Basinwide Fisheries Habitat Assessment Project

Volume I

Streams:

Angora Creek
Blackwood Creek
Burke Creek
Burton Creek
Cold Creek
Eagle Creek
Glen Alpine Creek
Griff Creek
Meeks Creek
Saxon Creek
Slaughterhouse Canyon Creek
Taylor Creek
Third Creek
Trout Creek
Upper Truckee River
U.T. River-Meiss Meadows
Ward Creek
Watson Creek

U.S.D.A. Forest Service-Lake Tahoe Basin Management Unit

California Tahoe Conservancy

Tahoe Regional Planning Agency

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Introduction

Changes within the Lake Tahoe Basin from anthropogenic management and development can be seen in the changes in the biodiversity within the Basin. This is especially noticeable with respect to the riparian and aquatic ecosystems.

Throughout the Basin fundamental elements of riparian ecosystems have been affected at different scales. The degree to which these elements have been affected has had an impact on the integrity of the riparian areas and streams. Consequently, how the riparian ecosystems, which include the streams of the Basin, function have been altered. This has affected the stability of the native riparian systems.

Some of the native riparian ecosystems have been disturbed beyond their limits of stability, and have become fundamentally different. The degree to which the disturbance has affected the biological diversity of these riparian systems is important in their recovery and restoration. The greater the biological diversity of these systems, or the less the biological diversity has been impacted, the increased likelihood that the limits of their stability have not been exceeded. Therefore, their recovery and/or restoration is more certain.

Importantly, any changes in or perturbations to the physical diversity of the riparian systems has been reflected in a direct change in the biological diversity of the systems. This concept has been the focus of the "Basinwide Fisheries Habitat Assessment Project."

The project has utilized a biocentric and ecocentric approach in the assessment of the physical diversity of the streams within the Basin. By using this approach the habitats of individual species and groups of species could be determined, as well as the structure at the community level within a watershed. Even though these are at different scales, the assessment has the ability to differentiate and blend both scales.

The project identified the existing conditions, with respect to channel geomorphic units, within the streams of the Basin. This information is then used to develop desired conditions for the streams within the Basin. Streams with low physical diversities will be identified and prioritized for recovery and restoration needs. As the physical diversity of streams within the Basin is increased through the implementation of recovery and restoration projects, the integrity of their riparian ecosystems will be protected, thereby conserving their biodiversity and lowering the risk to their sustainability.

Project Description

The "Basinwide Fisheries Habitat Assessment Project" has concentrated on the assessment of fisheries habitat types within the streams of the Lake Tahoe Basin. These habitat types are actually channel geomorphic units of a stream that are essential for the sustainability of the aquatic and riparian ecosystems.

A channel geomorphic unit is a discrete part of a stream, which is created in response to the interactions between watershed processes and stream dynamics and morphology. These channel geomorphic units or habitat types take the form of pools, runs, or riffles. The Forest Service's classification system uses 28 habitat types. For example, there are 16 pool habitat types within the 28 habitat types.

The classification system provides a standard frame of reference, with respect to aquatic habitats, for the management of streams within the Lake Tahoe Basin. These habitats are ecologically meaningful for the aquatic and riparian ecosystems.

Additionally, the classification system is well suited for the small streams of the Basin, because they have considerable heterogeneity with respect to morphological and hydraulic characteristics. The information gained from describing the habitats at this scale will aid in the understanding of the components, structures, and processes of the aquatic ecosystems.

Even though the habitat typing system provides good information about the elements of the streams, it does not fully describe the functioning of the stream system. Identification of different channel types, in addition to the habitat types, is important in the assessment of a stream's biological and physical response to management.

Each stream is classified according to protocol described by Rosgen (1994). The classification is based on entrenchment, bed material, width-to-depth ratio, gradient, and sinuosity. The Rosgen system provides a comprehensive description of the channel or reach.

Streams were assessed for habitat types and channel types from their confluences to major barriers or their headwater areas. The habitat types were described as to length, width, depth, instream cover, and substrate composition. The size and complexity of each stream determined the abundance and distribution of habitat types and channel types. For example, 675 habitat units were described for Trout Creek, whereas only 15 habitat units were described for the Snow Lake tributary to Cascade Creek.

The assessment project, in total, aids in the understanding of the components, structures, and processes of the aquatic ecosystems and the functions that are integrated within the watershed and especially the stream systems.

Project Accomplishments

The Forest Service has assessed 58 streams within California and Nevada. The streams assessed covered approximately 165 miles, and ranged from 0.2 miles on the Snow Lake tributary to over 20 miles on the Upper Truckee River. There have been 11,379 habitat units and 505 channel types identified and measured within the 165 miles of stream. For the purposes of this analysis, 17 representative streams were considered.

Every stream is divided into sequential reaches based on channel types, as previously described. The channel information specific to channel typing includes: channel type (according to Rosgen), reach length, bankfull width, bankfull mean depth, bankfull maximum depth, flood-prone width, channel gradient, width-to-depth ratio, entrenchment, sinuosity, and dominant particle size of the channel material. Additional information includes: location, elevation, latitude/longitude, streamflow measurement, vegetation layers, and riparian use levels observed, with respect to development and management. For this analysis, only the channel type and channel length were considered, and like channel types were combined for comparison.

Within each reach are individual habitat units which are sequentially numbered. The habitat units are defined by habitat types as described by Bisson et. al.(1981), and Hawkins et. al. (1993). The procedure for collecting the habitat type parameters is delineated by the USDA Forest Service Handbook (FSH 2609.23). The measured parameters for each habitat type include: mean length, mean width, mean depth, and maximum depth. Of these units, every pool and 20% of all other habitat types were sampled for cover and substrate. For this analysis, only the habitat type and mean length were considered due to their high degree of repeatability. All like types were correlated together for comparison and a graph was produced.

Pools are such a strong indicator of stream condition that they were separated out from all other habitat types. All similar pool types were grouped together and a graph was produced. Also on the graph is the percentage of total drainage length that is comprised of pools.

Another attribute of each stream that is defined by habitat type is barriers to fish migration. Barriers were defined by the following habitat types: 0-dry channel, 3-cascade, 13-dam pool, 25-beaver pond, and 27-culvert. Although all of these types were queried for scrutiny, not all of the habitat units that were called up actually meet the requirement of a barrier. Therefore,

the habitat typing notes are included to aid in the description of the unit.

The information described above is presented for selected streams within the Lake Tahoe Basin: Angora Cr., Blackwood Cr., Burke Cr., Burton Cr., Cold Cr., Eagle Cr., Glen Alpine Cr., Griff Cr., Meeks Cr., Saxon Cr., Slaughterhouse Cr., Taylor Cr., Third Cr., Trout Cr., Upper Truckee River, Ward Cr., and Watson Cr.

Project Discussion

The habitat type and channel type analyses will be used to determine the ecological status of each stream, whether it is early, mid, or late seral. Streams that have optimum or desirable conditions for habitat types and channel types will be used to develop desired conditions for the improvement and restoration of streams within the Lake Tahoe Basin. Streams that do not provide the desired habitat type and channel type conditions for the sustainability of the aquatic and riparian ecosystems will be prioritized for habitat and channel improvement and restoration projects.

References

Bisson, P.A., J.L. Nielsen, R.A. Palmason, and **L.E. Grove.** 1982. A system of naming habitat types in small streams, with examples of habitat utilization by salmonids during low streamflow. Pages 62-73 *in* N.B. Armantrout, ed. Acquisition and utilization of aquatic habitat inventory information. American Fisheries Society, Western Division, Bethesda, MD.

Hawkins, C.P., and **ten coauthors.** 1993. A hierarchial approach to classifying stream habitat features. Fisheries (Bethesda) 18(6):3-12.

Rosgen, D.L. 1994. A classification of natural rivers. Catena 22:169-199.

USDA (US Department of Agriculture), Forest Service. 1989. Fisheries habitat surveys handbook. Region 4-FSH 2609.23. Ogden, UT.

