus glaucus</i>	blue wildrye
<i>Festuca arundinacea</i>	tall fescue
<i>Festuca occidentalis</i>	western fescue
<i>Festuca subulata</i>	bearded fescue
<i>Festuca subuliflora</i>	crinkle-awn fescue
<i>Glyceria elata</i>	tall mannagrass
<i>Glyceria grandis</i>	American mannagrass
<i>Juncus covillei obtusatus</i>	Coville's rush
<i>Juncus effusus compactus</i>	soft rush
<i>Juncus effusus pacificus</i>	soft rush
<i>Juncus ensifolius</i>	swordleaf rush
<i>Juncus tenuis</i>	wire rush
<i>Lolium multiflorum</i>	annual ryegrass
<i>Luzula campestris</i>	field woodrush
<i>Luzula parviflora</i>	small-flowered woodrush
<i>Melica subulata</i>	Alaska oniongrass
<i>Panicum capillare</i>	common witchgrass
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Phleum pratense</i>	timothy
<i>Poa palustris</i>	fowl bluegrass
<i>Scirpus microcarpus</i>	smallfruit bullrush
<i>Trisetum canescens</i>	tall trisetum

Table 2
Chateau Falls RNA

The following is a plant species list made during a field visit by Bob Moseley and Juanita Lichthardt on June 13, 1996. (+ indicates additions to the list contained in the establishment record).

Scientific Name	Common Name	Riparian
TREES		
<i>Abies grandis</i>	grand fir	
<i>Betula papyrifera</i>	paper birch	X
<i>Larix occidentalis</i>	western larch	
<i>Pinus contorta</i>	lodgepole pine	
<i>Pinus monticola</i>	western white pine	
<i>Pinus ponderosa</i>	ponderosa pine	
<i>Pseudotsuga menziesii</i>	Douglas-fir	X
+ <i>Taxus brevifolia</i>	Pacific yew	
<i>Thuja plicata</i>	western redcedar	X
SHRUBS		
<i>Acer glabrum</i>	Rocky Mountain maple	X
<i>Alnus incana</i>	thin-leaf alder	X
<i>Amelanchier alnifolia</i>	serviceberry	X
+ <i>Arctostaphylos uva-ursi</i>	bearberry	
+ <i>Berberis repens</i>	Oregon grape	
+ <i>Ceanothus sanguineus</i>	red-stem ceanothus	
<i>Ceanothus velutinus</i>	mountain balm	
<i>Cornus stolonifera</i>	red-osier dogwood	X
<i>Holodiscus discolor</i>	oceanspray	X
+ <i>Linnaea borealis</i>	twinflower	
+ <i>Lonicera ciliosa</i>	orange honeysuckle	X
<i>Lonicera utahensis</i>	Utah honeysuckle	X
<i>Menziesia ferruginea</i>	fool's huckleberry	X
<i>Pachistima myrsinites</i>	mountain lover	X
+ <i>Philadelphus lewisii</i>	mock orange	X
<i>Physocarpus malvaceus</i>	ninebark	
<i>Prunus emarginata</i>	bitter cherry	X
<i>Prunus virginiana</i>	choke cherry	X
+ <i>Rhamnus purshiana</i>	casara	X
+ <i>Ribes hudsonianum</i>	stinking currant	X
+ <i>Rosa woodsii</i>	Wood's rose	
<i>Rubus parviflorus</i>	thimbleberry	X
+ <i>Salix drummondiana</i>	Drummond's willow	X
<i>Salix scouleriana</i>	Scouler's willow	X

+ <i>Sorbus scopulina</i>	mountain ash	
+ <i>Spiraea betulifolia</i>	birch-leaf spiraea	
+ <i>Spiraea densiflora</i>	subalpine spiraea	X
<i>Symphoricarpos albus</i>	common snowberry	X
<i>Vaccinium globulare</i>	globe huckleberry	X

FORBS

<i>Achillea millefolium</i>	common yarrow	
<i>Actea rubra</i>	baneberry	
<i>Adiantum pedatum</i>	maidenhair fern	X
+ <i>Agoseris heterophylla</i>	annual agoseris	
+ <i>Anemone piperi</i>	Piper's anemone	X
+ <i>Antennaria anaphaloides</i>	tall pussytoes	
<i>Apocynum androsaemifolium</i>	dogbane	
+ <i>Arabis glabra</i>	tower mustard	
+ <i>Arabis sp.</i>	rockcress	
+ <i>Arenaria serpyllifolia</i>	thyme-leaf sandwort	
+ <i>Arnica cordifolia</i>	heart-leaf arnica	X
+ <i>Asarum caudatum</i>	wild ginger	
+ <i>Aster sp.</i>	aster	
<i>Athyrium filix-femina</i>	ladyfern	
+ <i>Balsamorhiza sagittata</i>	arrowleaf balsamroot	
<i>Boykinia major</i>	false bug-bane	
+ <i>Brodiaea douglasii</i>	Douglas' brodiaea	
+ <i>Calochortus eurycarpus</i>	wide-fruit mariposa	
+ <i>Chimaphila menziesii</i>	Menzies' prince's pine	
+ <i>Chimaphila umbellata</i>	prince's pine	
+ <i>Clintonia uniflora</i>	queen-cup beadlily	X
+ <i>Collinsia parviflora</i>	baby blue-eyes	
+ <i>Collomia linearis</i>	narrow-leaf collomia	
<i>Coptis occidentalis</i>	golden-thread	X
+ <i>Cornus canadensis</i>	bunchberry dogwood	
+ <i>Cryptogramma crispera</i>	parsley-fern	
+ <i>Cystopteris fragilis</i>	brittle bladderfern	X
+ <i>Disporum hookeri</i>	fairy bells	
+ <i>Draba verna</i>	spring Whitlow-grass	
+ <i>Dryopteris carthusiana</i>	woodfern	X
<i>Epilobium angustifolium</i>	fireweed	X
+ <i>Epilobium minutum</i>	small-flowered willow-herb	
+ <i>Equisetum arvense</i>	horsetail	X
+ <i>Erigeron peregrinus</i>	wandering fleabane	X
+ <i>Erythronium grandiflorum</i>	avalanche lily	
+ <i>Fragaria vesca</i>	wild strawberry	
<i>Goodyera oblongifolia</i>	rattlesnake plantain	
+ <i>Gymnocarpium dryopteris</i>	oak-fern	X
+ <i>Habenaria saccata</i>	slender bog orchid	X

<i>Heuchera cylindrica</i>	roundleaf alumroot	
+ <i>Hieracium albiflorum</i>	white-flowered hawkweed	
<i>Hypericum perforatum</i>	St. John's wort	
+ <i>Lathyrus nevadensis</i>	Sierra peavine	
+ <i>Ligusticum verticillatum</i>	verticillate-flowered licorice root	X
+ <i>Lomatium sandbergii</i>	Sandberg's desert-parsley	
+ <i>Madia minima</i>	small-head tarweed	
+ <i>Mertensia paniculata</i>	panicle bluebells	X
+ <i>Microseris nutans</i>	nodding microseris	
+ <i>Mimulus breviflorus</i>	short-flowered monkey-flower	
+ <i>Mimulus breweri</i>	Brewer's monkey-flower	
+ <i>Mitella caulescens</i>	leafy mitrewort	X
+ <i>Mitella stauropetala</i>	side-flowered mitrewort	
+ <i>Montia sibirica</i>	Siberian miner's lettuce	
+ <i>Orobancha sp.</i>	broomrape	
+ <i>Osmorhiza chilensis</i>	mountain sweet-cicely	
+ <i>Penstemon attenuatus</i>	sulphur penstemon	
+ <i>Phacelia heterophylla</i>	varileaf phacelia	
<i>Polystichum munitum</i>	swordfern	
+ <i>Potentilla glandulosa</i>	sticky cinquefoil	
+ <i>Prenanthes sagittata</i>	rattlesnake-root	X
<i>Pteridium aquilinum</i>	brackenfern	
+ <i>Pyrola asarifolia</i>	common pink wintergreen	
+ <i>Rumex acetosella</i>	sheep sorrel	
+ <i>Saxifraga ferruginea</i>	rusty saxifrage	
+ <i>Saxifraga mertensiana</i>	Merten's saxifrage	X
+ <i>Saxifraga occidentalis</i>	western saxifrage	X
+ <i>Sedum stenopetalum</i>	wormleaf sedum	
+ <i>Senecio integerrimus</i>	western groundsel	
+ <i>Senecio triangularis</i>	arrowleaf groundsel	X
+ <i>Smilacina racemosa</i>	false Solomon's seal	
+ <i>Smilacina stellata</i>	starry Solomon's seal	
+ <i>Stenanthium occidentale</i>	western stenanthium	X
+ <i>Streptopus amplexifolius</i>	twisted-stalk	X
+ <i>Taraxacum officinale</i>	dandelion	
+ <i>Trillium ovatum</i>	white trillium	
+ <i>Vicia americana</i>	American vetch	
+ <i>Viola glabella</i>	heart-leaf violet	X
+ <i>Viola orbiculata</i>	round-leaf violet	
+ <i>Xerophyllum tenax</i>	beargrass	