Lake Tahoe Basin Inventory

MAINSTREAM	INVENTORY
ANGORA CREEK	Channel Typing/ Habitat Typing/ Biological Survey
BLACKWOOD CREEK	Channel Typing/ Habitat Typing/ Biological Survey
BURKE CREEK	Channel Typing/ Habitat Typing
BURTON CREEK	Channel Typing/ Habitat Typing/ Biological Survey
COLD CREEK	Channel Typing/ Habitat Typing/ Biological Survey
EAGLE CREEK	Channel Typing/ Habitat Typing/ Biological Survey
GLEN ALPINE CREEK	Channel Typing/ Habitat Typing/ Biological Survey
GRIFF CREEK	Channel Typing/ Habitat Typing
MEEKS CREEK	Channel Typing/ Habitat Typing
SAXON CREEK	Channel Typing/ Habitat Typing
SLAUGHTERHOUSE CANYON	Channel Typing/ Habitat Typing/ Biological Survey
TAYLOR CREEK	Channel Typing/ Habitat Typing/ Biological Survey
THIRD CREEK	Channel Typing/ Habitat Typing/ Biological Survey
TROUT CREEK	Channel Typing/ Habitat Typing/ Biological Survey
UPPER TRUCKEE RIVER	Channel Typing/ Habitat Typing/ Biological Survey
U.T. RIVER-MEISS MEADOWS	Channel Typing/ Habitat Typing/ Biological Survey
WARD CREEK	Channel Typing/ Habitat Typing/ Biological Survey
WATSON CREEK	Channel Typing/ Habitat Typing/ Biological Survey

MAINSTREAM	TOTAL LENGTH (m)	% POOLS	SUBSTRATE*	GRADIENT*	# OF BARRIERS
ANGORA CREEK	4,772	22	gravel	0.5	12
BLACKWOOD CREEK	4,945	25	cobble	0.7	14
BURKE CREEK	3,851	4	sand	1.9	5
BURTON CREEK	5,912	30	boulder	1.1	21
COLD CREEK	12,908	30	boulder	4.5	50
EAGLE CREEK	5,238	26	boulder	7.5	61
GLEN ALPINE CREEK	7,417	43	boulder	6.0	45
GRIFF CREEK	3,864	15	cobble	6.0	19
MEEKS CREEK	10,565	42	boulder	10.0	70
SAXON CREEK	10,899	42	cobble	3.3	24
SLAUGHTERHOUSE CANYON	5,134	24	fines	1.0	9
TAYLOR CREEK	3,297	23	boulder	1.5	3
THIRD CREEK	9,867	8	boulder	15.0	34
TROUT CREEK	23,579	38	fines	1.0	35
UPPER TRUCKEE RIVER	35,087	33	gravel	0.5	80
U.T. RIVER-MEISS MEADOWS	4,788	26	cobble	0.5	16
WARD CREEK	9,463	13	cobble	2.5	32
WATSON CREEK	4,656	27	cobble	12.0	22

*Substrate and gradient numbers are from the dominant channel type

Channel Type Description

GEN_DESCRIPTION	ENTRENCHMENT	WIDTH/DEPTH	SINUOUSITY	SLOPE RANGE	CHAN_MATERIAL
Well Confined, >=4%, Bedrock	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	bedrock
Well Confined, >=4%, Boulders	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	boulder
Well Confined, >=4%, Cobble	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	cobble
Well Confined, >=4%, Gravel	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	gravel
Well Confined, >=4%, Sand	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	sand
Well Confined, >=4%, Silt/Clay	Entrenched, >1.4	Low, <12	Low, <1.2	>4%	silt/clay
Moderately Confined, 2-3.9%, Bedrock	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	bedrock
Moderately Confined, 2-3.9%, Boulders	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	boulder
Moderately Confined, 2-3.9%, Cobble	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	cobble
Moderately Confined, 2-3.9%, Gravel	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	gravel
Moderately Confined, 2-3.9%, Sand	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	sand
Moderately Confined, 2-3.9%, Silt/Clay	Moderately Entrenched, 1.4-2.2	Moderate, >12	Moderate, >1.2	2-3.9%	silt/clay
Unconfined, 1-1.9%, Bedrock	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	bedrock
Unconfined, 1-1.9%, Boulders	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	boulder
Unconfined, 1-1.9%, Cobble	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	cobble
Unconfined, 1-1.9%, Gravel	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	gravel
Unconfined, 1-1.9%, Sand	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	sand
Unconfined, 1-1.9%, Silt/Clay	Slightly Entrenched, >2.2	Mod-High, >12	High, >1.4	0.1-1.9%	silt/clay
Multi-Channel, 0-1.0%, Bedrock	Braided	Very High, >40	Low	<2.0%	bedrock
Multi-Channel, 0-1.0%, Boulders	Braided	Very High, >40	Low	<2.0%	boulder
Multi-Channel, 0-1.0%, Cobble	Braided	Very High, >40	Low	<2.0%	cobble
Multi-Channel, 0-1.0%, Gravel	Braided	Very High, >40	Low	<2.0%	gravel
Multi-Channel, 0-1.0%, Sand	Braided	Very High, >40	Low	<2.0%	sand
Multi-Channel, 0-1.0%, Silt/Clay	Braided	Very High, >40	Low	<2.0%	silt/clay
Tightly Meandered, <2.0%, Bedrock	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	bedrock
Tightly Meandered, <2.0%, Boulders	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	boulder
Tightly Meandered, <2.0%, Cobble	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	cobble
Tightly Meandered, <2.0%, Gravel	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	gravel
Tightly Meandered, <2.0%, Sand	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	sand
Tightly Meandered, <2.0%, Silt/Clay	Slightly Entrenched, >2.2	Very Low, <12	Very High, >1.5	<2.0%	silt/clay
Well Confined, 0-2.0%, Bedrock	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	bedrock
Well Confined, 0-2.0%, Boulders	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	boulder
Well Confined, 0-2.0%, Cobble	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	cobble
Well Confined, 0-2.0%, Gravel	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	gravel
Well Confined, 0-2.0%, Sand	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	sand
Well Confined, 0-2.0%, Silt/Clay	Entrenched, <1.4	Mod-High, >12	High, >1.4	<2.0%	silt/clay
Well Confined, 2-3.9%, Bedrock	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	bedrock
Well Confined, 2-3.9%, Boulders	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	boulder
Well Confined, 2-3.9%, Cobble	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	cobble
Well Confined, 2-3.9%, Gravel	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	gravel
Well Confined, 2-3.9%, Sand	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	sand
Well Confined, 2-3.9%, Silt/Clay	Entrenched, <1.4	Low, <12	Moderate, >1.2	2-3.9%	silt/clay

Habitat Type Description

HABTYPE	HABCODE	DESCRIPTION
0	DRY	Dry Channel
1	LGR	Low Gradient Riffle
2	HGR	High Gradient Riffle
3	CAS	Cascade
4	SCP	Secondary Channel Pool
5	BWPB	Backwater Pool (Boulder Formed)
6	BWPR	Backwater Pool (Root Wad Formed)
7	BWPL	Backwater Pool (Log Formed)
8	TRC	Trench/Chute
9	PLP	Plunge Pool
10	LSPL	Lateral Scour Pool (Log Formed)
11	LSPR	Lateral Scour Pool (Root Wad Formed)
12	LSPK	Lateral Scour Pool (Bedrock Formed)
13	DPL	Dammed Pool
14	GLD	Glide
15	RUN	Run
16	SRN	Step Run
17	MCP	Mid-Channel Pool
18	EGW	Edgewater
19	CCP	Channel Confluence Pool
20	LSPB	Lateral Scour Pool (Boulder Formed)
21	POW	Pocket Water
22	CRP	Corner Pool
23	STP	Step Pool
24	BRS	Bedrock Sheet
25	BVR	Dammed Pool - Beaver
26	LAKE	Lake/reservoir within channel length
27	CULV	Culvert within channel length