GRAMINOIDS

<i>Agropyron spicatum</i>	bluebunch wheatgrass
+ <i>Bromus marginata</i>	mountain brome

+ <i>Bromus tectorum</i>	cheatgrass	
<i>Calamagrostis rubescens</i>	pinegrass	
+ <i>Carex concinnoides</i>	mountain sedge	
+ <i>Carex deweyana</i>	Dewey's sedge	
<i>Carex geyeri</i>	elk sedge	
+ <i>Festuca megalura</i>	foxtail fescue	
+ <i>Glyceria elata</i>	mannagrass	X
+ <i>Juncus ensifolius</i>	daggerleaf rush	X
+ <i>Luzula campestris</i>	field woodrush	X
+ <i>Luzula divaricata</i>	spreading woodrush	
<i>Oryzopsis exigua</i>	little ricegrass	
<i>Poa gracillima</i>	slender bluegrass	

Table 3**Dutch Creek RNA: List of Riparian Plant Taxa**

The following is a list of plant taxa observed in the riparian zone of Dutch Creek by Juanita Lichthardt on September 22, 1996. (+ indicates additions to the species list in the establishment record.)

Scientific name	Common name
TREES	
<i>Populus trichocarpa</i>	black cottonwood
<i>Thuja plicata</i>	western redcedar
SHRUBS	
<i>Alnus incana</i>	thinleaf alder
<i>Amelanchier alnifolia</i>	serviceberry
+ <i>Artemisia ludoviciana</i>	western mugwort
<i>Cornus stolonifera</i>	red osier dogwood
<i>Menziesia ferruginea</i>	fool's huckleberry
<i>Prunus emarginata</i>	bittercherry
<i>Rhamnus purshiana</i>	casacara
<i>Rubus parviflorus</i>	thimbleberry
<i>Salix scouleriana</i>	Scouler's willow
<i>Sorbus scopulina</i>	mountain ash
FORBS AND FERNS	
<i>Adiantum pedatum</i>	maidenhair fern
<i>Asarum caudatum</i>	wild ginger
+ <i>Aster eatonii</i>	Eaton's aster
<i>Athyrium filix-femina</i>	ladyfern
<i>Boykinia major</i>	mountain boykinia
+ <i>Equisetum arvense</i>	horsetail
+ <i>Habenaria dilatata</i> var. <i>leucostachys</i>	white bog-orchid
+ <i>Ligusticum verticillatum</i>	verticillate-umbel ligusticum
+ <i>Lupinus polyphyllus</i> var. <i>burkei</i>	bigleaf lupine
<i>Polystichum munitum</i>	swordfern
<i>Pteridium aquilinum</i>	bracken fern
+ <i>Selaginella douglasii</i>	Douglas' selaginella
<i>Senecio triangularis</i>	arrow-leaf groundsel
+ <i>Solidago canadensis</i>	goldenrod
+ <i>Veratrum californicum</i>	California false hellebore

GRAMINOIDS

+ <i>Carex deweyana</i>	Dewey's sedge
+ <i>Carex lenticularis</i>	lentil-fruit sedge
+ <i>Dactylis glomerata</i>	orchardgrass
<i>Elymus glaucus</i>	blue wildrye
+ <i>Glyceria elata</i>	mannagrass

Table 4**Four-bit Creek RNA: List of Riparian Plant Taxa**

The following is a list of vascular plant taxa observed by Juanita Lichthardt in riparian areas within Four-bit Creek RNA on July 12, 1996. (+ indicates an addition to the species list in the establishment record)

Scientific Name	Common Name
TREES	
<i>Abies lasiocarpa</i>	subalpine fir
<i>Picea engelmannii</i>	Engelmann spruce
<i>Thuja plicata</i>	western redcedar
SHRUBS	
+ <i>Alnus incana</i>	thinleaf alder
<i>Cornus stolonifera</i>	red-osier dogwood
<i>Linnaea borealis</i>	twinflower
+ <i>Lonicera involucrata</i>	honeysuckle
<i>Lonicera utahensis</i>	Utah honeysuckle
+ <i>Rhamnus alnifolia</i>	alder buckthorn
+ <i>Ribes hudsonianum</i>	stink currant
+ <i>Ribes lacustre</i>	prickly currant
<i>Rubus parviflorus</i>	thimbleberry
+ <i>Salix phylicifolia</i> ssp. <i>planifolia</i> *	tea-leaved willow
+ <i>Salix scouleriana</i>	Scouler's willow
<i>Sambucus cerulea</i>	blue elderberry
+ <i>Spiraea densiflora</i>	subalpine spiraea
<i>Symphoricarpos albus</i>	snowberry
+ <i>Vaccinium membranaceum</i>	thin-leaf huckleberry

FORBS AND FERNS

<i>Adiantum pedatum</i>	maidenhair fern
+ <i>Angelica arguta</i>	sharp-tooth angelica
+ <i>Aster modestus</i>	great northern aster
<i>Athyrium filix-femina</i>	lady-fern
+ <i>Boykinia major</i>	mountain boykinia
<i>Cornus canadensis</i>	bunchberry dogwood
+ <i>Dodecatheon jeffreyi</i>	Jeffrey's shooting star
+ <i>Epilobium</i> sp.	willow herb
+ <i>Equisetum arvense</i>	horsetail
+ <i>Galium triflorum</i>	sweet-scented bedstraw
+ <i>Habenaria saccata</i>	slender bog-orchid
+ <i>Heracleum lanatum</i>	cow parsnip
+ <i>Ligusticum canbyi</i>	Canby's ligusticum
+ <i>Mertensia paniculata</i>	panicle bluebells
+ <i>Mimulus guttatus</i>	yellow monkeyflower
+ <i>Mimulus moschatus</i>	musk monkeyflower
+ <i>Mitella caulescens</i>	leafy-stemmed mitrewort
+ <i>Ranunculus acriformis</i>	sharp buttercup
+ <i>Ranunculus flammula</i>	creeping buttercup
+ <i>Ranunculus macounii</i>	Macoun's buttercup
<i>Senecio triangularis</i>	arrow-leaf groundsel
<i>Smilacina stellata</i>	star-flowered false Solomon's seal
+ <i>Stellaria calycantha</i>	northern starwort
<i>Streptopus amplexifolius</i>	twisted stalk
<i>Tiarella trifoliata</i>	foam flower
+ <i>Tofieldia glutinosa</i> var. <i>montana</i>	sticky tofieldia
<i>Trautvetteria caroliniensis</i>	false bugbane
<i>Veratrum californicum</i>	California false hellebore
+ <i>Veronica americana</i>	American brooklime
<i>Viola glabella</i>	heart-leaf violet

GRAMINOIDS

+ <i>Agrostis scabra</i>	rough hair-grass
+ <i>Calamagrostis canadensis</i>	bluejoint reedgrass
+ <i>Carex amplifolia</i>	big-leaf sedge
+ <i>Carex aquatilis</i>	water sedge
+ <i>Carex arcta</i>	northern clustered sedge
+ <i>Carex brunnescens</i> *	brownish sedge
+ <i>Carex interior</i>	inland sedge
+ <i>Carex luzulina</i>	woodrush sedge
+ <i>Carex muricata</i>	muricate sedge
+ <i>Carex pachystachya</i>	thick-headed sedge
+ <i>Carex vesicaria</i>	inflated sedge
+ <i>Cinna latifolia</i>	woodreed
+ <i>Deschampsia cespitosa</i>	tufted hairgrass

+ *Glyceria elata*

tall mannagrass

+ *Scirpus microcarpus*

small-fruit bulrush

* Specimen deposited at the University of Idaho Herbarium

Table 5
Grave Peak RNA

The following vascular plant taxa were observed in Grave Peak RNA by J. Lichthardt on September 14, 1996. (+ indicates additions to the plant list in the establishment record).