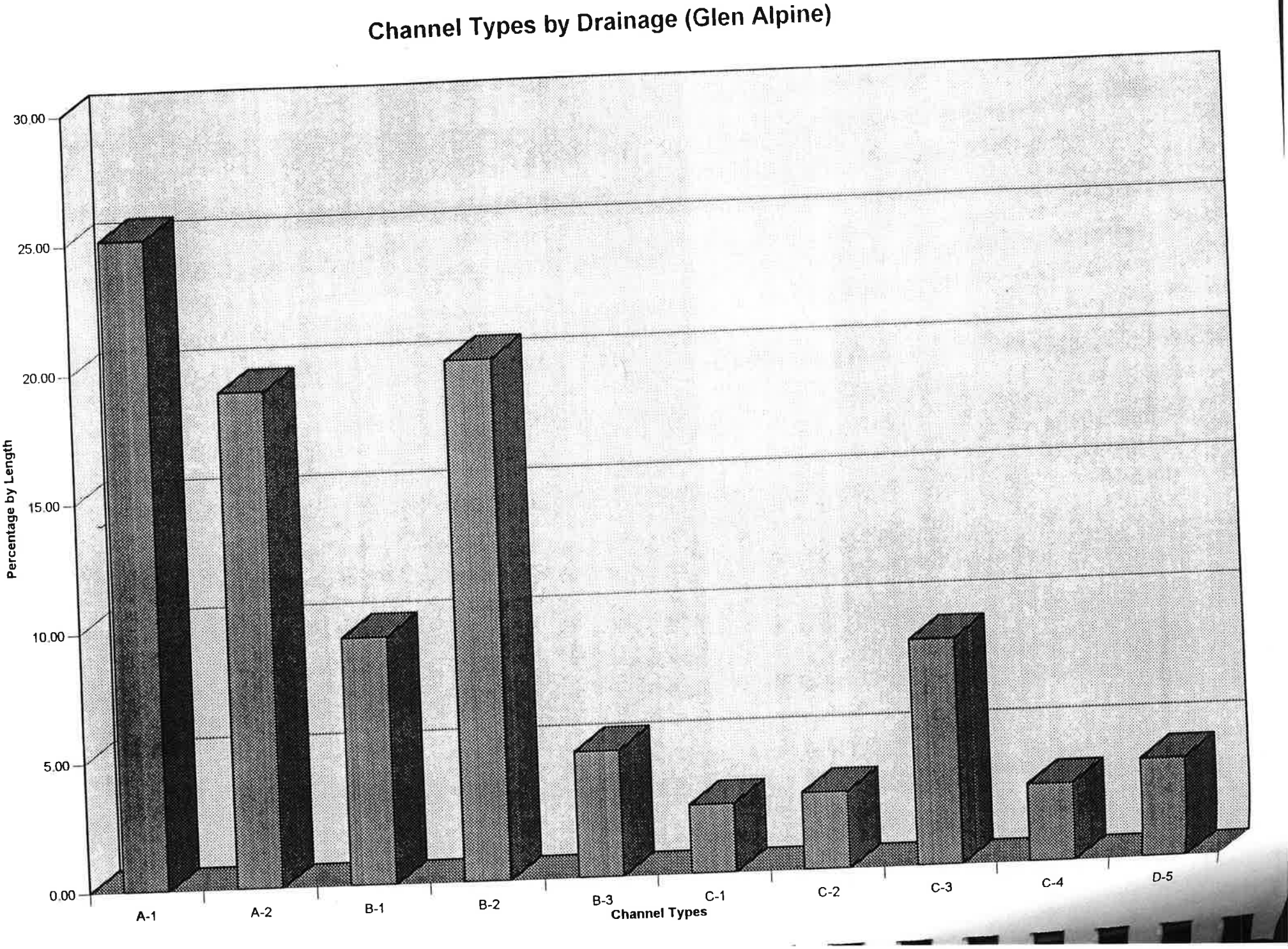
GLEN ALPINE CREEK

GLEN ALPINE CREEK

Located on the south-west shore of Lake Tahoe, Glen Alpine Creek has a watershed area of 10.80 square miles and a stream length of 7,417m. Habitat typing, biological sampling, and channel typing were done in 1992. The dominant channel type at that time was a A-1, which occupied 25% of the total surveyed stream length. Other channel types included : A-2, B-1, B-2, B-3, C-1, C-2, C-3, C-4, and D-5.

The survey also showed that there were 308 habitat units consisting of 21 different types. Of these types, the step-run was the dominant type at 24% with the low gradient riffle as the second highest unit type at 13%. The pool units were considered separately with the total length of the stream occupied by pools at 43%. Of this percentage, step-pools occupied 15% while there were no beaver dams. Barrier units were also considered separately with 45 units selected. The types of barrier units were: cascades(26 units), dammed pools(18 units), and a reservoir(1 unit).

The previous description is part of a basin-level analysis, and will be used to identify reaches for the planning and design of improvement and restoration projects. Once areas of improvement and restoration needs are identified, then project-level analyses will be completed. A project-level analysis differs from a basin-level analysis, in that, at the project level a more detailed description of habitat types and channel types is performed. The same habitat and channel measurements are taken, as at the basin level, but they are measured at a smaller scale. The smaller analysis scale allows for the design of site specific improvements, for example structures, within the project area.


Channel Types by Drainage (Glen Alpine)
30.00
25.00
20.00
15.00
10.00
5.00
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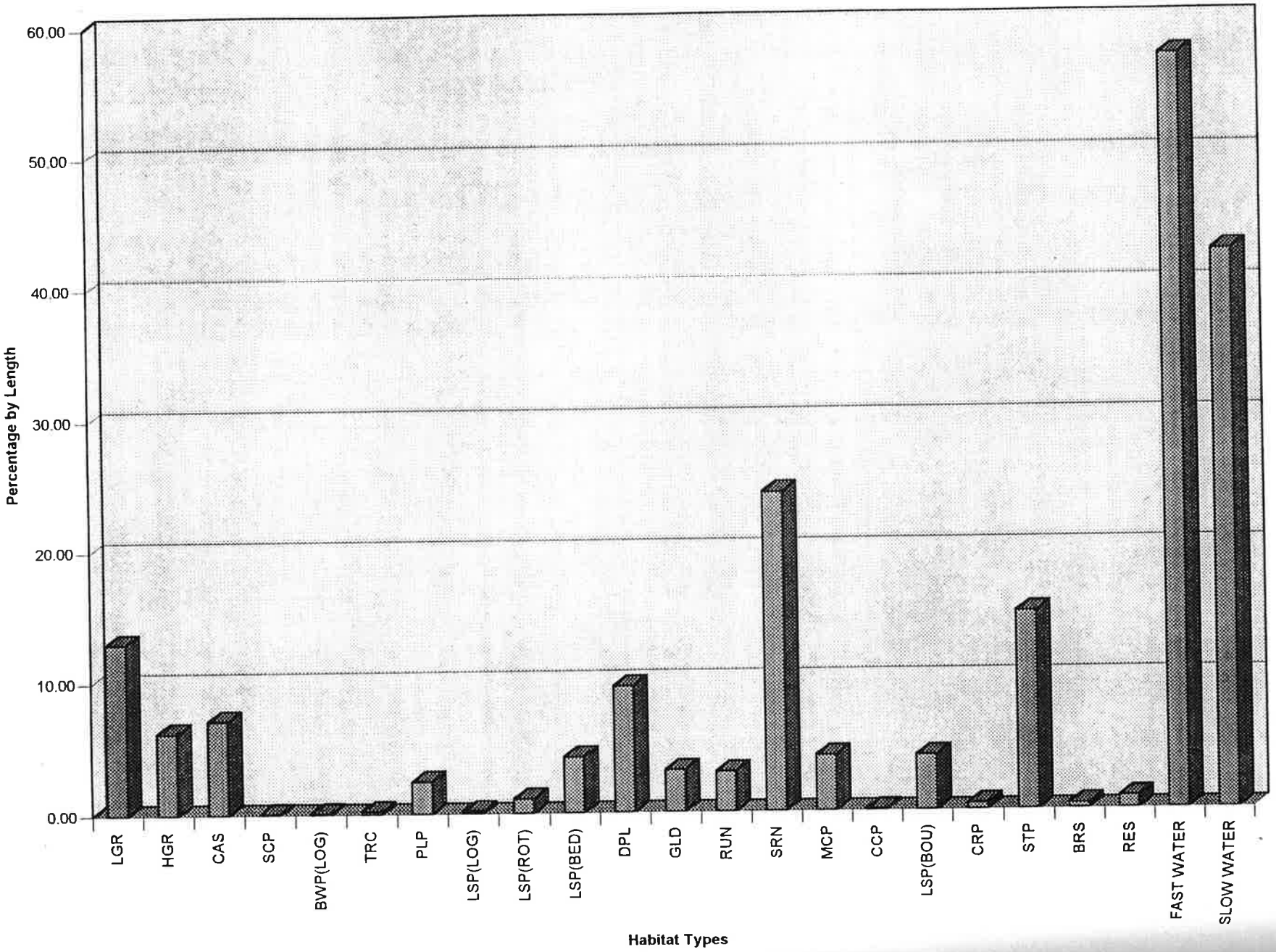
Percentage by Length
A-1
A-2
B-1
B-2
B-3
C-1
C-2
C-3
C-4
D-5
Channel Types

Channel Types by Drainage
GLEN ALPINE CREEK

QUAD NAME	REACH	CHANNEL TYPE	REACH L	COMBINE	ELEVATION	GENERAL DESCRIPTION
EMERALD BAY	20	A-1	249.39	1864.94	7240	Well Confined, >=4%, Bedrock
EMERALD BAY	8	A-1	332.32		6600	Well Confined, >=4%, Bedrock
EMERALD BAY	22	A-1	521.04		7520	Well Confined, >=4%, Bedrock
EMERALD BAY	17	A-1	762.20		7160	Well Confined, >=4%, Bedrock
EMERALD BAY	24	A-2	380.79	1422.26	7720	Well Confined, >=4%, Boulders
EMERALD BAY	19	A-2	306.71		7080	Well Confined, >=4%, Boulders
EMERALD BAY	15	A-2	197.26		7040	Well Confined, >=4%, Boulders
EMERALD BAY	3	A-2	537.50		6480	Well Confined, >=4%, Boulders
EMERALD BAY	9	B-1	708.23	708.23	6720	Moderately Confined, 2-3.9%, Bedrock
EMERALD BAY	2	B-2	215.85	1494.51	6400	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	11	B-2	433.23		6880	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	14	B-2	238.41		7000	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	16	B-2	177.74		7080	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	18	B-2	277.13		7080	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	7	B-2	152.13		6560	Moderately Confined, 2-3.9%, Boulders
EMERALD BAY	1	B-3	89.02	360.37	6400	Moderately Confined, 2-3.9%, Cobble
EMERALD BAY	13	B-3	271.34		6960	Moderately Confined, 2-3.9%, Cobble
EMERALD BAY	21	C-1	195.73	195.73	7480	Unconfined, 1-1.9%, Bedrock
EMERALD BAY	23	C-2	219.82	219.82	7600	Unconfined, 1-1.9%, Boulders
EMERALD BAY	4	C-3	292.68	646.65	6520	Unconfined, 1-1.9%, Cobble
EMERALD BAY	6	C-3	163.41		6560	Unconfined, 1-1.9%, Cobble
EMERALD BAY	10	C-3	190.55		6840	Unconfined, 1-1.9%, Cobble
EMERALD BAY	12	C-4	221.65	221.65	6880	Unconfined, 1-1.9%, Gravel
EMERALD BAY	5	D-5	282.62	282.62	6520	Multi-Channel, 0-1.0%, Sand
			TOTAL=	7416.77		

Habitat Types by Drainage (Glen Alpine)



Habitat Types by Drainage

MAINSTREAM	HABUNIT	SCHUNIT	HABTYPE	LENGTH	DESCRIPTION
GLEN ALPINE CREEK	161		1	5.79	Low Gradient Riffle
GLEN ALPINE CREEK	118	05. . .	1	23.17	Low Gradient Riffle
GLEN ALPINE CREEK	36		1	248.78	Low Gradient Riffle
GLEN ALPINE CREEK	118	03. . .	1	6.40	Low Gradient Riffle
GLEN ALPINE CREEK	40		1	116.16	Low Gradient Riffle
GLEN ALPINE CREEK	125		1	24.09	Low Gradient Riffle
GLEN ALPINE CREEK	146		1	24.09	Low Gradient Riffle
GLEN ALPINE CREEK	165		1	11.28	Low Gradient Riffle
GLEN ALPINE CREEK	188	01. . .	1	14.33	Low Gradient Riffle
GLEN ALPINE CREEK	188		1	23.78	Low Gradient Riffle
GLEN ALPINE CREEK	187		1	11.89	Low Gradient Riffle
GLEN ALPINE CREEK	179		1	28.05	Low Gradient Riffle
GLEN ALPINE CREEK	172		1	19.82	Low Gradient Riffle
GLEN ALPINE CREEK	121		1	21.34	Low Gradient Riffle
GLEN ALPINE CREEK	237		1	13.11	Low Gradient Riffle
GLEN ALPINE CREEK	75		1	19.82	Low Gradient Riffle
GLEN ALPINE CREEK	2		1	7.62	Low Gradient Riffle
GLEN ALPINE CREEK	7		1	51.52	Low Gradient Riffle
GLEN ALPINE CREEK	251		1	31.40	Low Gradient Riffle
GLEN ALPINE CREEK	88		1	73.17	Low Gradient Riffle
GLEN ALPINE CREEK	247		1	11.28	Low Gradient Riffle
GLEN ALPINE CREEK	239	01. . .	1	76.83	Low Gradient Riffle
GLEN ALPINE CREEK	239		1	5.18	Low Gradient Riffle
GLEN ALPINE CREEK	94		1	38.11	Low Gradient Riffle
GLEN ALPINE CREEK	98		1	5.49	Low Gradient Riffle
GLEN ALPINE CREEK	100		1	14.02	Low Gradient Riffle
GLEN ALPINE CREEK	111		1	10.37	Low Gradient Riffle
GLEN ALPINE CREEK	232	01. . .	1	17.38	Low Gradient Riffle
GLEN ALPINE CREEK	205		1	7.93	Low Gradient Riffle
GLEN ALPINE CREEK	221		1	12.80	Low Gradient Riffle
GLEN ALPINE CREEK	26		1	10.67	Low Gradient Riffle
GLEN ALPINE CREEK	43		2	24.39	High Gradient Riffle
GLEN ALPINE CREEK	201		2	7.01	High Gradient Riffle
GLEN ALPINE CREEK	199		2	10.37	High Gradient Riffle
GLEN ALPINE CREEK	275		2	91.77	High Gradient Riffle
GLEN ALPINE CREEK	16		2	29.27	High Gradient Riffle
GLEN ALPINE CREEK	167		2	6.71	High Gradient Riffle
GLEN ALPINE CREEK	176		2	8.84	High Gradient Riffle
GLEN ALPINE CREEK	218		2	21.04	High Gradient Riffle
GLEN ALPINE CREEK	46		2	40.24	High Gradient Riffle
GLEN ALPINE CREEK	174		2	20.73	High Gradient Riffle
GLEN ALPINE CREEK	228		2	11.28	High Gradient Riffle
GLEN ALPINE CREEK	195	01. . .	2	16.16	High Gradient Riffle
GLEN ALPINE CREEK	203		2	7.32	High Gradient Riffle
GLEN ALPINE CREEK	232		2	14.94	High Gradient Riffle
GLEN ALPINE CREEK	195		2	12.50	High Gradient Riffle
GLEN ALPINE CREEK	18		2	15.55	High Gradient Riffle
GLEN ALPINE CREEK	127		2	17.07	High Gradient Riffle
GLEN ALPINE CREEK	54		2	7.32	High Gradient Riffle
GLEN ALPINE CREEK	89		2	14.02	High Gradient Riffle
GLEN ALPINE CREEK	57		2	7.32	High Gradient Riffle
GLEN ALPINE CREEK	84	01. . .	2	70.12	High Gradient Riffle
GLEN ALPINE CREEK	69		2	7.01	High Gradient Riffle
GLEN ALPINE CREEK	59		2	10.37	High Gradient Riffle
GLEN ALPINE CREEK	235		3	21.95	Cascade

Habitat Types by Drainage

GLEN ALPINE CREEK	91		3	10.98	Cascade
GLEN ALPINE CREEK	62		3	14.63	Cascade
GLEN ALPINE CREEK	47		3	14.63	Cascade
GLEN ALPINE CREEK	219		3	2.13	Cascade
GLEN ALPINE CREEK	249		3	17.38	Cascade
GLEN ALPINE CREEK	183		3	50.30	Cascade
GLEN ALPINE CREEK	244		3	16.46	Cascade
GLEN ALPINE CREEK	175		3	7.01	Cascade
GLEN ALPINE CREEK	246		3	17.38	Cascade
GLEN ALPINE CREEK	223		3	85.98	Cascade
GLEN ALPINE CREEK	137		3	8.54	Cascade
GLEN ALPINE CREEK	230		3	2.13	Cascade
GLEN ALPINE CREEK	242		3	10.37	Cascade
GLEN ALPINE CREEK	78		3	23.17	Cascade
GLEN ALPINE CREEK	170		3	10.37	Cascade
GLEN ALPINE CREEK	152		3	6.40	Cascade
GLEN ALPINE CREEK	265		3	11.28	Cascade
GLEN ALPINE CREEK	20		3	7.32	Cascade
GLEN ALPINE CREEK	267		3	31.71	Cascade
GLEN ALPINE CREEK	52		3	5.49	Cascade
GLEN ALPINE CREEK	150		3	11.89	Cascade
GLEN ALPINE CREEK	257		3	25.61	Cascade
GLEN ALPINE CREEK	272		3	37.50	Cascade
GLEN ALPINE CREEK	49		3	21.65	Cascade
GLEN ALPINE CREEK	11		3	67.99	Cascade
GLEN ALPINE CREEK	36	01. . .	4	2.44	Secondary Channel Pool
GLEN ALPINE CREEK	118	06. . .	7	6.71	Backwater Pool (Log Formed)
GLEN ALPINE CREEK	79		8	14.63	Trench/Chute
GLEN ALPINE CREEK	225		9	3.66	Plunge Pool
GLEN ALPINE CREEK	77		9	8.84	Plunge Pool
GLEN ALPINE CREEK	108		9	6.71	Plunge Pool
GLEN ALPINE CREEK	274		9	2.13	Plunge Pool
GLEN ALPINE CREEK	64		9	6.71	Plunge Pool
GLEN ALPINE CREEK	270		9	4.88	Plunge Pool
GLEN ALPINE CREEK	85		9	9.76	Plunge Pool
GLEN ALPINE CREEK	19		9	13.72	Plunge Pool
GLEN ALPINE CREEK	66		9	6.71	Plunge Pool
GLEN ALPINE CREEK	245		9	4.27	Plunge Pool
GLEN ALPINE CREEK	268		9	8.23	Plunge Pool
GLEN ALPINE CREEK	248		9	8.54	Plunge Pool
GLEN ALPINE CREEK	90		9	11.89	Plunge Pool
GLEN ALPINE CREEK	51		9	12.80	Plunge Pool
GLEN ALPINE CREEK	48		9	12.50	Plunge Pool
GLEN ALPINE CREEK	158		9	6.40	Plunge Pool
GLEN ALPINE CREEK	38		9	3.35	Plunge Pool
GLEN ALPINE CREEK	37		9	1.83	Plunge Pool
GLEN ALPINE CREEK	169		9	8.54	Plunge Pool
GLEN ALPINE CREEK	139		9	14.02	Plunge Pool
GLEN ALPINE CREEK	36	02. . .	9	1.83	Plunge Pool
GLEN ALPINE CREEK	173		9	3.66	Plunge Pool
GLEN ALPINE CREEK	132		9	5.49	Plunge Pool
GLEN ALPINE CREEK	53		9	3.66	Plunge Pool
GLEN ALPINE CREEK	128		9	11.28	Plunge Pool
GLEN ALPINE CREEK	191		9	4.27	Plunge Pool
GLEN ALPINE CREEK	119		10	8.84	Lateral Scour Pool (Log Formed)
GLEN ALPINE CREEK	36	03. . .	10	3.35	Lateral Scour Pool (Log Formed)