Scientific Name	Common Name
TREES	
<i>Abies lasiocarpa</i>	subalpine fir
<i>Larix lyallii</i>	subalpine larch
+ <i>Picea engelmannii</i>	Engelmann spruce
<i>Pinus albicaulis</i>	whitebark pine
SHRUBS	
+ <i>Kalmia microphylla</i>	small-leaved laurel
+ <i>Luetkea pectinata</i> *	luetkea
<i>Phyllodoce empetriformis</i>	pink mountain heather
+ <i>Sorbus sitchensis</i>	mountain ash
+ <i>Spiraea douglasii</i>	Douglas' spiraea
<i>Vaccinium scoparium</i>	grouse whortleberry
FORBS AND FERNS	
<i>Athyrium distentifolium</i> *	alpine lady-fern
+ <i>Boykinia major</i>	mountain boykinia
<i>Campanula parryi</i>	Parry's campanula
+ <i>Castilleja miniata</i>	scarlet paintbrush
+ <i>Erigeron peregrinus</i> ssp. <i>callianthemus</i> var. <i>scaposus</i> *	subalpine daisy
<i>Eriogonum pyrolifolium</i> var. <i>coryphaeum</i>	alpine buckwheat
+ <i>Gentiana calycosa</i>	mountain bog gentian
<i>Hypericum formosum</i> var. <i>nortoniae</i>	western St. John's-wort
<i>Penstemon flavescens</i>	pale yellow penstemon
+ <i>Phlox hoodii</i>	Hood's phlox
<i>Polemonium pulcherrimum</i> var. <i>pulcherrimum</i>	skunk-leaved polemonium
<i>Polygonum phytolaccaefolium</i>	alpine knotweed
+ <i>Potentilla flabellifolia</i>	fan-leaf cinquefoil
+ <i>Pteridium aquilinum</i>	bracken fern
+ <i>Senecio triangularis</i>	arrow-leaf groundsel
+ <i>Tofieldia glutinosa</i> ssp. <i>montana</i>	sticky tofieldia
GRAMINOIDS	
+ <i>Carex aquatilis</i>	water sedge
+ <i>Carex illota</i> *	small-headed sedge
+ <i>Carex lenticularis</i>	lentil-fruited sedge

+ <i>Carex multicosata</i>	many-nerved sedge
+ <i>Carex nigricans</i>	black alpine sedge
+ <i>Carex praeceptorum</i>	teacher's sedge
+ <i>Carex scopulorum</i>	Rocky Mountain sedge
+ <i>Carex utriculata</i>	beaked sedge
+ <i>Danthonia intermedia</i>	timber oatgrass
+ <i>Deschampsia cespitosa</i>	tufted hairgrass
<i>Juncus drummondii</i> var. <i>drummondii</i> *	Drummond's rush
+ <i>Juncus mertensianus</i>	Merten's rush
+ <i>Trisetum spicatum</i>	spike trisetum

* Specimen deposited in the University of Idaho Vascular Herbarium.

Table 6
Steep Lakes RNA

The following species list was made at lower Steep Lake by Juanita Lichthardt on September 5, 1996. (+ indicates an addition to the species list in the establishment record).

Scientific Name	Common Name	Riparian
SHRUBS		
<i>Alnus sinuata</i>	Sitka alder	
+ <i>Lonicera involucrata</i>	twinberry honeysuckle	X
+ <i>Ribes lacustre</i>	prickly current	
+ <i>Salix scouleriana</i>	Scouler's willow	
+ <i>Spiraea douglasii</i>	Douglas' spiraea	
FORBS AND FERNS		
+ <i>Antennaria racemosa</i>	raceme pussytoes	
+ <i>Aster foliaceus</i>	leafy aster	
+ <i>Athyrium</i> sp.	ladyfern	
+ <i>Castilleja miniata</i>	scarlet paintbrush	
+ <i>Delphinium occidentale</i>	western larkspur	
+ <i>Habenaria saccata</i>	slender bog-orchid	
+ <i>Heracleum lanatum</i>	cow parsnip	
+ <i>Ligusticum canbyi</i>	Canby's ligusticum	
+ <i>Mertensia paniculata</i>	panicle bluebells	X
+ <i>Mimulus lewisii</i>	Lewis' monkeyflower	
+ <i>Parnassia fimbriata</i>	fringed grass-of-Parnassus	
+ <i>Polystichum lonchitis</i>	mountain swordfern	
+ <i>Saussurea americana</i>	American sawwort	X
+ <i>Saxifraga arguta</i>	brook saxifrage	
+ <i>Senecio triangularis</i>	arrow-leaf groundsel	
+ <i>Valeriana sitchensis</i>	Sitka valerian	
+ <i>Veratrum californicum</i>	California false hellebore	X
GRAMINOIDS		
+ <i>Calamagrostis canadensis</i>	bluejoint reedgrass	X
+ <i>Carex neurophora</i>	alpine nerved sedge	
+ <i>Elymus glaucus</i>	blue wildrye	
+ <i>Juncus tenuis</i>	slender rush	

APPENDIX C
COMPLETED PLOT FORMS
FOR SELECTED COMMUNITIES