Habitat Types by Drainage

GLEN ALPINE CREEK	3		11	8.84	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	84		11	27.13	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	238		11	5.79	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	87		11	13.72	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	207		11	8.54	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	36	04. . .	11	2.44	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	166		11	7.93	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	106		11	8.54	Lateral Scour Pool (Root Wad For
GLEN ALPINE CREEK	227		12	4.88	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	168		12	12.80	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	59	01. . .	12	14.02	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	142		12	6.71	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	17		12	21.95	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	162		12	21.65	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	9		12	50.61	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	149		12	8.54	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	70		12	23.17	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	151		12	7.62	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	14		12	40.24	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	234		12	4.88	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	68		12	9.15	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	229		12	5.49	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	99		12	20.12	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	92		12	12.80	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	56		12	10.37	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	58		12	7.32	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	178		12	18.90	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	222		12	6.40	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	22		12	14.94	Lateral Scour Pool (Bedrock Form
GLEN ALPINE CREEK	81		13	26.52	Dammed Pool
GLEN ALPINE CREEK	114		13	22.56	Dammed Pool
GLEN ALPINE CREEK	110		13	12.50	Dammed Pool
GLEN ALPINE CREEK	35		13	3.96	Dammed Pool
GLEN ALPINE CREEK	115		13	10.98	Dammed Pool
GLEN ALPINE CREEK	83		13	21.04	Dammed Pool
GLEN ALPINE CREEK	74		13	182.93	Dammed Pool
GLEN ALPINE CREEK	82		13	22.26	Dammed Pool
GLEN ALPINE CREEK	277		13	12.80	Dammed Pool
GLEN ALPINE CREEK	39		13	2.44	Dammed Pool
GLEN ALPINE CREEK	160		13	11.28	Dammed Pool
GLEN ALPINE CREEK	73		13	274.39	Dammed Pool
GLEN ALPINE CREEK	105		13	6.40	Dammed Pool
GLEN ALPINE CREEK	113		13	18.60	Dammed Pool
GLEN ALPINE CREEK	112		13	11.28	Dammed Pool
GLEN ALPINE CREEK	109		13	8.23	Dammed Pool
GLEN ALPINE CREEK	86		13	70.12	Dammed Pool
GLEN ALPINE CREEK	63		13	8.54	Dammed Pool
GLEN ALPINE CREEK	122		14	21.95	Glide
GLEN ALPINE CREEK	236		14	85.06	Glide
GLEN ALPINE CREEK	141		14	16.16	Glide
GLEN ALPINE CREEK	118	01. . .	14	10.37	Glide
GLEN ALPINE CREEK	116		14	48.78	Glide
GLEN ALPINE CREEK	145		14	16.46	Glide
GLEN ALPINE CREEK	124		14	42.68	Glide
GLEN ALPINE CREEK	34		15	20.73	Run
GLEN ALPINE CREEK	41		15	24.70	Run

Habitat Types by Drainage

GLEN ALPINE CREEK	154		15	17.38	Run
GLEN ALPINE CREEK	159		15	7.32	Run
GLEN ALPINE CREEK	71		15	7.62	Run
GLEN ALPINE CREEK	130		15	16.77	Run
GLEN ALPINE CREEK	24		15	64.94	Run
GLEN ALPINE CREEK	206		15	12.50	Run
GLEN ALPINE CREEK	107		15	16.46	Run
GLEN ALPINE CREEK	104		15	10.98	Run
GLEN ALPINE CREEK	157		15	15.85	Run
GLEN ALPINE CREEK	171		15	14.02	Run
GLEN ALPINE CREEK	208		16	43.60	Step Run
GLEN ALPINE CREEK	118		16	16.46	Step Run
GLEN ALPINE CREEK	241		16	30.18	Step Run
GLEN ALPINE CREEK	156		16	57.32	Step Run
GLEN ALPINE CREEK	240		16	71.04	Step Run
GLEN ALPINE CREEK	133	01. . .	16	26.83	Step Run
GLEN ALPINE CREEK	216		16	14.63	Step Run
GLEN ALPINE CREEK	140		16	42.07	Step Run
GLEN ALPINE CREEK	214		16	8.23	Step Run
GLEN ALPINE CREEK	144	01. . .	16	20.73	Step Run
GLEN ALPINE CREEK	133	04. . .	16	21.04	Step Run
GLEN ALPINE CREEK	233		16	14.94	Step Run
GLEN ALPINE CREEK	224		16	43.90	Step Run
GLEN ALPINE CREEK	120		16	21.95	Step Run
GLEN ALPINE CREEK	226		16	8.23	Step Run
GLEN ALPINE CREEK	131	. . .	16	26.22	Step Run
GLEN ALPINE CREEK	129	01. . .	16	12.80	Step Run
GLEN ALPINE CREEK	129		16	22.56	Step Run
GLEN ALPINE CREEK	210		16	38.72	Step Run
GLEN ALPINE CREEK	96		16	34.76	Step Run
GLEN ALPINE CREEK	123		16	21.95	Step Run
GLEN ALPINE CREEK	212		16	11.28	Step Run
GLEN ALPINE CREEK	192		16	40.85	Step Run
GLEN ALPINE CREEK	273		16	24.70	Step Run
GLEN ALPINE CREEK	202		16	8.23	Step Run
GLEN ALPINE CREEK	33		16	12.80	Step Run
GLEN ALPINE CREEK	194		16	26.22	Step Run
GLEN ALPINE CREEK	276		16	37.20	Step Run
GLEN ALPINE CREEK	144		16	41.77	Step Run
GLEN ALPINE CREEK	30		16	21.95	Step Run
GLEN ALPINE CREEK	271		16	35.37	Step Run
GLEN ALPINE CREEK	28		16	45.12	Step Run
GLEN ALPINE CREEK	184		16	31.71	Step Run
GLEN ALPINE CREEK	13		16	25.91	Step Run
GLEN ALPINE CREEK	8		16	40.85	Step Run
GLEN ALPINE CREEK	7	01. . .	16	14.94	Step Run
GLEN ALPINE CREEK	6		16	57.93	Step Run
GLEN ALPINE CREEK	190		16	56.10	Step Run
GLEN ALPINE CREEK	4		16	40.55	Step Run
GLEN ALPINE CREEK	182		16	21.95	Step Run
GLEN ALPINE CREEK	259		16	9.76	Step Run
GLEN ALPINE CREEK	250		16	25.00	Step Run
GLEN ALPINE CREEK	252		16	167.38	Step Run
GLEN ALPINE CREEK	163		16	15.85	Step Run
GLEN ALPINE CREEK	254		16	14.33	Step Run
GLEN ALPINE CREEK	256		16	42.99	Step Run

Habitat Types by Drainage

GLEN ALPINE CREEK	269		16	14.33	Step Run
GLEN ALPINE CREEK	261		16	24.09	Step Run
GLEN ALPINE CREEK	197		16	7.62	Step Run
GLEN ALPINE CREEK	263		16	219.82	Step Run
GLEN ALPINE CREEK	264		16	57.32	Step Run
GLEN ALPINE CREEK	43	01. . .	16	19.21	Step Run
GLEN ALPINE CREEK	179	01. . .	16	32.62	Step Run
GLEN ALPINE CREEK	198		17	8.84	Mid-Channel Pool
GLEN ALPINE CREEK	180		17	28.96	Mid-Channel Pool
GLEN ALPINE CREEK	155		17	12.50	Mid-Channel Pool
GLEN ALPINE CREEK	196		17	19.51	Mid-Channel Pool
GLEN ALPINE CREEK	189		17	14.63	Mid-Channel Pool
GLEN ALPINE CREEK	164		17	10.98	Mid-Channel Pool
GLEN ALPINE CREEK	72		17	14.33	Mid-Channel Pool
GLEN ALPINE CREEK	1		17	20.73	Mid-Channel Pool
GLEN ALPINE CREEK	36	05. . .	17	11.59	Mid-Channel Pool
GLEN ALPINE CREEK	118	04. . .	17	23.78	Mid-Channel Pool
GLEN ALPINE CREEK	67		17	27.74	Mid-Channel Pool
GLEN ALPINE CREEK	76		17	26.83	Mid-Channel Pool
GLEN ALPINE CREEK	102		17	47.87	Mid-Channel Pool
GLEN ALPINE CREEK	111	02. . .	17	21.95	Mid-Channel Pool
GLEN ALPINE CREEK	118	02. . .	17	13.72	Mid-Channel Pool
GLEN ALPINE CREEK	185		17	6.71	Mid-Channel Pool
GLEN ALPINE CREEK	117		17	7.93	Mid-Channel Pool
GLEN ALPINE CREEK	36	06. . .	19	5.49	Channel Confluence Pool
GLEN ALPINE CREEK	135		20	10.67	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	5		20	11.28	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	27		20	22.56	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	29		20	31.40	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	31		20	25.61	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	32		20	12.20	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	55		20	8.23	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	42		20	14.94	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	44		20	29.27	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	133	02. . .	20	7.62	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	126		20	12.20	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	136		20	14.63	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	147		20	8.23	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	97		20	18.60	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	101		20	18.90	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	133	03. . .	20	12.80	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	200		20	12.50	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	213		20	6.40	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	193		20	9.45	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	266		20	11.59	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	217		20	7.01	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	204		20	9.76	Lateral Scour Pool (Boulder Forme
GLEN ALPINE CREEK	111	01. . .	22	7.32	Corner Pool
GLEN ALPINE CREEK	36	07. . .	22	6.71	Corner Pool
GLEN ALPINE CREEK	25		22	20.73	Corner Pool
GLEN ALPINE CREEK	220		23	22.26	Step Pool
GLEN ALPINE CREEK	138		23	26.83	Step Pool
GLEN ALPINE CREEK	143		23	9.76	Step Pool
GLEN ALPINE CREEK	211		23	17.38	Step Pool
GLEN ALPINE CREEK	209		23	25.00	Step Pool
GLEN ALPINE CREEK	148		23	23.78	Step Pool

Habitat Types by Drainage

GLEN ALPINE CREEK	148	01. . .	23	26.52	Step Pool
GLEN ALPINE CREEK	260		23	13.11	Step Pool
GLEN ALPINE CREEK	153		23	17.68	Step Pool
GLEN ALPINE CREEK	133		23	45.73	Step Pool
GLEN ALPINE CREEK	50		23	46.04	Step Pool
GLEN ALPINE CREEK	80		23	61.89	Step Pool
GLEN ALPINE CREEK	103		23	14.94	Step Pool
GLEN ALPINE CREEK	231		23	9.76	Step Pool
GLEN ALPINE CREEK	45		23	79.27	Step Pool
GLEN ALPINE CREEK	262		23	27.13	Step Pool
GLEN ALPINE CREEK	10		23	111.89	Step Pool
GLEN ALPINE CREEK	12		23	26.52	Step Pool
GLEN ALPINE CREEK	15		23	110.98	Step Pool
GLEN ALPINE CREEK	21		23	12.80	Step Pool
GLEN ALPINE CREEK	23		23	38.41	Step Pool
GLEN ALPINE CREEK	243		23	11.59	Step Pool
GLEN ALPINE CREEK	134		23	122.56	Step Pool
GLEN ALPINE CREEK	61		23	64.63	Step Pool
GLEN ALPINE CREEK	177		23	12.80	Step Pool
GLEN ALPINE CREEK	255		23	12.80	Step Pool
GLEN ALPINE CREEK	95		23	84.45	Step Pool
GLEN ALPINE CREEK	181		23	24.09	Step Pool
GLEN ALPINE CREEK	253		23	8.54	Step Pool
GLEN ALPINE CREEK	215		23	8.54	Step Pool
GLEN ALPINE CREEK	258		23	21.65	Step Pool
GLEN ALPINE CREEK	93		24	13.11	Bedrock Sheet
GLEN ALPINE CREEK	65		24	8.54	Bedrock Sheet
GLEN ALPINE CREEK	60		24	7.32	Bedrock Sheet
GLEN ALPINE CREEK	186		26	69.51	Lake/reservoir within channel lengt

Pool Types by Drainage
GLEN ALPINE CREEK

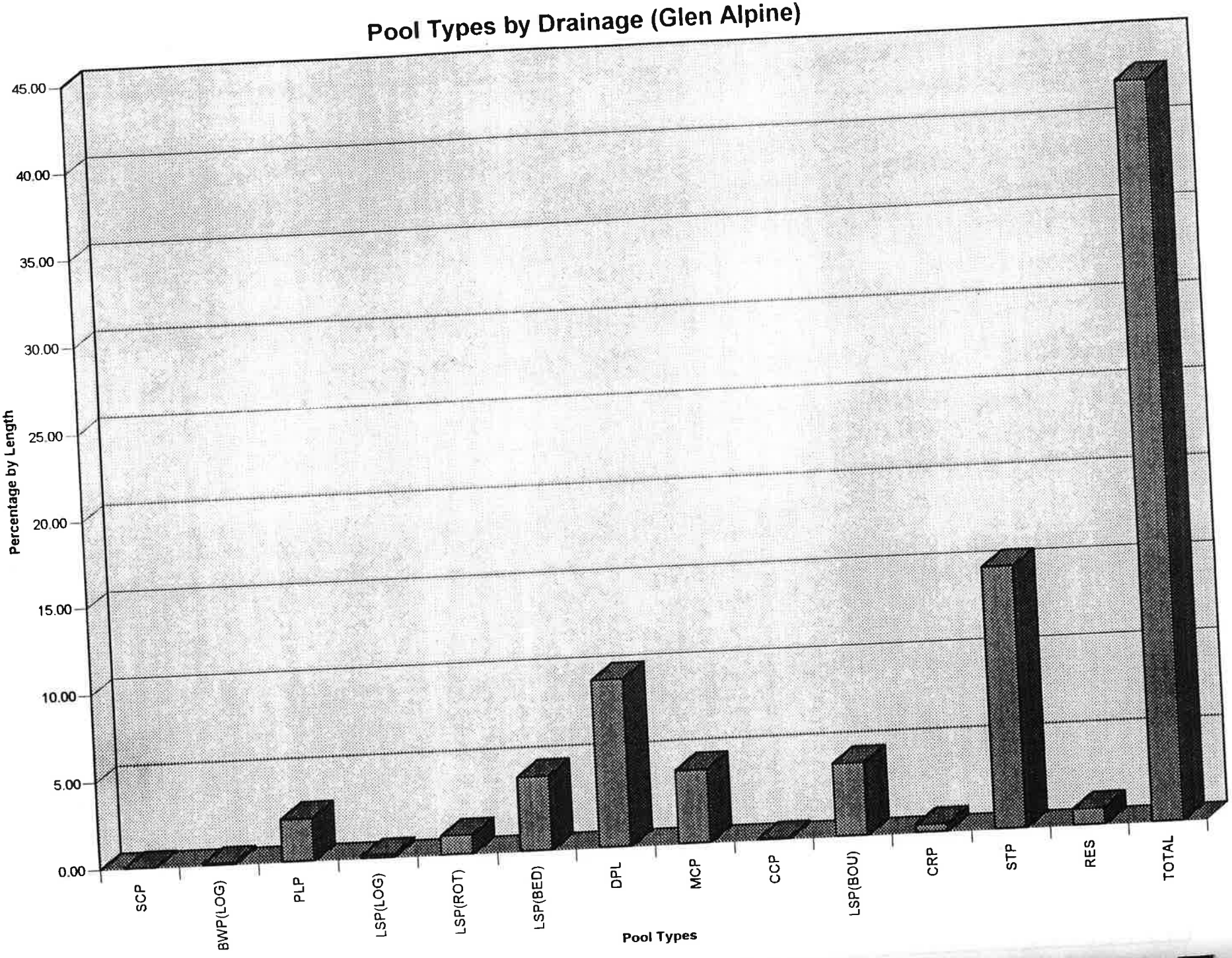
HABUNIT	SCHUNIT	HABTYPE	LENGTH	MAX_DEP	DEP_PCRST	RES_DEPT	DEPTH_RATIO	DESCRIPTION
36	01. . .	4	2.44	0.37	0.12	0.25	0.68	Secondary Channel Pool
118	06. . .	7	6.71	0.73	0.18	0.55	0.75	Backwater Pool (Log Formed)
173		9	3.66	0.73	0.15	0.58	0.79	Plunge Pool
77		9	8.84	1.25	0.49	0.76	0.61	Plunge Pool
191		9	4.27	0.67	0.09	0.58	0.86	Plunge Pool
19		9	13.72	0.98	0.32	0.66	0.68	Plunge Pool
36	02. . .	9	1.83	0.82	0.12	0.70	0.85	Plunge Pool
37		9	1.83	0.61	0.06	0.55	0.90	Plunge Pool
38		9	3.35	1.10	0.12	0.98	0.89	Plunge Pool
48		9	12.50	1.83	0.18	1.65	0.90	Plunge Pool
51		9	12.80	1.83	0.40	1.43	0.78	Plunge Pool
53		9	3.66	2.13	0.55	1.59	0.74	Plunge Pool
245		9	4.27	0.98	0.06	0.91	0.94	Plunge Pool
66		9	6.71	0.58	0.24	0.34	0.58	Plunge Pool
274		9	2.13	0.43	0.09	0.34	0.79	Plunge Pool
85		9	9.76	1.46	0.21	1.25	0.85	Plunge Pool
90		9	11.89	1.83	0.27	1.55	0.85	Plunge Pool
108		9	6.71	0.55	0.12	0.43	0.78	Plunge Pool
128		9	11.28	0.52	0.24	0.27	0.53	Plunge Pool
132		9	5.49	0.61	0.34	0.27	0.45	Plunge Pool
139		9	14.02	2.13	0.24	1.89	0.89	Plunge Pool
158		9	6.40	1.04	0.15	0.88	0.85	Plunge Pool
225		9	3.66	0.76	0.06	0.70	0.92	Plunge Pool
248		9	8.54	1.22	0.09	1.13	0.93	Plunge Pool
268		9	8.23	0.49	0.06	0.43	0.88	Plunge Pool
270		9	4.88	0.64	0.09	0.55	0.86	Plunge Pool
64		9	6.71	1.83	0.12	1.71	0.93	Plunge Pool
169		9	8.54	1.83	0.27	1.55	0.85	Plunge Pool
119		10	8.84	1.01	0.09	0.91	0.91	Lateral Scour Pool (Log Formed)
36	03. . .	10	3.35	0.58	0.12	0.46	0.79	Lateral Scour Pool (Log Formed)
87		11	13.72	0.58	0.40	0.18	0.32	Lateral Scour Pool (Root Wad Formed)
36	04. . .	11	2.44	0.61	0.21	0.40	0.65	Lateral Scour Pool (Root Wad Formed)
238		11	5.79	0.61	0.06	0.55	0.90	Lateral Scour Pool (Root Wad Formed)
207		11	8.54	0.58	0.18	0.40	0.68	Lateral Scour Pool (Root Wad Formed)
84		11	27.13	1.07	0.21	0.85	0.80	Lateral Scour Pool (Root Wad Formed)
106		11	8.54	1.52	0.30	1.22	0.80	Lateral Scour Pool (Root Wad Formed)
3		11	8.84	0.98	0.21	0.76	0.78	Lateral Scour Pool (Root Wad Formed)
166		11	7.93	0.91	0.18	0.73	0.80	Lateral Scour Pool (Root Wad Formed)
68		12	9.15	0.70	0.46	0.24	0.35	Lateral Scour Pool (Bedrock Formed)
234		12	4.88	0.40	0.06	0.34	0.85	Lateral Scour Pool (Bedrock Formed)
229		12	5.49	0.98	0.09	0.88	0.91	Lateral Scour Pool (Bedrock Formed)
227		12	4.88	0.73	0.18	0.55	0.75	Lateral Scour Pool (Bedrock Formed)
222		12	6.40	0.79	0.09	0.70	0.88	Lateral Scour Pool (Bedrock Formed)
22		12	14.94	0.88	0.30	0.58	0.66	Lateral Scour Pool (Bedrock Formed)
178		12	18.90	0.88	0.12	0.76	0.86	Lateral Scour Pool (Bedrock Formed)
92		12	12.80	1.68	0.12	1.55	0.93	Lateral Scour Pool (Bedrock Formed)
151		12	7.62	1.19	0.12	1.07	0.90	Lateral Scour Pool (Bedrock Formed)
162		12	21.65	1.52	0.09	1.43	0.94	Lateral Scour Pool (Bedrock Formed)
99		12	20.12	1.40	0.21	1.19	0.85	Lateral Scour Pool (Bedrock Formed)
56		12	10.37	1.83	0.43	1.40	0.77	Lateral Scour Pool (Bedrock Formed)
58		12	7.32	0.98	0.24	0.73	0.75	Lateral Scour Pool (Bedrock Formed)
59	01. . .	12	14.02	0.64	0.18	0.46	0.71	Lateral Scour Pool (Bedrock Formed)
142		12	6.71	1.83	0.67	1.16	0.63	Lateral Scour Pool (Bedrock Formed)
9		12	50.61	1.16	0.30	0.85	0.74	Lateral Scour Pool (Bedrock Formed)
14		12	40.24	0.88	0.24	0.64	0.72	Lateral Scour Pool (Bedrock Formed)
17		12	21.95	1.52	0.46	1.07	0.70	Lateral Scour Pool (Bedrock Formed)

Pool Types by Drainage
GLEN ALPINE CREEK

70		12	23.17	0.70	0.18	0.52	0.74	Lateral Scour Pool (Bedrock Formed)
149		12	8.54	1.52	0.18	1.34	0.88	Lateral Scour Pool (Bedrock Formed)
168		12	12.80	0.88	0.12	0.76	0.86	Lateral Scour Pool (Bedrock Formed)
86		13	70.12	1.83	0.18	1.65	0.90	Dammed Pool
160		13	11.28	0.64	0.06	0.58	0.90	Dammed Pool
115		13	10.98	1.52	0.03	1.49	0.98	Dammed Pool
113		13	18.60	1.01	0.06	0.95	0.94	Dammed Pool
110		13	12.50	0.79	0.09	0.70	0.88	Dammed Pool
112		13	11.28	0.58	0.12	0.46	0.79	Dammed Pool
105		13	6.40	1.04	0.09	0.95	0.91	Dammed Pool
39		13	2.44	0.49	0.06	0.43	0.88	Dammed Pool
83		13	21.04	0.95	0.21	0.73	0.77	Dammed Pool
82		13	22.26	1.31	0.18	1.13	0.86	Dammed Pool
81		13	26.52	0.79	0.18	0.61	0.77	Dammed Pool
74		13	182.93	1.83	0.61	1.22	0.67	Dammed Pool
63		13	8.54	0.95	0.24	0.70	0.74	Dammed Pool
73		13	274.39	2.44	0.52	2.23	0.91	Dammed Pool
277		13	12.80	0.52	0.18	0.34	0.65	Dammed Pool
109		13	8.23	0.70	0.06	0.64	0.91	Dammed Pool
35		13	3.96	0.85	0.30	0.55	0.64	Dammed Pool
114		13	22.56	1.52	0.09	1.43	0.94	Dammed Pool
118	04. . .	17	23.78	0.98	0.06	0.91	0.94	Mid-Channel Pool
189		17	14.63	0.61	0.09	0.52	0.85	Mid-Channel Pool
111	02. . .	17	21.95	0.64	0.09	0.55	0.86	Mid-Channel Pool
198		17	8.84	0.52	0.30	0.21	0.41	Mid-Channel Pool
180		17	28.96	1.01	0.12	0.88	0.88	Mid-Channel Pool
155		17	12.50	0.98	0.06	0.91	0.94	Mid-Channel Pool
185		17	6.71	0.58	0.34	0.24	0.42	Mid-Channel Pool
118	02. . .	17	13.72	0.91	0.34	0.58	0.63	Mid-Channel Pool
117		17	7.93	0.76	0.64	0.12	0.16	Mid-Channel Pool
1		17	20.73	0.67	0.40	0.27	0.40	Mid-Channel Pool
36	05. . .	17	11.59	0.98	0.18	0.79	0.81	Mid-Channel Pool
67		17	27.74	0.76	0.21	0.55	0.72	Mid-Channel Pool
72		17	14.33	0.67	0.40	0.27	0.41	Mid-Channel Pool
76		17	26.83	1.25	0.24	1.01	0.80	Mid-Channel Pool
102		17	47.87	1.13	0.18	0.95	0.84	Mid-Channel Pool
164		17	10.98	0.91	0.11	0.80	0.87	Mid-Channel Pool
196		17	19.51	0.58	0.21	0.37	0.63	Mid-Channel Pool
36	06. . .	19	5.49	0.58	0.21	0.37	0.63	Channel Confluence Pool
147		20	8.23	0.79	0.21	0.58	0.73	Lateral Scour Pool (Boulder Formed)
29		20	31.40	1.01	0.34	0.67	0.67	Lateral Scour Pool (Boulder Formed)
27		20	22.56	1.10	0.18	0.91	0.83	Lateral Scour Pool (Boulder Formed)
266		20	11.59	0.40	0.06	0.34	0.85	Lateral Scour Pool (Boulder Formed)
217		20	7.01	0.70	0.06	0.64	0.91	Lateral Scour Pool (Boulder Formed)
213		20	6.40	0.40	0.09	0.30	0.77	Lateral Scour Pool (Boulder Formed)
204		20	9.76	0.52	0.09	0.43	0.82	Lateral Scour Pool (Boulder Formed)
193		20	9.45	0.52	0.18	0.34	0.65	Lateral Scour Pool (Boulder Formed)
5		20	11.28	1.13	0.30	0.82	0.73	Lateral Scour Pool (Boulder Formed)
136		20	14.63	1.07	0.24	0.82	0.77	Lateral Scour Pool (Boulder Formed)
135		20	10.67	1.01	0.27	0.73	0.73	Lateral Scour Pool (Boulder Formed)
133	03. . .	20	12.80	0.82	0.15	0.67	0.81	Lateral Scour Pool (Boulder Formed)
133	02. . .	20	7.62	0.73	0.09	0.64	0.88	Lateral Scour Pool (Boulder Formed)
126		20	12.20	1.07	0.24	0.82	0.77	Lateral Scour Pool (Boulder Formed)
101		20	18.90	0.64	0.12	0.54	0.84	Lateral Scour Pool (Boulder Formed)
97		20	18.60	0.70	0.12	0.58	0.83	Lateral Scour Pool (Boulder Formed)
55		20	8.23	0.70	0.34	0.37	0.52	Lateral Scour Pool (Boulder Formed)
44		20	29.27	1.01	0.18	0.82	0.82	Lateral Scour Pool (Boulder Formed)

Pool Types by Drainage
GLEN ALPINE CREEK

42		20	14.94	1.55	0.55	1.01	0.65	Lateral Scour Pool (Boulder Formed)
32		20	12.20	0.95	0.27	0.67	0.71	Lateral Scour Pool (Boulder Formed)
31		20	25.61	1.83	0.37	1.46	0.80	Lateral Scour Pool (Boulder Formed)
200		20	12.50	0.70	0.37	0.34	0.48	Lateral Scour Pool (Boulder Formed)
25		22	20.73	0.98	0.30	0.67	0.69	Corner Pool
36	07. . .	22	6.71	0.88	0.18	0.70	0.79	Corner Pool
111	01. . .	22	7.32	0.73	0.12	0.61	0.83	Corner Pool
45		23	79.27	1.80	0.37	1.43	0.80	Step Pool
21		23	12.80	0.61	0.24	0.37	0.60	Step Pool
138		23	26.83	0.82	0.18	0.64	0.78	Step Pool
143		23	9.76	0.73	0.09	0.64	0.88	Step Pool
148		23	23.78	0.85	0.12	0.73	0.86	Step Pool
148	01. . .	23	26.52	0.49	0.06	0.43	0.88	Step Pool
134		23	122.56	1.07	0.27	0.79	0.74	Step Pool
177		23	12.80	0.95	0.09	0.85	0.90	Step Pool
181		23	24.09	0.95	0.12	0.82	0.87	Step Pool
211		23	17.38	0.40	0.09	0.30	0.77	Step Pool
10		23	111.89	0.61	0.43	0.18	0.30	Step Pool
209		23	25.00	0.61	0.12	0.49	0.80	Step Pool
215		23	8.54	0.49	0.12	0.37	0.75	Step Pool
12		23	26.52	0.88	0.18	0.70	0.79	Step Pool
15		23	110.98	0.85	0.43	0.43	0.50	Step Pool
153		23	17.68	1.16	0.12	1.04	0.89	Step Pool
260		23	13.11	0.85	0.09	0.76	0.89	Step Pool
231		23	9.76	0.40	0.12	0.27	0.69	Step Pool
133		23	45.73	0.52	0.24	0.27	0.53	Step Pool
243		23	11.59	0.82	0.12	0.70	0.85	Step Pool
253		23	8.54	0.58	0.06	0.52	0.89	Step Pool
258		23	21.65	0.40	0.12	0.27	0.69	Step Pool
220		23	22.26	0.43	0.09	0.34	0.79	Step Pool
262		23	27.13	0.52	0.06	0.46	0.88	Step Pool
50		23	46.04	1.07	0.37	0.70	0.66	Step Pool
61		23	64.63	0.95	0.24	0.70	0.74	Step Pool
23		23	38.41	0.95	0.30	0.64	0.68	Step Pool
80		23	61.89	0.67	0.30	0.37	0.55	Step Pool
95		23	84.45	0.79	0.24	0.55	0.69	Step Pool
103		23	14.94	0.67	0.21	0.46	0.68	Step Pool
255		23	12.80	0.49	0.09	0.40	0.81	Step Pool
186		26	69.51	-1.00	-1.00	0.00	0.00	Lake/reservoir within channel length


Pool Types by Drainage (Glen Alpine)
Percentage by Length
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
SCP
BWP(LOG)
PLP
LSP(LOG)
LSP(ROT)
LSP(BED)
DPL
MCP
CCP
LSP(BOU)
CRP
STP
RES
TOTAL
Pool Types

Barriers by Drainage (Glen Alpine)

REACH	CHANTYPE	ELEVATION	HABUNIT	SCHUNI	HABTYPE	LENGTH	HABNOTES
3	A-2	6480	11		3	67.99	1325 55 DEGREES, NO FISH, AWESOME!
3	A-2	6480	20		3	7.32	L.B. BEDROCK WALL 50'
4	C-3	6520	35		13	3.96	LOG BRIDGE CROSSES CREEK AT END OF UNIT CAUSING JAM, (BARRIER)/
							TAG ON BRIDGE CENTER OF POOL
6	C-3	6560	39		13	2.44	
8	A-1	6600	47		3	14.63	DEPTH VISUAL, DIVE TAG ON R.B. ALDER BEGINING OF UNIT, UNKNOWN DEPTH AT PLUNGE
							CASCADE. THIS POOL IS COOL - SMALL TRIB L.B.
8	A-1	6600	49		3	21.65	80 DEGREE GRADIENT, MEAN AND MAX DEPTH ARE UNKNOWN
8	A-1	6600	52		3	5.49	
8	A-1	6600	62		3	14.63	CABIN ON L.B.
8	A-1	6600	63		13	8.54	THESE TWO POOLS ARE JOINED, TAG ON ALDER AT END OF UNIT.
9	B-1	6720	73		13	274.39	STEPPED OFF LENGTH AND GUESSED REST. LOTS OF FISH RISING.
							TAG ON L.B. FIR BEGIN 0F UNIT.
9	B-1	6720	74		13	182.93	GUESSED SAME AS #73, SKETCH ON FIELD SHEET.
9	B-1	6720	78		3	23.17	TAG ON FIR AT END OF UNIT
10	C-3	6840	81		13	26.52	TAG ON LITTLE CEDAR R.B. AT END OF UNIT. LARGE LOG JAM IN MIDDLE OF POOL.
							BEDROCK LEDGE MAKES THE DAM.
10	C-3	6840	82		13	22.26	DAM AT BEGINNING OF UNIT LOOKS MAN MADE. LARGE DEBRIS SECTION ON R.B.
10	C-3	6840	83		13	21.04	SMALL BACK WATER POOL ON R.B. AT END OF UNIT.
10	C-3	6840	86		13	70.12	THE DAM FOR THIS POOL IS MAN MADE - SEE SKETCH ON FIELD NOTES
11	B-2	6880	91		3	10.98	
12	C-4	6880	105		13	6.4	TAG PINE CENTER UNIT AT END
12	C-4	6880	109		13	8.23	LOG / BEAVER DAM END OF UNIT
12	C-4	6880	110		13	12.5	FISH
12	C-4	6880	112		13	11.28	LARGE LOG AT START CROSSES STREAM
12	C-4	6880	113		13	18.6	OLD BEAVER DAM MARSH WET R.B.
12	C-4	6880	114		13	22.56	WOODY OVERHANG, FISH
12	C-4	6880	115		13	10.98	SMALL BACK WATER LB. END UNIT TAG R.B. ALDER
15	A-2	7040	137		3	8.54	TRIB JOINS CREEK AT THIS UNIT CABIN L.B.
17	A-1	7160	150		3	11.89	BEDROCK V CHUTE
17	A-1	7160	152		3	6.4	
17	A-1	7160	160		13	11.28	TAG PINE L.B.
17	A-1	7160	170		3	10.37	
17	A-1	7160	175		3	7.01	BEDROCK OUTCROP
17	A-1	7160	183		3	50.3	LG. WOODY NEAR END OF THIS UNIT BEDROCK WALLS
17	A-1	7160	186		26	69.51	THIS IS A POND DOWN STREAM FROM GRASS LAKE
19	A-2	7080	219		3	2.13	PINE R.B.
20	A-1	7240	223		3	85.98	TAG SMALL PINE END
20	A-1	7240	230		3	2.13	
20	A-1	7240	235		3	21.95	
22	A-1	7520	242		3	10.37	TAG PINE R.B. MID UNIT 244
22	A-1	7520	244		3	16.46	BEDROCK POOL 2.3 MAX
22	A-1	7520	246		3	17.38	PLUNGE POOL 1.9 MAX

Barriers by Drainage (Glen Alpine)

22	A-1	7520	249		3	17.38	
22	A-1	7520	257		3	25.61	
24	A-2	7720	265		3	11.28	
24	A-2	7720	267		3	31.71	
24	A-2	7720	272		3	37.5	
24	A-2	7720	277		13	12.8	

Barriers by Drainage (Glen Alpine)